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How the Epidemiological Transition Affects Health Policy Issues in Three Latin American Countries

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How can developing Latin American countries design realistic strategies for preventing and controlling noncommunicable conditions and injuries before they reach the peak rates observed in developed countries — and at the same time maintain efforts to reduce the "unfinished agenda" in health services?

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This paper — a product of the Population, Health, and Nutrition Division, Population and Human Resources Department — was presented at the Workshop on Policy and Planning Implications of the Epidemiological Transition in Developing Countries, organized by the Committee on Population of the National Academy of Science, November 20-22, 1991, in Washington, DC. Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Otilia Nadora, room S6-065, extension 31091 (October 1992, 20 pages).

Bobadilla and Possas focus on healthy policy issues associated with health reform needed to meet the health needs arising from the demographic and epidemiological transitions. They illustrate these policy issues by analyzing: Brazil, Colombia, and Mexico, whose populations represent about 60 percent of Latin America's population.

Brazil, Colombia, and Mexico are facing an important decline in mortality and fertility rates. New health problems have arisen related to rapid urbanization and industrialization — for example, injuries, accidental intoxication and poisoning, and the occupational and noncommunicable conditions (such as hypertension and diabetes) affecting an aging population. At the same time, these countries are not free of old health problems — of many infectious and parasitic diseases — although their mortality rates are declining.

That is, old and new health problems coexist while wide social disparities persist in these developing Latin American countries. The epidemiological diversity and the speed of change in disease profiles makes the health transition in many developing countries more complex than the situation developed countries faced.

Most of these countries also have inadequate health infrastructure and are unlikely to be able to afford to develop them in the next decade or so. And most governments are being pressed to adopt the therapeutic medical model to deal with noncommunicable conditions.

Bobadilla and Possas arrive at seven main conclusions about the implications of the epidemiological transition for health policy in developing Latin American countries:

- The transition offers an empirical framework for strategic planning for the health system, allowing policymakers to anticipate future trends and causes of mortality and anticipate disease scenarios.
- Since more disease is expected among the adult and elderly populations, the health system's mission should be revised with more emphasis on disease prevention and control and less on satisfying demand.
- Existing inequities in the geographical distribution of health resources and in the quality of care between health institutions should be corrected to avoid greater epidemiological polarization.
- The health care model should be reformed to strengthen the technical capacity to provide preventive and curative services at the first level of care (health centers) to control the dual burden of disease.
- Efficiency and quality of care need to be substantially improved to accommodate the greater demand for clinical services, especially those provided at hospitals.
- Criteria for setting priorities in the health sector must be defined, so resources can be allocated among competing health needs and socioeconomic groups.
- These countries need to strength their ability to analyze the health status of populations, to evaluate the health system's performance, and to design cost-effective interventions to deal with noncommunicable diseases.

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HEALTH POLICY ISSUES IN THREE LATIN AMERICAN COUNTRIES: THE IMPLICATIONS OF THE EPIDEMIOLOGICAL TRANSITION[1]

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Health Policy Issues in Three Latin American Countries:
The Implications of the Epidemiological Transition

Table of Contents

This paper is based on the authors' experience while participating in their own countries in the working groups set-up during the health care reforms undertaken by Brazil and Mexico, over the past seven years. Although individual acknowledgments are impractical and will probably be incomplete, the authors acknowledge that many of the ideas presented here are drawn from group discussions and consultations in their respective countries. During the preparation of this document Juan Eduardo Cespedes provided the authors with information and comments on the current health situation in Colombia. We are most grateful for his inputs. We are grateful for invaluable comments received from Richard Cash, Xavier Coll, Oscar Echeverri, James Gribble and Samuel Preston. As usual the possible errors remain the sole responsibility of the authors.

Even in middle-income countries, more favorable statistics in the aggregate disguise wide disparities between the conditions, on the one hand, of the rural and peri-urban poor that are typical of low-income countries and the conditions, on the other hand, of more affluent urban dwellers who are better educated and have better access to health services and whose health status closely resembles the profile in industrialized countries.

John Evans, et al. 1981.

