Health system reform has to start somewhere; that is, if the system needs reform and the various players, payors, employers, providers, and consumers can come to some agreement on the direction that reform should take. It does not take much scanning of the literature of each of the above groups, trade publications, company reports and benefit communications for the payors and employers, the medical literature for the providers and the press for the consumers, to understand that the debate on health reform has escalated over the past year. As a straw doll, the President released his health plan in early September. Many organizations have released their versions of health system reform and others have reacted to the myriad of ideas. Nevertheless, in a climate of reform, there must be some principles to reform and some goals and objectives of reform, otherwise, reform for the sake of reform, will result. In an earlier article some general principles of reform in an overall "public-private" partnership were outlined:

Access for All
Encompassing All Care
Adequate Financing and an Appropriate Revenue Stream
Community Based Structure
Accountability, Quality and Cost-Efficiency

The following components to each of the five principles were listed:

**EQUITY**
**COST CONTAINMENT**
**DELIVERY SYSTEM**
**RESPONSIBILITY**
**FINANCE**
**TAX**
**IMPLEMENTATION**

Health system reform like any other major change can have expected and unexpected effects. The expected changes are really the goals and objectives and the unexpected effects may be either beneficial or threats to the system in general and to reform in particular. In this article, I am going to start with a premise, that is matters little where one begins to focus on the five listed principles for they are all inexorably linked. However, one must start somewhere to begin to understand the entirety of the process. I am going to start with the principle: "Community Based Structure" for the purposes of developing a foundation from which one can review the other four principles.

Before one moves directly into that principle, it is helpful to review our current health care system and reveal its weaknesses and strengths. What is "wrong" about the current system structure and what would be the goals and objectives for a reformed health care system? We have a system of health care in this country where there are over 37 million citizens who do not have access to health care. Is this due to lack of capacity? Probably not. Is this due to lack of financing? There are people who can probably afford health care but make no attempt to avail themselves of it. This may be a problem of education.

We have a vast over supply of medical resources, such as acute care general hospital beds, imaging facilities and cardiac catheterization and surgical centers. Although we provide care, we are often unsure of the outcome of that care, for the current system is fragmented. We spend more in total, more per capita and more as a function of our GDP, than any other country in the world today and that has ever been. At its best, our health care system is second to none. We have centers of excellence that can simply not be bettered anywhere in the world; we lead with much of the innovative technology and our personnel are the most widely recognized in terms of Nobel Laureates for basic medical sciences.

Focusing once more on the "Community Based Structure" of the delivery system, we can review some of the goals and objectives of a reformed health care system.

**EQUITY**

To achieve a health care system that is simply ont a monolithic federally managed bureaucracy, there must be a myriad of smaller "units," each equivalent in most respects to each other, but giving approximately the same levels, quality and quantity of service. Vastly differing sizes of these units would give differences in

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level, quality and quantity of service. In other words, it would not be an equitable system. So what is a "unit"? If we define the unit as a state, there would be a problem of equity between a state with a population of 600,000, such as North Dakota or Vermont with 450,000, and a state such as Ohio, with a population of nearly 11 million. States with population bases of around half a million, simply from a population base alone, could not support many tertiary care centers.

If on the other hand, a community is defined as a county, an eastern state, such as Ohio, would be at a distinct disadvantage, for the way that the county borders were defined as compared to those in the west of the country, such as California. Ohio, with 88 counties, has counties that do not even have one physician!

COST CONTAINMENT

If a goal of a reformed health care system is to stop the rapid inflation of the health sector of the economy and to achieve some economies of scale, then the definition of a community becomes critical. Indeed, what is the minimum size of a community that will allow local autonomy, but at the same time, achieve economies of scale? As we have already argued, states and counties fall short in the definition of a community. Metropolitan areas, as communities, likewise, are not suitable in and of themselves, for they immediately isolate the rural side of the equation. There is the similar objection as made in the definition of a county as a community. Indeed, not only is an "area" similar to a county in most cases, i.e., rural area and urban area, if defined as community, "area" would perform an equity problem as does the definition of "county" as a "community." Urban areas have many or all of the tertiary care facilities and the rural areas with few, if not any at all.

One definition of community that seems to avoid many of the problems of inequity and has a large enough array of facilities to encourage economies of scale is a geographic area. This area can provide the majority of medical services that would be expected to be required within the boundaries and from which there are less than a certain percentage of referrals made to centers elsewhere in the state or within a region of the country encompassing several states.

