Developing Tomorrow's Integrated Community Health Systems: A Leadership Challenge for Public Health and Primary Care

WILLIAM E. WELTON, THEODORE A. KANTNER, and SHEILA MORIBER KATZ

Allegheny University of the Health Professions, Philadelphia

AS WE REDEFINE THE ROLE OF PRIMARY CARE in a health system that is rapidly shifting to a market-oriented, managed care paradigm, we must understand and re-explore the current and future relations between population-based, or "public health," services and personal medical services at the primary care level. This question is vital to our ability as a society to ensure and improve the health of our diverse populations in an environment of dynamic change.

The issue has gathered urgency as private employers and government-sponsored health programs continue their aggressive development of managed care programs that are designed to decrease costs, to improve accountability for performance, and to upgrade service quality and access. Increasingly, pragmatic analysis requires a rethinking of traditional notions and paradigms of population (public) health.

In this article, we will identify current issues and offer suggestions for integrating concepts to support practical improvements, while upgrading population health and guaranteeing reasonable access to services in a context of controlled, long-term per capita costs. To assure these desired outcomes, we must expand our vision to include both *population-*

The Milbank Quarterly, Vol. 75, No. 2, 1997
© 1997 Milbank Memorial Fund. Published by Blackwell Publishers,
350 Main Street, Malden, MA 02148, USA, and 108 Cowley Road,
Oxford OX4 1JF, UK.

based and *primary* medicine and health care (*services*) in a single, integrated system. We must work to remove barriers to the formation of such a system and to develop new operating paradigms for assuring its continuing high quality while clarifying its objectives and curbing its excesses.

Finally, we will identify and highlight significant requirements and challenges to the leadership of the public health and the primary care communities, and to the academicians who serve and support those communities. Many of these challenges must be addressed by visionary leaders within our political and health care delivery systems as well, if we are to realize the potential of integrated community health systems.

In short, we must view both public health and primary care as two interacting, mutually supportive components of a single, integrated community health system whose overarching goal is improving the health of the community and its diverse populations.

Background: Public Health and Primary Care

In our research, we noted with interest the relative paucity of published material that addresses the intersection of public health and primary care services. We uncovered few articles that were written from the perspective of public health; instead, we discovered that most adopted the point of view of preventive and family medicine (mostly community-oriented primary care, or COPC). Nor was there much material on this topic in the internal medicine and pediatric literature. In general, the COPC concept has not spread throughout the world of primary care medical practice since it was first the subject of a study by the Institute of Medicine (IOM) in 1984. The COPC practice model appears to be most apparent in staff-model HMOs and in a relatively small number of academic, community-based practices. The concept elucidated in the 1984 study has guided our thoughts on the appropriate roles of public health and primary care and the relations between them.

Over the past two decades, our understanding of public health and primary health care has undergone important transitions. Each domain diverged into an unrelated and competitive culture over the past 80 years. It is now important to create an integrated picture, however, as these two distinct cultures are more frequently forced to work together under a series of broader market reforms. Increasingly, these reforms

emphasize competitive managed care programs and reward strategies that organize and provide integrated health care and preventive services at controlled cost and quality to defined populations, including most of those formerly cared for directly by local and state health departments. This trend is evident in the accelerated transition during the past decade of Medicaid populations to a broad range of managed care programs. In this context, it is important to acknowledge the preference of our political system for market-oriented solutions to complex health care problems. Yesterday's public health and primary care will become tomorrow's population-health, clinical- and preventive-primary-care, and community-based medicine. Combining the work of the two domains in the context of market-oriented financing systems will spur the growth of integrated community health systems.

The Institute of Medicine recently offered a formal definition of primary care:

The provision of *integrated, accessible health care services* by *clinicians* who are *accountable* for addressing a *large majority of personal health care needs*, developing a *sustained partnership* with *patients*, and practicing in the *context of family and community*. (Institute of Medicine 1996, 1)

A good deal has been written recently about the role of "public health" in our pluralistic, diverse, and often fragmented society. In 1988, the Institute of Medicine published *The Future of Public Health*, which has guided the subsequent development of the field:

The mission of public health [can be defined] as fulfilling society's interest in assuring conditions in which people can be healthy. . . .

The core functions of public health agencies at all levels of government are assessment, policy development, and assurance (*linked through effective programs of evaluation*). (Institute of Medicine 1988, 7)

Additional recommendations were made for the creation of statutory authority: reorganizing all health functions into a single, cabinet-level agency (separate from income maintenance functions) of the state government; defining clear lines of accountability for public health departments down through the local level; and strengthening public health ties to the related areas of mental health, environmental health, social services, and care of the indigent (Institute of Medicine 1988, 8–13).

The basic public health functions of government are summarized in figure 1 and can be summed up as follows: *assessment*—the systematic collection and analysis of information on the health of the community; *assurance*—guaranteeing that the necessary services are provided to achieve agreed-upon (population health) goals; *evaluation*—reviewing the results of prior actions (or inactions) relative to previously determined policy goals and/or quality standards; and *policy development*—guiding the operation of the health system and its resources while taking a strategic approach in the context of a democratic political process (Institute of Medicine 1988, 8).