I. Introduction

This paper is concerned with health policy issues in Latin American countries, with emphasis on the changes that health systems need to introduce in order to effectively meet the health needs imposed by the demographic and epidemiological transitions. To illustrate these policy issues, three country cases are analyzed here: Brazil, Colombia and Mexico. The population of these countries includes about 60 percent of the inhabitants of the Latin American countries. The three selected countries are now facing an important decline in mortality and fertility rates, and a new set of health problems have arisen related to rapid urbanization and industrialization such as: injuries, accidental intoxications and poisoning, and occupational and noncommunicable diseases affecting an aging population. At the same time, old health problems have not yet been solved; these countries are not yet free of the burden of many infectious and parasitic diseases, although their overall mortality rates for infectious diseases are declining. The analysis of the distribution of both groups of diseases show wide disparities in health conditions across different regions and social classes.

The coexistence of old and new health problems and the persistence of wide social disparities in these developing Latin American countries have been described before (Evans et al. 1981) and referred to by Frenk, et al. (1989) as "epidemiological polarization" and by Possas (1989) as "structural heterogeneity". These authors have stressed the importance of identifying the main consequences of this complex transitional process in developing countries. The increasing burden of chronic diseases affecting a growing adult population in these Latin American societies will be, in the next decades, an important challenge to their governments since many of their old unsolved health problems are likely to persist. This epidemiological diversity and the speed of change in the disease profiles, makes the health transition process in many developing countries much more complex than the situation faced now, or before, by the developed societies (Evans, et al. 1981). Developing countries are reducing their fertility rate and mortality rates due to infectious diseases in shorter periods than industrialized countries, leaving a much shorter time interval to adjust the health system in order to respond adequately to the health needs of adults and the elderly, and, at the same time, maintain the efforts to reduce the burden of infectious diseases in children and reproductive health problems. Two other factors differ between developing and industrialized countries: first, most developing countries still lack the required health infrastructure to deal with the most pressing health needs of their populations, and judging from their gross national products and the proportion spent on health, this is not likely to improve in the next decade or so; second, most governments of developing countries are being pressed to adopt the therapeutic medical model to deal with the burden of noncommunicable diseases.

The current health care paradigms for developing countries, epitomized by the primary health care model, have been effective to deal with epidemiological scenarios where infection and reproductive health problems dominate. It is not clear how governments should reorient their health system to respond to the new challenges posed by the population aging and the emergence of noncommunicable diseases. This paper reviews the main policy issues that should be considered to reorient the health system, in the context of the epidemiological transition.

Recent analyses of the epidemiological transition (Caldwell, et al. 1989; Laurenti, 1990; Jamison and Mosley, 1991; Frenk, et al. 1991; Bell, 1991; and Possas, 1991), suggest that the understanding of its policy implications can contribute to highlighting important aspects of the existing theoretical framework related to the health of human populations. Understanding the process of policy formulation in heterogeneous developing societies passing through the epidemiological transition, can help to develop new concepts and methodologies for health care planning.

The formulation of policies in the health sector is influenced by various elements that interact with the epidemiological transition. The conceptual model presented in the following section briefly describes the main elements that influence the formulation of health policies and indicates the most relevant relationships. Next, basic information is presented on the socioeconomic, demographic and health characteristics of the population and the health system organization in Brazil, Colombia, and Mexico. In the following section, critical policy issues are described and discussed with a focus on how they are affected by the epidemiological transition.

II. Conceptual Framework to Examine the Policy Implications of the Epidemiological Transition

The causes of long term changes in the epidemiological profiles of human populations are not clearly understood. Our limited understanding of the proximate determinants of health status suggests that changes in the standards of living, life styles, access and quality of health services and nutrition account for most of the improvements in survival in contemporary societies (Frenk et al. 1991). The technological advances in prevention and treatment of common diseases, occurred in the past 50 years, have changed the relative importance of these factors, so that now some countries with low income per capita ($300) are able to reduce substantially the burden of infectious and parasitic diseases. Health policies in developing countries are becoming therefore increasingly relevant to the health status of populations.

Many of the policy issues that governments need to consider when dealing with the consequences of the epidemiological transition are country-specific. The factors that determine the health status of the population, and the organization and performance of the health system need to be taken into account. In this section, a brief review of these factors is provided. Rather than presenting a comprehensive list of these determinants, we highlight those that are likely to play a relevant role in the health policy formulation in the three selected countries.

The main determinants of health policy and their interrelationships are summarized in Figure 1. The population dynamics is essential to understand the size and distribution of the population, and provides a first idea of the magnitude of the health needs. The rate of population growth and the process of population aging are the most important variables to be considered. Within a country, the intense rural-urban migration often poses additional burdens on the local health systems of big cities.