Delivery System

One can approach community size in a totally different way; that is, from the delivery side. We know the birth rate and so can calculate the number of births a year. We can then assess the number of bed days for obstetrics by knowing the cesarean section rate. We can build up a model of an acute care general hospital in-patient census in this way. For instance, we know from census data the population prevalence in Ohio of the different age cohorts from under 5, 5-17, 18-24, each decade to 84 and those over 85. If we are to assume that the commercial, non-Medicare population has an acute care general hospital bed rate of 400 per 1,000 (a rather high rate, but it includes those eligible for Medicaid) and 2 days of hospital care for all those of over 65, Ohio uses 6.66 million hospital bed days per year. If there were to be 80% bed occupancy, Ohio would need nearly 23,000 beds a year.

We can, however, go further with this type of analysis and predict from the live birth rate and incidence data of congenital heart disease what would be the prevalence. Prevalence estimates\(^2\) then enable us to estimate the needs in terms of cardiac catheterization and open-heart surgery. These two estimates indicate that the smallest, self-sustaining pediatric cardiology center with cardiac surgery, needs a population base of about three million to support it. There are other tertiary services that such an analysis is possible and similar number rationales emerge for the "community" to be a population base of three to five million. There is a training component built into this estimate.

The definition of a community, from the perspective of equity, cost containment and delivery system, becomes a geographic area in which:

There are a range of services which include all primary and secondary services and most tertiary services. These services should include; ambulatory care, in-patient care, rehabilitation programs, long term care facilities, medical school, teaching hospitals, and social HMOs (SHMOs).

There is enough of a range of services that few referrals outside the boundaries are medically necessary. These services should include adult tertiary care services, childcare, mental health.

There is a rural area attached to each urban area.

There is an array of rare tertiary services and quaternary services for the community.

There are facilities for the introduction through research for cost-effective and innovative treatment services.

There are facilities that can manage the medically rare disease process or treatment procedures.
There are facilities for medical and allied health service training.

It is likely that the community will support a population base of three to five million, plus or minus a million.

Components and Roles of the Different Parts of the Delivery System: Overall

The actual delivery system for the "community" will therefore consist of physicians and other medical providers, hospitals and out-patient facilities, mental health services and facilities, rehabilitation services and facilities, and an academic medical center. The latter will often be a medical school, a teaching hospital and a post-graduate facility.

Accountable Health Plan

If there is a managed competition or managed cooperation approach, it is possible that there can be a number of different configurations or Accountable Health Plan structures for the piece that delivers most of the primary, secondary and some of the tertiary care, while the rare tertiary care and quaternary services are common to all the different configurations would be the responsibility of the academic medical center.

Each Accountable Health Plan (Figures 1-a & -b), no matter what its actual structure, in a managed competition approach would be expected to do the financial management, administration and be a delivery system. The financial management would involve risk-taking, risk brokering, and reinsurance. The configuration would be expected to be financially viable and have the capital requirements and reserves appropriate under state law.

The administrative side would need to possess skills in claims handling, marketing, outcomes management, quality assurance, total quality management, provider profiling and practice parameter management. The delivery systems that would be most likely to qualify as Accountable Health Plans are the following models (Figure 2):

- a physician and hospital contracted network
- a hospital network with employed physicians
- a partnership of medical providers, including physicians and hospitals.

Ownership of these entities could be by hospital, insurer, physician, allied health worker, incorporated group or any combination which does not contravene state law on the practice and ownership of medicine. A community would be served by a number of these entities.

To link the academic medical center to these AHPs, the unique resources of rare tertiary care services and quaternary services would need to be contracted from the academic medical centers to the community AHPs. The contracting rates and services would be the same for all the AHPs in the area and so would not be the differentiation at market level to allow the AHPs to compete, one with another. In turn, for fiscal responsibility of the community to the Academic Medical Center, there would be accountability on the Academic Medical Center to the community.

Academic Medical Center

The components of the academic center, in the most generic of senses are:

- Medical School (or Health Professional Training Facility)
- Post-Graduate Training Facility
- Teaching Hospital

Each of these has different but complementary missions, goals and objectives. Together, however, in a reformed system, the academic medical center is the link up between the other communities in the state (Figures 2 & 3).

The roles of the academic medical center in a community are those of teaching, research and clinical service; the responsibility of the health plans to the academic medical center is one of support.

Teaching:

The medical school has the initial responsibility for selecting potential trainees and teaching the basic background for a career in the health professions. It is the medical school which can often influence the enrolled body of students upon which aspect of health care delivery to focus. Quickly in the career development, the student is introduced to the practical, apprentice-like work which can only be performed in a hospital setting. It is incumbent upon the "three legs" of the academic stool to prioritize the teaching roles to provide the most appropriately trained individuals for the community, for the state and for the country, in that order.
Research:

Research can arbitrarily be divided into basic research, clinical research and community-based research. Basic research should be part of a national plan, and the funding competitive at a national level. The community-based research should be useful to the community and is often in the fields of clinical decision-making, analysis, outcomes measurement, cost benefit and effectiveness studies. Furthermore, it is at the community level that the research performed by the medical directors, actuaries, and others of the life insurance industry on morbidity and mortality, begin to come together with the outcomes researchers. The responsibility for the questions to be asked and the funding for such research should be jointly by community and academic medical center. Clinical research is obviously important, but the relevance to the community, state and country must be part of the priority system that is used in selection of funding. Into this category falls the assessment and dissemination of technology and experimental procedures.