Within this overall construct, we can seek clarification of the role public health should play in the important area of prevention, as outlined by the Partnership for Prevention (1993). Three essential elements of prevention were identified: clinical preventive services; community-based health promotion and disease prevention; and public policy for health promotion and disease prevention. The Partnership views prevention as the critical link between traditional notions of public health and personal and community health. For our part, we will assume that the responsibility for providing and/or facilitating clinical preventive services resides principally within the arena of primary care. We will also work from the premise that the responsibility for providing and/or coordinating the tasks of community-based health promotion and disease prevention, and of constructing the public policy for doing so, will reside principally in the public domain.

These elements have been eloquently described and endorsed by Lashof (1994) and Schauffler (1994). We assume, for the purposes of this article, that the IOM's concepts of assessment and assurance incorporate

FIG. 1. The functions of public health (Institute of Medicine 1988).

the public functions associated with community-based health promotion and disease prevention (Institute of Medicine 1988). Additionally, we consider that the policy development function will incorporate the public policy functions that underpin health promotion and disease prevention programs. Schauffler goes further in her article to propose a new form of organization: a community-based health promotion and disease prevention (CBHPDP) organization. Such a public-private entity would be separate from the health department, would rely on collaboration within and across the community, and would oversee community-based programs of health promotion and disease prevention while linking the worlds of primary and preventive services and of public health policy (Schauffler 1994).

A more recent, and more functionally oriented, definition of public health is provided in the report *For a Healthy Nation: Returns on Investment in Public Health*, which outlines the services that fall into the category of public health:

<i>Prevents</i>	epidemics
<i>Protects</i>	the environment, workplaces, housing, food and water
<i>Promotes</i>	healthy behaviors
<i>Monitors</i>	the health status of the population
<i>Mobilizes</i>	community action
<i>Responds</i>	to disasters
<i>Assures</i>	the quality, accessibility, and accountability of medical care
<i>Reaches</i>	out to link high-risk and hard-to-reach people to needed services
<i>Researches</i>	to develop new insights and innovative solutions
<i>Leads</i>	the development of sound health policy and planning (U.S. Public Health Service 1994, 1)

Over the past two decades, refinements on the definitions of both primary care and public health have largely proceeded independently of each other. To date, there does not appear to be one definition whose explicit purpose is the integration of the two into a single system with the common goal of improving the health of populations through a team approach.

This issue was recognized by Joyce Lashof:

Bringing public health and primary care together is essential for the economically disadvantaged, but it is also increasingly important to

all communities. What is lacking in this effort, however, is the organizational and financial mechanisms necessary to implement this approach on a larger scale. (Lashof 1991)

Thomas Rundall also recognized the problem in the broader context of medicine and public health:

The effectiveness of our future system for improving the health of our citizens depends greatly on the reform and [effective] integration of our nation's public health and medical care systems. . . . As we move into the twenty-first century, an integrated system of public health and medical care services is our nation's best hope not only for improving the health of all of our citizens, but also for closing the "health gap" between socioeconomically disadvantaged groups and the rest of the population. (Rundall 1994)

These definitional refinements have paralleled significant changes in our national health care system, as embodied in passage of the HMO act of 1973 (and subsequent amendments), in the 1991 Omnibus Budget Reconciliation Act (OBRA), which instituted diagnosis-related groups [DRG] reimbursement for hospitals, and in subsequent legislation that defines physician payment in terms of the resource based relative value scale (RBRVS). These major legislative initiatives, occurring in tandem with the aggressive adoption of managed care programs by large employers and governmental programs, have begun to force a practical integration of personal and preventive services, which increasingly are supported by population-based management and assurance systems. Unfortunately, these developments often bypass our traditional public health systems, thereby leading to confusion and inefficiency and delaying achievement of the larger goal: improving population health.

Since the passage of Medicare and Medicaid in 1966, the focus of the nation's policy makers has turned to cost containment. During the same period, the nation's major industries and employers have had to deal with rising international competition, which has led them to control costs, particularly those related to health care. Our state and local governments find that their resources are constrained as they struggle to cope with rising health care costs and the competing needs of social, educational, and crime prevention programs. Demands for health care now tend to center on issues of premature death and disability and on achieving greater value for the resources expended.

In their landmark study, entitled "Actual Causes of Death in the United States," McGinnis and Foege (1993) concluded that approximately 50 percent of the nation's annual deaths "are by definition premature and are often preceded by impaired quality of life. . . . The public health burden imposed by these contributors offers both a mandate and guidance for shaping health policy priorities."