The contribution of fertility decline to the aging of the population and its effect on the number of deaths and the increasing proportion of noncommunicable diseases has been described elsewhere (Bobadilla, et al. 1991; Jamison and Mosley, 1991). It is worth mentioning that these demographic factors may play a far more relevant role in the epidemiological transition than the changes in the risk factors for noncommunicable diseases. Nevertheless, the paucity of information on the prevalence and trends of risk factors for noncommunicable diseases in developing countries, including the three analyzed here, precludes any definite statement on their relevance in the forthcoming decades.

The current status of the health system can be described by multiple variables such as number of institutions, coverage of different services, mix of private and public sources and amount of financial resources, efficiency, equity in the distribution of resources, quality of care, etc. Organizational and performance deficiencies of the health system are common in many countries of the world, and obviously need to be corrected before other policies designed to respond to the epidemiological transition can be implemented. Most governments allocate resources in the health sector according to pattern of expenditure of previous years, creating an **institutional inertia** to maintain the **status quo** in

their health system. This inertia reduces the flexibility of the health system to adapt to new challenges, as those posed by the epidemiological transition.

As Figure 1 illustrates, the current health system is related, in part, to the epidemiological profile, since it is supposed to control, prevent and treat the main diseases and injuries. However, the health system is also determined by other social and economic factors, such as the market forces of drugs and medical equipment, technological innovation in diagnosis and treatment, the medical labor market, and political interests. Future health policies should ideally be oriented toward improving the capacity of the health system to respond to the changing demand due to the epidemiological transition.

The relationship between the epidemiological profile and the health system is depicted in Figure 1 as occurring directly and mediated through demand. Some health needs of the population elicit direct responses from the health system, as the case of immunizations. Others are identified through demands from the population, like case management of noncommunicable diseases. Needs and demands are clearly not synonymous, as the demand depends on the health status and the perception of illness by the individuals and families. This is a critical element to consider in health planning because a large proportion of the rise in demand for health care is due to an increase in illness perception and not necessarily to higher prevalence of disease.

Health policy options are also affected by two other factors that are often ignored because they are resistent to change. These are: the legal framework for health, environment, and health care; and the ideological standpoints that governments and leading population groups hold regarding health and the role of the State in the provision of health services. These two factors often limit the options available in the formulation of policies. They can, of course, be changed and often are objects of policy. Since they are country-specific, it is difficult to generalize on the restrictions they impose on health policy alternatives.

All the factors described before, are influenced by macro social and economic characteristics of the country, as well as by their recent trends and the perception of policy-makers. To illustrate the most relevant ones, suffice to mention the rate of economic growth, the inflation rate, the size of external debt, the productivity and the political stability of the country.

III. Health Policy Context in Brazil, Colombia and Mexico.

This section describes, for the three countries, the most important elements of the conceptual framework described in the previous section.

1. Social and Economic Characteristics

An overview of the main social and economic features of the three countries can contribute to a better understanding of the determinants of their health profiles and the structure of their health systems. Table 1 shows economic, social, and health status indicators for the three countries. Wide disparities can be observed an economic data such as GNP per capita, ranging from US$ 1,200 in Colombia to US$ 2,540 in Brazil, and in average annual inflation, ranging from less than 24 % in Colombia to more than 200 % in Brazil. Nevertheless, all three countries share similar patterns of

income concentration with about 40% of income in the highest 10% income group and from 1% to 4% of income in the lowest 20% income group.

Social conditions also show similarities and disparities. All three countries share similar proportions of population in poverty ranging from 37 % in Mexico to 45 % in Brazil. But other social conditions, such as access to safe water, sanitation facilities and education are quite different. In Brazil, there is a very high illiteracy rate (22 % of adult population) while in Colombia and Mexico these rates are 12 % and 10 %, respectively. Access to safe water and sanitation facilities in Mexico are limited to 69 % and 45 %, respectively, whereas in Brazil and Colombia at least 75 % of the population has access to piped water and more that 65 % has access to adequate sanitation facilities.