Clinical Service:

A role of the clinical service falls to the medical school in the responsibility that it takes for the disadvantaged, whether they be socially, financially or medically indigent. The emphasis that the medical school places on the difficult, complex and rare disease is an excellent complement for the community primary or secondary care level facility that has neither the resources or personnel to deliver optimal care to the outlier. In this regard, not only should there be a fiduciary responsibility from the community hospital to the academic medical center, but there should be the adoption of a community accountability score card that should not isolate the academic medical center for taking most of the complex medical problems into their hospital.5

The role of the academic medical center at a state level would be to work with the other academic medical centers so that the state funding is wisely distributed and the academic world, as whole, works with the state and communities to avoid unnecessary duplication or programs, either of research or training, and to guarantee there is some independence remaining with the academic medical centers for themselves to determine how to divide resources and responsibilities.

RESPONSIBILITY

In a "Community Based Structure" as described here, there is plenty of room for the members, or beneficiaries, to exercise responsibility for part of their own health care. This responsibility at an individual level may be the planning of a healthy lifestyle and availing themselves of wellness and prevention services.

At the community level there should be a responsibility of the AHPs to the academic medical center; and vice versa. Likewise, at a state or regional level there should be responsibility to serve the citizens in an appropriate and cost-effective way ensuring access for all.

FINANCE

The usual mechanism of finance would be for individuals to purchase plan membership either directly through a regional alliance or through their employers to the AHP of their choice. Medicare beneficiaries would, in a similar fashion, be able to purchase services from the AHPs. In the case of states where the Medicaid program is being administered through the private sector, the respective, responsible agency such as in Ohio, the Department of Human Services, would purchase services from one or more AHPs. The AHPs, in turn, would purchase, on the basis of a premium fee for service or capitation services from the academic medical center the tertiary services that were missing from their AHPs and quaternary services.

This relationship would have the benefit of bringing accountability and responsibility to academic medical center and community alike.

TAX

Any taxation funds that go for health care and any that are developed in the future to pay for health care should be used as far as possible in a budget neutral way and be used to encourage behavior change to behavior that supports the principles and objectives of health care reform.

For example, in the approach to excess capacity reduction, a voluntary mechanism can be envisaged where hospitals and facilities within a given community can develop their own plans to remove excess capacity in creative and innovative fashions. The encouragement for the voluntary approach would be to avoid a subsequent regulatory approach and to benefit for tax revenue raised from those communities that refuse, or are unable to come up with, voluntary reduction plans.
IMPLEMENTATION

The four primary points for implementation are: that the reform is enacted in legislation or regulation, that communities are described in a similar way to the way in which they have been discussed, that AHPs are indeed the method for health care delivery, and that they have additional responsibilities for financial management and administration and the role of the academic medical center.

In conclusion, one of the "principles" in health care reform, namely a "community based structure," is described from the perspective of the goals and objectives of health care reform. A community is described in terms of resources, referral patterns and demographics. The principle components are discussed.

Figure 1a
Local Level
A local Health Care Delivery System or Accountable Health Plan
(see footnote for definition of levels of care, i.e., health plan primary, secondary, tertiary and quaternary)

Footnote: Primary services for hospitals are primarily diagnostic and simple treatment services. Secondary services are primarily diagnostic and treatment at a higher level than in a primary hospital. Cardiac catheterization services are typically performed at this level of service, whereas the Coronary Artery Bypass Graft procedures are performed in a tertiary center. A tertiary center has more emphasis on the treatment of medical problems. It will usually have a whole range of services appropriate for the catchment area that it serves.

Quaternary services, in contrast, are those that cannot be supported by a community hospital alone. Examples of quaternary services are: solid organ transplantation services, fetal surgery and other esoteric services. Medical schools, teaching and research efforts usually fall into this category, in that the support comes from a wider area than a single community. Quaternary services might be provided by two out of five communities or might be provided by several hospitals which are linked contractually, to be in effect, "one hospital with long corridors," as is one model considered by the Solid Organ Transplantation community.
Figure 1b
Local Level (Alternate)
An Alternate Local Health Delivery System where there may be multiple integrated or competing systems.
Figure 2
Community
A community with four local health plans. The health plans are linked to the Academic Medical Center (medical school and teaching hospital) by Accountability and Responsibility.
Figure 3
State
A state, e.g., Ohio with five communities linked by the Quarternary Services.

References