In a similar vein the U.S. Public Health Service reported:

An appropriate investment in public health will lead to substantial future savings in medical care. . . . The fulfillment of public and personal health objectives will increasingly require close collaboration between the changing medical care and public health systems. . . . Even a reformed medical care system cannot mount the appropriate actions to address many of the conditions responsible for death and disability in the United States today. (U.S. Public Health Service 1994, 43)

The forgoing assessment, of course, begs the issue of the "systems" interactions of public (population) health and primary care. Increasingly, public health leaders are calling for an integrated view of population and personal health. In the Shattuck Lecture to the Massachusetts Medical Society, Dr. Philip Lee observed:

Today, perhaps the best linkage between the personal health care system and the public health system is in the area of clinical preventive services. While clinical preventive services provide one very significant link, applying the population based perspective of public health to the personal health care system in its totality is the next necessary step. . . . In spite of the intellectual underpinnings and the syntheses of ideas integrating public health and personal health care, public policy has continued to separate public health from the personal health care system. However, if we want to achieve the goals of increasing the span of healthy life for Americans and reducing the health disparities among Americans at an affordable cost, our nation must adopt . . . an approach that accentuates and promotes a close working relationship between the personal care and public health systems. (Lee 1994)

All of these factors force us to refocus on the practical questions of translating our idealized "integrated health care system" into one that

achieves the goals of preventive medicine cost-effectively, as distinct from the medical and acute care subsystems that are in place today.

The Starting Point: A Systems Model for Clinical and Preventive Services

If one accepts the notion that public health and primary care are two facets of a complex system influencing personal, population, and community health status, it becomes important to synthesize a model for such a system and to identify areas for specific intervention and improvement. The beginnings of such a synthesis have been recently suggested by Thompson and his colleagues, who describe their own experience with primary and clinical preventive services in an HMO and recommend ways to implement an effective, integrated population health and primary care model. They conclude:

Systematic population-based approaches to the development and provision of clinical preventive services targeting the one-to-one level of primary care and multiple infrastructure levels of care are forging a synthesis of clinical medicine and public health approaches. This approach will become pervasive as clinical information systems improve, risk information is captured routinely, and practitioners gain skills in the art of risk behavior change and population-based care. (Thompson *et al.* 1995)

Their model incorporates the following principles:

1. [Relies on] population-based planning.
2. [Is] directed toward epidemiologically determined major causes of morbidity and mortality.
3. Offers effective, evidence-based intervention.
4. Functions at several levels simultaneously, including individual primary care, health care infrastructure and organization, and the broader community.
5. [Offers] prospective and automated interventions, if feasible.
6. Believes health is a by-product of a joint effort of caregivers and patients, maximizing informed discussion and consent. (Thompson *et al.* 1995)

Thompson's group has used these concepts to develop the intervention model, which is schematically illustrated in figure 2. This model specifies three factor groups that support behavioral change in health professionals and are necessary to integrate primary and preventive medical services effectively. The factor groups accomplish the following goals:

- They *predispose* a health professional to make a necessary behavioral change in his or her practice.
- They *enable* the necessary behavioral change to occur at the levels of community organization and practice.
- They reward and strengthen (*reinforce*) behavioral change.

Ultimately, the model defines an integrated professional and behavioral system that supports effective and efficient delivery of personal health

FIG. 2. A behavioral model integrating population-based primary and preventive practice (Thompson et al. 1995). Reprinted with permission from the author.

services (both primary and preventive care) in a population health context (an enrolled HMO population).

Thompson's model has been developed and evaluated over a period of 20 years and has produced impressive results:

A 32% decrease in late stage breast cancer (1989 to 1990); 89% for 2 year olds with complete immunizations (1994); decrease in adult smokers from 25% to 17% (1985 to 1994); and an increase in bicycle safety helmet use among children from 4% to 48% along with a 67% decrease in bicycle-related head injuries (1987 to 1992). (Thompson *et al.* 1995)

His work makes a significant theoretical and practical contribution to our understanding of the mechanisms and benefits associated with integrating, organizing, and delivering population-based primary and preventive care. It begs the question, however, of how this, or any, model of population-based clinical and preventive services can and should fit into an even broader, more integrated "systems" model supporting health improvement of the larger community.

One might logically ask how a clinical and preventive service delivery model within a staff-model HMO differs from the COPC model, although it could be said that the staff-model HMO itself is ideal for providing community-oriented medical care (COMC). At the primary care level, the COPC concept attempts to extend the population-based clinical and prevention-oriented primary care practice model in the following ways:

- Defin[es] and characteriz[es] [a] "community" for which it has assumed responsibility to provide health care.
- Through local research the practice identifies the community's health problems.
- Modif[ies] the [service] program in light of problems defined above.
- Monitor[s] the impact of the program's modification. . . . (Waitzkin and Hubbell 1992, 166)

One could simply conclude that COPC is an excellent idea under certain circumstances, such as when the population of interest is clearly defined; the medical practice is organized to carry out the work; the financial incentives are appropriately aligned; the policy support and community

service coordination exists; the staffing is affordable; and the professionals are trained in community-oriented care.

The COPC model has not expanded its practice base substantially in this country, beyond a relatively small number of academically based urban practices and certain staff-model HMOs (which increasingly emphasize the integration and delivery of clinical and preventive services at the primary care practice level). Observations on the experiences of the COPC movement to date shed some light on its current state:

A critical review of COPC applications in the United States shows that despite investigators' use of epidemiologic methods to identify important local health problems, the lack of a supportive policy environment has hampered local efforts to address these problems. . . . The gap between knowledge about local problems and the power to achieve responsive policies has received scant attention in the COPC literature. While the efforts of COPC leaders deserve praise, optimism about the success of piecemeal approaches to local problems is less warranted than one might suppose. The situation is not likely to improve unless consistent and responsive national [state, and local] policies are put in place to support local actions. (Waitzkin and Hubbell 1992, 168–9)

Additionally, the W.K. Kellogg Foundation sponsored a demonstration project to begin 13 COPC rural practices in cooperation with the National Rural Health Association (NRHA) from 1989 to 1992. The Kellogg experience can be summarized as follows:

The evaluation findings support previous reports in the literature of substantial impediments to the integration of COPC into primary care physician practices. . . .