Finally, it is interesting to note that with the lowest GNP per capita, Colombia's social and health indicators are not far below those of Mexico and Brazil and even for some of these indicators such as mortality under five and life expectancy, Colombia is in better or similar position. Several hypothesis could explain these differences and certainly this is not our purpose in this paper. Nevertheless it is important to stress that investments in prevention and primary health care in Brazil and Mexico have been relatively small in the past three decades and only in the mid-1980's this situation started to change. Colombia, on the contrary, has concentrated national efforts in population-based activities to control communicable diseases.

2. *Population Dynamics*

In the past 30 years, the three selected countries have experienced substantial reductions in their total fertility rate, giving place to a profound change in the age structure of their populations. Table I shows the total fertility rate registered for the years 1965, 1989 and projected for the year 2000. From levels between 5.6 and 6.7, total fertility dropped to about 3 and it is estimated that by the year 2000 these countries will report rates around 2.2. This has been achieved to a large extent as a consequence of the greater utilization of contraceptives by childbearing age women, that in 1987 reached levels of 53% in Mexico, 63% in Colombia and 65% in Brazil. The main changes in the population structure involve an important growth of the relative population of adults and elderly, as shown in Table II. By the year 2000 almost 70 % of the population of these countries will be 15 to 64 years old.

3. *Health Status*

The health status of the populations of Brazil, Colombia and Mexico has, according to information on mortality levels, improved considerably over the past sixty years. Life expectancy at birth is 69 years for Mexico and Colombia and 66 years in Brazil. The childhood mortality rates are lower for Colombia and Mexico, (45 and 47 per 1,000 children under 5 respectively) and 58 for Brazil. See Table I. Although these indicators show a considerably better health status than many developing countries, they are quite unsatisfactory when compared with countries that have similar or lower annual income per capita such as Costa Rica and Chile.

The epidemiological profile in the three countries shows that, according to mortality statistics, infectious and parasitic diseases are no longer responsible for the majority of the deaths, but rather cardiovascular disease, cancer and injury explain between 45 and 58 percent of the total deaths. Table III shows the distribution of deaths by major causes of death. Mexico has a larger share of deaths due to infectious and parasitic disease and malnutrition, and Colombia has more deaths due

to injury. The coverage of mortality statistics in Brazil is lower than the two other countries, thus the information of table III probably underestimates the number of deaths due to infectious and parasitic diseases in Brazil.

Health status indicators at the national level need to be complemented with information stratified by socioeconomic groups, in order to depict the epidemiological profile. Table IV shows the childhood mortality rate according to different levels of the mother's education. The childhood mortality rates among children whose mothers are less educated are between three and four times greater than those for children with mothers with the highest educational level.

4. Main characteristics of the Health Systems

Organizational Structure. Health systems in the three countries have different organizational structures. While in Brazil, government and social security agencies have been integrated into a Unified Health System, in Mexico and Colombia, there is a clear division of responsibilities between the Ministry of Health and the Social Security Agencies. These responsibilities differ in the two countries: in Colombia, the Ministry of Health provides the majority of the health services to the population and the Social Security Institute covers only a small proportion of the population involved in the labor force. On the contrary, in Mexico, the Ministry of Health concentrates its services on the poor and social security agencies covers about 60 % of the total population.

The size and role of private sector are also quite different in the three countries. In Brazil, it is very large, provides services to the unified public system, and the private insurance plans are also growing very fast. In Colombia and Mexico, it also plays an important role, but there is no significant provision of private services funded by the public system. The insurance plans in these countries are also growing, but their size is very small.

Source of Finance. The sources of finance follow the organizational structures in the three countries. In Mexico and Colombia, where there is a clear division between the Social Security Institutes and the Ministry of Health, the former are financed through contributions from employers and employees and the latter is financed through general taxation and fees. Colombia also obtains funds through earmarked taxation on specific products (like beer or tobacco) to finance specific components of the health services. Brazil, on the other hand, integrates these different sources into an unified health fund to finance its Unified Health System.

Coverage. The three countries have similar coverage indicators. Information on the utilization of services suggests that, in all of them, about 20% of the population has no access to health care. Important differences exist between the estimates for geographical access to ambulatory care (which ranges from 82% in Colombia to 96% in Brazil) and actual utilization of services which show a lower coverage (80%). Other coverage indicators, such as deliveries attended by health professionals (ranging from 70% in Mexico, to 81% in Brazil) and immunization of children with DPT3 (ranging from 66% in Mexico to 87% in Colombia) also show lower figures than the normative estimate mentioned above.