For practices to play a substantial role in the COPC process, they may need to rethink their mission in very fundamental ways. . . .

Another important finding relates to the [substantial] time and resources required to carry out the different elements in the COPC process. . . .

The experience of the demonstration also suggests that communities, with the support of local practices, can accomplish many COPC objectives, although this goal requires modification of COPC as it is generally conceptualized. (Kukulka et al. 1994, 498–501)

Despite concerted efforts to demonstrate its applicability and utility, COPC has not been adopted as the practice and training model of choice across all primary care specialties (or at least not to the degree that family medicine alone has been selected). Although no one has suggested that the COPC model is inappropriate, the barriers to its implementation appear to have impeded its expansion.

Although the COPC movement has had limited success, we still must conclude that there is no viable model for integrating a primary care practice effectively into a single, population-based, integrated community health care system, with the exception of the staff-model HMO, which is committed to providing community-oriented medical care (COMC). Unfortunately, examples of this model are scarce.

Moving toward an Integrated Community Health System

There does not appear to be a generally integrated, effective working partnership between public health officials and community-based primary care practitioners in the local community. This is not surprising for two reasons:

1. The historical cultures of public health and primary care medicine have not placed a value on building and maintaining such a partnership.
2. The historical paradigm is shifting dramatically to one of managing the per capita costs and outcomes of enrolled populations under conditions of financial risk and market competitiveness.

These two observations present both a problem and an opportunity for the public health and primary care communities, which share considerable responsibility for the health of the same, or overlapping, populations.

Because of the paucity of published research on the topic of integrated community health systems, we conducted a roundtable discussion with a group of 10 educators and practitioners in the fields of primary care, preventive medicine, and public health, focusing on the roles of primary care and public health and their relation to each other. The anecdotal insights that emerged are significant, and they suggest a

direction for future investigation, synthesis, and policy evaluation. The panel's observations and conclusions offer early, practical insight into a murky area. Although their conclusions may not apply to all communities, they are likely to provide guidance for many.

A summary of primary care and public health perspectives, organized by general areas of concern, follows.

Primary Care Practitioner Perspective: General Observations

There is a conceptual gap between the primary care physician and the public health professional:

- Primary care physicians provide care to individual patients and families and do not routinely stay in touch with the local health department.
- Reportable diseases are generally relayed to clinical laboratories.
- The incidence and prevalence of diseases of significance to the primary care practitioner and his or her individual practice community are often not reportable (e.g., asthma, diabetes, coronary heart disease).
- Often, therefore, the local health department does not communicate information that is of practical importance to the primary care physician's practice.
- Neither group seems to talk about the same subject, community, or population at the same time.
- Many times, because each at times interrupts the other's work flow, it often appears that one is adding difficulties to, and creating inefficiencies for, the other.

It is, therefore, not always apparent that both are focusing on a common objective: improving the health of the same population.

Clinical Decision Making, Public Health, Primary Care, and Managed Care

Primary care physicians are very concerned about de facto determination of health policy and standards of medical practice by individual health

plans or through HMO reimbursement policies. Ultimately, physicians are likely to be influenced by payment policies. Who is determining these policies and who is accountable to the public interest for the quality of their decisions? Who resolves policy conflicts among payers in favor of the public interest? Perhaps tomorrow's public health professionals should assume the role of assuring population health by determining general standards and monitoring performance against the standards constructed by payers, professionals, and institutions.

Public Health, Community Services, and Primary Care

Primary care practitioners are facing problems of increasing complexity, many of which require coordination of a complex array of community-based social, educational, support, and transportation services. Even simple, inexpensive remedies are likely to improve the situation at the patient, family, and individual practice level. Coordinating and standardizing information across all of these boundaries will help patients of primary care practitioners, who are also citizens of the community.

Primary Care Office Practice and Public Health

The primary care office is a bad place for a physician to practice public health: proper tools are not available, and physicians do not have the denominator data necessary to analyze the information (even if they were trained to do so). Primary care physicians need a public health entity with the necessary resources and the willingness to collect information that is both relevant to their practices and is communicated to them on a timely basis. We need to view primary care and public health professionals as members of a collaborative team with common objectives: improving population and community health and sharing information systems while concurrently serving the same patients and populations.

Primary Care, Public Health, and Mental Health

Many of these comments apply to the mental health system's support of primary care practice as well. It is estimated that anywhere from 30 to 40 percent of family relations are affected by some kind of mental

health, behavioral, or substance abuse problem over time. Additionally, mental health and substance abuse problems are often dealt with in discrete, but uncoordinated, systems of care (e.g., community mental health centers, employee assistance programs, Workers' Compensation, automobile insurance). Rarely do these other organizations interact effectively with the medical care system. Perhaps the local health department could integrate, standardize, and coordinate the aspects of these services that are relevant to the health care system.

Integration of Public Health and Medicine in Education and in Practice

Integration of public health and primary care through a shared population perspective has not been emphasized or valued in either the primary care or the public health cultures. Over many decades, neither public health nor primary care professionals have constructed systems of mutual benefit and support. Both have defined their own roles and methods, independently of the other. The shift toward a holistic outlook has begun in primary care, but not in public health. Public health is still fragmented, existing in a series of subspecialties, a situation that is frustrating to generalist primary care physicians.

When primary care medicine and public health professionals refocus on a common, synchronized educational base and rely on pooled information and support systems, thereby benefiting their common patients, clients, and constituents within the same population(s), the problem of fragmentation will be conquered.

Information to Support Population Health Improvement, Health System Efficiency, and Health System Effectiveness

The accelerated shift to managed care in most larger metropolitan markets is forcing the perspective of health systems, managers, and physicians to the population level. Information is the currency necessary to manage a population's health status effectively. Population-based information is essential to define standards, to monitor performance against those standards, and to assure public accountability over time. Managed care systems have taken the lead today, whereas the state and local health departments are more often found on the sidelines.

The community and its health providers often operate in a Tower of Babel because no one is standardizing record-keeping and information systems. This situation helps no one, particularly patients. Information must be standardized across plans and delivery systems to improve overall system effectiveness and to support patients and families as they change health plans and move through their life cycles. This sort of information tracking will become more important as the population ages and as management of chronic disease and the prevention of disability become more important.

Information to Assure Market Function and Health Plan Accountability

Just as broad-based population health information is essential for assuring the quality of care—both currently and longitudinally—to populations and communities, so is it also critical to improve the market function and public accountability of commercial health plans. In short, issues of consumer protection are of great consequence. If, as a matter of policy, our society continues to emphasize competitive markets for health plans, and if one of the effects of such a policy is to de-emphasize the traditional public and community accountability of the not-for-profit hospital system (by attenuating its historical community accountability role as nationally owned, insurance-driven health plans move into its domain), who will step in at the local level to assure quality and access? Many expect that state and local health departments or affiliated community health agencies will assume this responsibility.

Public Health, Primary Care, and Organizational Issues

In fulfilling its responsibility to assure the health of populations, the public health department of the future will have to coordinate, standardize, and monitor the vast array of personal health and community-based social services. By increasing the effectiveness of local markets, access to health care services by all populations will be assured.

In order to accomplish this critical mission, public health departments (or some other appropriate “community health agency”) must oversee the functioning of the health care market as well. Perhaps the most

important aspect of this oversight activity will be the standardizing of information, thus making it available to health providers, managed care organizations, and consumers; the latter category comprises a range of users, from individuals, to employers, to government program sponsors. Public health departments, or other designated community health agencies, must focus on establishing strong operational relations with managed care organizations and with emerging integrated delivery systems.

Opportunities for Shared Research and Development

Finally, significant opportunities exist for health departments, schools of public health, and schools of medicine to collaborate with each other and with emerging integrated systems of care, sharing in research and training for the future. Such partnerships, like those with managed care organizations and emerging integrated health delivery systems, will be critical in assuring the future health of populations and communities. Unless these relations are properly developed and managed by health departments, based on a realistic assessment of local market conditions for health services and their future direction, the opportunity for improving population and community health will be lost.

This list of observations has a single common denominator. All represent significant gaps in the interface between the traditional population- and community-based services of “public health” and the emerging, market-driven personal care system. All are the product of decades of separation in the education, practice, research, professional culture, perspective, and accountability structures of health professionals and organizations.

The implications are profound for education, practice, and research in both public health and medicine as we near the 21st century. In the next section, we will explore these implications and suggest a number of future directions for both public health and primary care.

Integrating Community Health Systems and Improving Community Health

We conclude that we need to visualize a health care system that comprises regularly interacting or interdependent entities whose ultimate

goal is to improve the long-term health of populations. We now suggest an alternative model for the future. Figure 3 presents the key elements, their conceptual interrelations, and their interactions within a general community health systems model. Although the diagram is admittedly complex, it accurately portrays inherently complex roles, responsibilities, interrelations, and interactions. It is clear that we, as a society, have not yet either designed or accepted a "system" of this kind.

This observation, of course, begs the policy question of whether we should, the economic question of whether we must, or the legal and political questions of whether we can. In any event, the development of a community health systems perspective may be the single most important conceptual reorientation for assuring population and community health over time. In evaluating this systems concept and assuming the objective of "fulfilling society's interest in fulfilling conditions in which people can be healthy" (Institute of Medicine 1988, 7), it is

FIG. 3. General community health systems model.

important to define the organizational requirements for optimal system performance. These may be summarized as follows:

1. The objectives for population health must be clearly defined.
2. System-operating elements and the critical relations among them must be clearly delineated. Responsibilities must be defined, agreed to, and accepted. Performance measurement systems should be defined (for the whole system and for each element of it). Incentive systems must be devised to ensure that individual and system objectives are met.
3. Policies for information systems, including record keeping and access to information, must be designed in a standardized form in order to support the operation and outcomes evaluation of the system and its individual parts.
4. Population-based assessment, education, and resource services must be made available when necessary and should be tailored to the needs of populations for which individual practitioners or other care providers are directly responsible.
5. Quality assessment programs are needed, as are continuing education programs for individuals, families, community organizations, school systems, employers, health plans, and providers.
6. Appropriately trained personnel are essential to a well-run system. Some training will occur through ongoing performance evaluation.