Distribution of Resources. Health conditions in Brazil, Colombia, and Mexico have improved considerably for the majority of their populations over the recent decades. Unfortunately, the uneven distribution of the social benefits derived from development has accentuated health inequalities. The current organization of health services widens the existing health inequalities in the three countries analyzed here, mainly because the distribution of resources is biased towards the middle and upper

classes, and the quality of care, for those who have access, is generally inversely related to socioeconomic status.

Decentralization of health services. The three countries analyzed here have undergone a very intense decentralization process in their health systems during the 80's. This process has been a consequence of two main determinants: the growing political pressures for the empowerment of local levels in the last decade, and the need to increase the flexibility of these systems, making them more adequate to the growing diversity in their epidemiological profiles and local realities (Rondinelli, et al. 1983). The analysis of the decentralization experiences in those countries seems to indicate that this process has, in general, constituted a positive response to the social changes and increasing epidemiological diversity. However, there is a major problem that has been faced by local government and communities in this process, especially in those poorer areas and regions (Vianna, et al. 1990). It refers to the lack of managerial capacity and instruments at the local level to deal with the new duties and attributions transferred in the decentralization process.

The information presented in this section indicates that the countries analyzed are relatively similar in their demographic and health profiles, but exhibit large disparities in the organization and delivery of health services. The reforms, still in process in the three countries, are oriented towards the same general directions: greater unification of the health institutions, more decentralization of operations, greater responsibility of the government to finance health care, and sustained commitment to expand the coverage of services and strengthen the first level of care. It is difficult to assess the effectiveness of health policies that are implemented by other sectors of the economy; water and sanitation, pollution control, food distribution and safety, tobacco taxation, road safety, etc. Ministries of health in these countries express concern over these intersectoral policies but assign, in general terms, lower priority to these issues as compared to the provision of health services. Even health programs that fall into their domain, but are not related to health care, as sanitary regulation or health education, tend to receive lower priority. This is due, at least in part, to the low level of expenditure in social sectors and the relative weakness of the ministries of health to enforce laws and regulations, and to lead other ministries to undertake intersectoral policies.

IV. Health Policy Issues and Options

The analysis of the complex epidemiological transition process in these three Latin American countries suggests that it is not possible to formulate an homogeneous health policy agenda for developing countries. The health problems faced by the middle-income countries need to be addressed differently from those low-income countries where infectious diseases and undernutrition clearly still predominate. In spite of this need for specificity in the analysis of each country-case, the authors identified a set of issues that should orient their health planning strategy. The discussion of each issue illustrates the complexities involved in reshaping the health system to be more responsive to the demographic and epidemiological changes, and hopefully can serve as a guide to analyze policy options in other developing countries.

1. Provision of Health Services as a Mean to Redistribute Welfare

Inequalities in health status are the consequence, in a large part, of concentration of income and other goods and services. Social services, including health services, should, according to the social justice objectives declared by the governments of the three countries studied here, serve to

redistribute the benefits of development. In the three countries, the health system fails to do that, and in some situations, exacerbates inequalities (Medici, 1989; Bobadilla, et al. 1988). In the context of these countries, five systemic policies are proposed to achieve greater equity in the distribution of health services.

First, a change in the eligibility criteria to access health services. The partial coverage of social security in Colombia and Mexico shows regressive effects in the distribution of welfare, because the financing of the system is supported by the whole society, but the benefits are restricted to the middle and lower middle classes. It is proposed that eliminating the barrier to social security for the unemployed, the peasant, and workers of the informal sector (largely self-employed), could lead to greater equity in the distribution of resources by socioeconomic groups. The incorporation into the Brazilian Constitution of the notion that social security should be universally accessible and distinguished from the more restricted notion of "seguro social", which limits the access on the basis of employment, is an example of the legal steps that can be taken towards this policy.

Second, a tax reform that eliminates differential health subsidies for the middle and upper class. Medical expenses and drugs are tax deductible in the three countries. The net result is that the middle and upper classes are the only beneficiaries of this policy, since they are more likely to earn enough to pay taxes, and they consume the vast majority of the private health services (Cruz, et al. 1991). The lower middle class and some groups of the poor, live with low cash income and utilize also the private health services, but have no means of recovering their expenditure. In addition, most of the population groups that have no access to health care are in extreme poverty. This type of tax policy, intended to provide incentives for the utilization of health services, produces a regressive effect in the distribution of welfare.

Third, ration or eliminate health interventions of low cost-effectiveness in public health institutions. This policy, is of course, justified in all circumstances, since health needs are infinite and resources are not. But its importance should be stressed now, since the current trend in Brazil, Colombia and Mexico is to reproduce the therapeutic component of the health care model for noncommunicable diseases, prevalent in industrialized countries. Most of the technologies and interventions available to treat the most common chronic and degenerative diseases are extremely expensive and relatively ineffective (Jamison and Mosley 1991). The proposed policy would free scarce resources that can be used to finance the next two proposed policies, that require additional investment.

Fourth, expand the coverage of public health services for the poor. This is already a policy in the three countries analyzed here. The problem is that the poorest sectors of the population have not been reached. Brazil and Mexico face serious difficulties in reaching the disperse rural areas, due to long distances and lack of transport and other goods and services in these communities. Many rural communities are very small (Mexico has more than 100,000 communities with less than 500 inhabitants), making investment in these communities very expensive. On the other hand, in communities where transport is readily available, potential still exists for increasing coverage. Successful models that use community health workers to reach the rural disperse communities in the three countries, should be replicated and the scope of their activities reviewed, to assess whether other noncommunicable disease can be addressed by them.

The financial feasibility of extending coverage to all the poor who lack access to health care needs to be carefully reviewed. If the current allocation of resources (by health programs) is maintained and extension depends exclusively on new funds, this proposal is not feasible in the next decade or so. As it was mentioned before, waste derives from inefficiencies and application of non cost-effective interventions. There is evidence to suggest that the current human and financial resources in Brazil and Mexico would clearly be sufficient to extend the coverage to all the poor

unserved communities just by improving the efficiency and rationalizing the allocation of resources for health programs. The political and technical feasibility of designing and implementing these reforms is difficult to assess, but given the major macro-reforms already implemented in Mexico and Brazil, this policy seems to be feasible.

Fifth, reduce differences in quality of care between health agencies. Again, this policy is already necessary regardless of the implications of the epidemiological transition, due to the low standards of care prevailing in many health institutions in these countries (Gish, 1988). The equity objective reinforces the need for quality, overcoming the uneven distribution that exists between institutions that serve different socioeconomic groups. A large study of quality of perinatal health services in Mexico City demonstrated that neonatal mortality rates (standardized for obstetric risk) were higher in Ministry of Health hospitals, which mainly serves the poor, when compared with social security hospitals (Bobadilla, et al. 1991).

2. *Reform of the Health Care Model*

The current health care model of the three countries is inadequate to deal with the increasing complexity of the epidemiological profile. As in many other countries, in these three, the first level of care is weak and under-utilized, and most of the public hospitals are overcrowded and used for conditions that could be treated in lower levels of care. Three interrelated changes in the current health care model are proposed to correct these problems.

First, to increase the technological complexity of the first level of care. The increasing demand for health services that derives from the rise of the absolute number of noncommunicable disease cases will not be met adequately with the limited health personnel and restricted technology available at the first level of care. Common conditions, such as hypertension, ischemic heart disease, menopause, cervical dysplasia, cataract, varicose veins, etc., can be controlled with current inexpensive treatments. Early detection of many chronic conditions can save resources by reducing the number of cases that advance to more severe stages and require hospitalization. Diagnostic and screening procedures and cost-effective ambulatory therapies should be selected and made available at the primary level of care. This policy should not be implemented, however, if resources are going to be taken from services for maternal and child health, which are still the priority in poor areas.

Second, to restrict hospital care for the most severe conditions and to give priority to conditions amenable to treatment with cost-effective interventions. Low risk deliveries, sterilizations, and minor surgery are examples of services that can be provided at a lower level health facility. The next policy proposal defines such a facility.