Ultimately, integrated community health systems must depend on the educational establishment to train a broad range of health professionals (not only primary care physicians) appropriately to work in a systems environment. In addition to basic technical skills, educational programs must begin to foster other abilities: systems thinking and future orientation; the ability to work well in interdisciplinary teams; integration of diverse skills and disparate information as a basis for critical analysis; organizational and management skills (at varying levels of sophistication); and the skills to make ongoing performance evaluations and to aid professionals in improving their work performance.

Parenthetically, the adoption of these educational objectives will force changes on institutions and programs, on the bodies that accredit them, and, finally, on the educators themselves. It's a tall order, but a necessary one for achieving the long-term results in population health maintenance and/or improvement that we all desire.

We submit that the key elements of an integrated model have already surfaced in pieces. However, they have not been linked, integrated, and properly supported. Specifically, we refer to the functions of public health as outlined in figure 1 and the integrated system of primary care and prevention that are presented in figure 2. When the two are combined, a model for an integrated community health system emerges, which is shown in figure 4.

Such a system does not require a merger of financial, business, or operating organizations. It simply organizes and standardizes the market environment within which population-based providers will function. To this end, it also standardizes the flow of technical, educational, marketing, and evaluative information within the market, leading to higher levels of public accountability and more efficient market function. Note that this model emphasizes accountability to the community for the functioning of the health insurance market and for improving

FIG. 4. The integrated community health system (P & PC = population and primary care practice; see fig. 2).

population health, coordinating providers, and guaranteeing the consistency of public services.

Finally, the perspective of all system elements is moved to the population(s) served within a community through its various health plans. The health of the community and its populations will improve once the following elements fall into place:

- The expectations and accountabilities for health status are established.
- An infrastructure is in place that offers universal provider access to standardized information on a timely basis.
- The capitated reimbursement mechanisms and per capita performance measurements and operating systems are developed and aligned.

Although it is important to begin our recommendations by using a general model, we are under no illusions about the difficulty of realigning the system to produce this result. If society and, more specifically, our political and commercial systems want the nation's public health system to be transformed into an effective model that can operate in a capitated and competitive market context, then it must move in the direction we have outlined.

Future Considerations for Health Policy, Public Health, and Primary Care

Although it is important to create a vision for the future, suggestions for the present are needed as well. Many emerge directly from the observations we have made:

1. Legislators (federal, state, and local) and regulators should move from a categorical program focus to a population program focus, a shift that would be facilitated by coordination among the federal agencies responsible for assessment programs (i.e., Centers for Disease Control and Prevention [CDC], the Environmental Protection Agency [EPA]) and for program organization and reimbursement (Health Care Financing Administration [HCFA], Civilian Health and Medical Program of the Uniformed Services [CHAMPUS]). It would also help if these organizations changed

their view to a population- and community-based perspective and encouraged state and local health departments to adopt population-based management and to install information networks.

2. Health departments and/or affiliated community-accountable, not-for-profit entities should lead the way in developing community health information networks (CHINs). They might standardize data transfers and automate the record information required for entry into the CHIN. While health departments should lead in the development of publicly accountable CHINs, the networks themselves also must evolve in a way that facilitates and encourages the functioning of a competitive market.

Community and population-based primary care information and coordination systems must ultimately capture the activities of a broad base of practitioners in the community, all of whom provide aspects of "primary care" to its residents. The range covers dentists, physical therapists, nurse practitioners and/or midwives, pharmacists, sports medicine physicians, visiting nurses and other home care professionals, and psychologists.

3. Health departments should develop a service perspective vis-à-vis the primary care system, the integrated health provider networks, and the emerging managed care organizations. Health departments should extend themselves to coordinate services that affect community health status (e.g., health aspects of social and educational services) as a service to primary care providers and to managed care plans. They should also make high-quality, population-related, timely surveillance and environmental data available to primary care providers on electronic data systems.
4. A simple step to assist health departments in reorienting their perspective would be a requirement put forth by the CDC for state and local health departments to report statistics by population segments that are divided into logical primary care markets and service areas. Aligning the statistical perspective of markets and service areas, of disease prevention and control, and of primary care will ultimately realign the perspectives and communications patterns of population health and primary care professionals.
5. Health departments should collaborate with managed care plans and integrated health delivery networks to provide continuing education on prevention in a community health context to primary care providers. Taken in concert with other outreach efforts,

this action would build positive relations and improve communications with the primary care system.

6. Health departments and primary care providers cannot align their perspectives on populations while ignoring issues of mental health, behavior, and substance abuse. The mental health system must move out of its restricted orbit and become part of the primary care system.
7. The federal and state governments, health departments, schools of public health, schools of medicine, managed care plans, and integrated provider networks should emphasize research on organizations, health services, information systems, and health policy.
8. Governing authorities that accredit primary care residency training programs (specifically, family medicine, internal medicine, and pediatrics), working in partnership with interested private foundations and public health leaders, should develop recommendations for a standardized training model. This model would be designed to train primary care physicians in population health concepts and skills and to encourage schools of public health to educate their professionals to support the community practices of primary care physicians. Both should be trained in team settings to work collaboratively and longitudinally. Further, currently practicing primary care providers should be trained, or retrained, in the elements of population-based and preventive medicine. The support of accrediting bodies for graduate and continuing primary health professional education will be important.
9. Change of the magnitude suggested must be facilitated nationally, perhaps by setting data transfer standards and assigning certain monitoring and assessment responsibilities now under federal health care programs (Medicare, Medicaid, Federal Employee Health Benefits Program, and CHAMPUS) to state and local health departments or to specially chartered community benefit organizations. The federal government may well be able to use its market power to define the structure of the future system and its required accountability mechanisms.

Most of these suggestions call for fundamental change at the program or health department level. The transformation of the structure, perspective, and financing of health delivery systems makes it even more imperative for us to rethink our concepts of public health. Both public

health and primary care providers must collaborate in creating a new, appropriate paradigm for the populations that they jointly serve, and they must also learn how to serve each other in order to create the best health system.

One overarching observation must be made, however. Our suggestions assume that all citizens have access to clinical and preventive services through organized plans of care. Unfortunately, not only is this not the case, but the situation appears to be worsening as the nation's employer-based health insurance system confronts the stresses of international competition. We can only conclude that society must begin to ensure universal access to clinical and preventive services. This conclusion begs the question of responsibility for financing comprehensive access, which could occur at various levels and combinations of federal, state, county, city, and community jurisdictions, on either a publicly or voluntarily funded basis, or perhaps by combining the two.

Our recommendations would impose new roles—rulemaker, honest broker, standardizer, market facilitator, and community quality assurer—on the government, at a time when many are rejecting government activism. Others, however, feel that government is the only entity that can rationalize the market and oversee the rules of the game. Government as an accountable representative of broad community interests (or affiliated, publicly accountable entities) may be the necessary vehicle to assure population health. However, in our conceptualization, there is a clear separation between the government's role as a facilitator and its role as a payer, or even, sometimes, as a provider of last resort.

The changes we have suggested are both simple and complex. Several of the issues we have discussed were also covered by Joyce Lashof in a Plenary Address to the Agency for Health Care Policy Research (AHCPR):

To mount a county-wide effort to integrate medical care and public health across the spectrum of community health problems is more difficult initially but in the long run far simpler than developing separate programs for each risk factor and disease. . . . We must experiment with new models that break out of the categorical mode, and we must develop the methodologies for evaluating the impact of programs on the health of populations. . . . The development of a true partnership between public health and primary care remains an unrealized goal. Yet such a partnership is essential if we are to achieve the goals of Healthy People in the Year 2000. (Lashof 1991)

The question is familiar: will we have the leadership vision and fortitude, the management skills, and the political will to move there, and in time?

Finding Our Way: The Leadership Challenge

We have suggested the need for a paradigm shift to improve the health of populations by restructuring the relation between public health and primary care, just as the nation's health care system, itself, is being reconfigured. In fact, we have suggested ways in which the population health system (the public health and primary care team) can work together to assist communities to create the conditions for people to be healthy. This is, of course, the mission suggested by the IOM (1988). However, we must acknowledge the considerable degree of change that would be required for state and local public health departments to support our evolving market-oriented structure, particularly in designing plans for the populations that have been categorically supported for the past 50 years and/or that have turned to the public health system as the "provider of last resort."

Ultimately, our vision, which requires the reorientation of existing bureaucratic structures, a task analogous to turning a huge oil tanker around within a very small space, cannot be achieved without four vital resources: political vision, combined with courage; willing, appropriately trained, and adequately equipped personnel under the guidance of committed leadership; and adequate resources. To this end, the challenges for the nation's schools of public health, medicine, nursing, and allied health professions have never been greater. Just as it is necessary for public health and primary care practitioners to form a population health team, so it will be necessary for these professional schools to form their own educational teams to teach population health and to reorient their perspectives and those of their colleagues within the university. The task is daunting, but essential.

The critically important subject of resources may be addressed by calling on those of existing federal program to define system requirements. Federal support is required to propel a transformation of this kind and magnitude.

The subject of leadership deserves special attention and may turn out to be the most significant question. In a recent report from the Milbank

Memorial Fund, Molly Coye, William Foege, and William Roper (1994) discussed aspects of public health leadership and concluded that it must reinvent itself. The perspective of public health must become a global one, and will have to be measured over longer periods of time. New systems and strategic thinking skills are needed, as are organizational and political skills, team management, and motivational skills. This is a tall order for any profession.

We submit that leadership development to support population health improvement paradigms is critical for primary care and public health professionals alike. It will be most important to build a common vision of a system that resembles the one we have proposed in order to improve the health of populations.

Tomorrow's Integrated Community Health System

Our recommendations challenge us to adapt our thinking to the market-based, community-health-oriented realities of the years ahead. The challenge will be to work collaboratively to make such a system work. The move to an integrated system of care is not without significant risks and difficulties. We suspect that population- and personal-health professionals will continue to differ among themselves about priorities and resource allocation.

Some degree of tension is healthy, particularly when the differing perspectives operate within a unified organizational structure that is accountable to the same groups, when the tensions are acknowledged as appropriate for achieving optimum results for the populations served, and when those communities participate in deciding critical matters of policy.

Increasingly, tensions will evolve between the publicly accountable and voluntary components of our community health systems and the investor-owned health care systems. These tensions can be managed in a way that produces a positive health result for the community by requiring new organizational methods and by balancing the competing requirements of community and shareholder accountability. The growing complexity of our communities, combined with recognition of the need to develop new ways to bridge the public-private chasm, might lead to an awareness of the need to explore the community-based health

promotion and disease prevention (CBHPDP) partnership concept (Schauffler 1994).

Organizing the complete spectrum of community-accountable, population-based, and personal services required to create an environment within which health can be assured is a complex task:

Thus, a community, in the context of CBHPDP, is defined by its people, institutions organization, and locality.

Many of our communities are experiencing growing economic, cultural, and ethnic diversity; significant inequities in health status have accompanied this diversity. As a result, it is imperative that we recognize the important role communities must play if we are to improve and maintain the health status of our population. Two choices are available: (1) we can continue down the current path and support models that fragment care and focus only on the individual as the unit of prevention interventions, thereby risking an increase in the health status gaps that exist between the most advantaged and disadvantaged subgroups of our population; or (2) we can build a model for the twenty-first century that recognizes the diversity of our communities by developing a multidisciplinary, intersectoral approach that encourages and supports the significant role communities can and must play in promoting health and preventing disease. (Schauffler 1994, 9)

The difficulty of achieving this result and of reconciling the tensions we have described between those who are accountable to the community and those who are not, within an integrated health system, must not be underestimated. Ultimately, it is a problem that must be solved through our political system.

Will it be risky to follow the path we have suggested? Perhaps. But we also have to ask ourselves, Will it be even more risky not to move at all?

References

- Coye, M.J., W.H. Foege, and W.L. Roper. 1994. *Leadership in Public Health*. New York: Milbank Memorial Fund.
- Institute of Medicine. 1984. *Community Oriented Primary Care: A Practical Assessment*. Vol. 1: *The Committee Report*. Washington, D.C.: National Academy Press.

- . 1988. *The Future of Public Health*. Washington, D.C.: National Academy Press.
- . 1996. *Primary Care: America's Health in a New Era*. Washington, D.C.: National Academy Press.
- Kukulka, G., J.B. Christianson, I.S. Moscovice, and R. DeVries. 1994. Community Oriented Primary Care: Implementation of a National Rural Demonstration. *Archives of Family Medicine* 3:495–501.
- Lashof, J. 1991. Public Health and Primary Care. In conference proceedings of the Agency for Health Care Policy Research, *Primary Care Research: Theory and Methods*, ed. M. Grady. Pub. no. (PHS) 91-0011. Rockville, Md.: Department of Health and Human Services.
- . 1994. Public Health and Prevention. Presented at the Conference on Public Health Agencies and Managed Care: Partnerships for Health, Atlanta.
- Lee, P.R. 1994. Re-Inventing Public Health. Presented at the Massachusetts Medical Society Annual Meeting, Boston, May 21.
- McGinnis, J.M., and W.H. Foege. 1993. Actual Causes of Death in the United States. *Journal of the American Medical Association* 270:2207–12.
- Partnership for Prevention. 1993. Prevention is Basic to Health Reform: A Position Paper from an Expert Panel. Washington, D.C.
- Rundall, T.G. 1994. The Integration of Public Health and Medicine. *Frontiers of Health Services Management* 10(4): 3–24.
- Schauffler, H.H. 1994. Health Promotion and Disease Prevention in Health Care Reform. *American Journal of Preventive Medicine* 10(5, suppl.).
- Thompson, R.S., S.H. Taplin, T.A. McAfee, M.T. Mandelson, and A.E. Smith. 1995. Primary and Secondary Prevention Services in Clinical Practice: Twenty Years' Experience in Development, Implementation, and Evaluation. *Journal of the American Medical Association* 273:1130–35.
- U.S. Public Health Service. 1994. *For a Healthy Nation: Returns on Investment in Public Health*. Washington, D.C.
- Waitzkin, H., and F.A. Hubbell. 1992. Truth's Search for Power in Health Policy: Critical Applications to Community Oriented Primary Care and Small Area Analysis. *Medical Care Review* 49(2):161–89.

Acknowledgments: This article is based on work originally done in support of the Institute of Medicine's recent report, *Primary Care: America's Health in a New Era* (1996). The authors express their appreciation to Mary Neighbour for her editorial assistance.

Address correspondence to: William E. Welton, School of Public Health, Allegheny University of the Health Professions, 1505 Race Street, Bellet Building, 11th floor, Philadelphia, PA 19102-1192.