Third, to create or strengthen the Advanced Primary Health Care Centers. With different names and slight changes in the content, the three countries analyzed here have already recognized the need for a new level of care. This would deal with the health problems mentioned previously: low risk delivery, ambulatory surgery, common diseases and conditions that require an specialist, and others. This proposal for a more complex intermediate level of care is only feasible for urban areas, having a large enough population base to support such an institution. For this reason, it is important to note that this policy without the preceding one, could aggravate the current inequalities between the urban and the rural populations. This is an extremely important strategy to face the fast growing health problems of urban areas, and defining mechanisms of cooperation between public and private sectors can be very effective, since both are already providing care for these health conditions.
The most successful experience that has applied these reforms to the health care model comes from Cali, Colombia. Several reports have shown that with limited investment, these policies led to

improved efficiency and effectiveness at the hospital level, greater coverage of delivery care and other conditions, improvements in the satisfaction of patients, and lower (direct and indirect) costs (Velez, et al. 1984; Guerrero 1990).

3. Improved Efficiency and Quality of Care

The evidence for inefficiency in the use of resources abounds in the health sectors of developing countries (Akin, et al. 1987). The most common example is given by the low output of facilities and health personnel at the primary and secondary levels of care. Occupancy rates lower than 40 percent are common in district and other second level hospitals, mainly in the public sector. The reasons for this under-utilization of resources are related to poor organization of the health centers, lack of resources (drugs, equipment and other), and poor quality of care. Potential users perceive these services as inadequate to meet their health needs and resort to alternative options, such as private doctors and hospitals, or tertiary level of care public hospitals. As a consequence, tertiary level hospitals are typically overloaded with patients, with trivial or non-severe conditions. Occupancy rates of these hospitals range from 80 to over 100 percent, depending on the ward. Moreover, many admissions and lengths of stay are not medically justified in these hospitals, adding to the misuse of scarce resources.

The services provided by the Ministries of Health of Brazil, Colombia and Mexico all share these characteristics. In Colombia and Mexico, however, the social security and the private schemes do not necessarily share them to the same extent, as the output per health personnel and health facility is higher. On the other hand, inefficiency in Brazil is high because the National Institute for Medical Care (INAMPS), which originated from the Social Security System and is now linked with the Ministry of Health, is the largest health scheme in the country and buys most of the hospital services from the private sector. With INAMPS the excess of intervention and the problems of quality are further exacerbated, as the control over private practice is very limited (Mello, 1981; McGreevey, 1989; Possas, 1989).

Suboptimal quality of health care in developing countries is, to a large extent, due to scarcity of resources and administrative inefficiency to deliver the required inputs on time. But more money and resources alone will not improve the standards of care. Unnecessary interventions, which are a reflection of bad quality, occurs more often in institutions and facilities where the supply of resources is adequate. Hysterectomies, cesarean sections, tonsillectomies and appendectomies are only a few of the interventions that are excessively provided in some health institutions of developing and industrialized countries. Brazil and Mexico experience some of the highest levels of cesarean deliveries in the world (Bobadilla, 1988), but paradoxically, in the rural areas of these countries, between 20 to 30 percent of the births are not attended by a health professional. Excessive medical intervention wastes money, produces morbidity and mortality (sometimes offsetting its health benefits at the population level) and entails a high opportunity cost for the health care of the poor.

The problems of quality of care in hospital settings are more difficult to solve and have more severe consequences than those of the health centers or doctor's office. It has been documented that the cuts in the health sector occurred in many Latin American countries, affected the purchase of drugs and supplies and the level of salaries, but left largely untouched the scope, number and content of the existing health programs (Cruz, et al. 1991). Less money for medical supplies and equipment, maintenance, supervision, administration and salaries, have produced two effects: an improvement in the efficiency when there was a margin to do so, and a deterioration in the quality of care (Ayala, et al. 1991). Public hospitals have been more severely affected, due to the increased

demand from the population group that had previously sought attention through private hospitals before, but who now resorts to the public facilities.

Three policies deserve serious consideration to improve the quality of care and consequently the efficiency of service delivery. First, certification of hospitals. The diversity of institutions engaged in the provision of services in these three countries suggests that a single nationally recognized commission or office should perform regular evaluations of hospitals. Such a commission ought to be independent of the interested parties and probably be separated from the government. Failing to pass the certification after a pre-determined number of times should lead to closure of the facility. Obviously new laws would be required to make hospitals comply and to settle disputes. This policy has already been suggested for Mexico (Ruelas 1990).

Second, certification of doctors and other health professionals. A similar system to the previously proposed would ensure that health professionals update their knowledge and improve their practice over time.

Third, implementation of quality assurance systems. Good administration of health facilities is not enough to achieve optimal quality of care. It is necessary to develop information on process and outcome to support monitoring the performance of health facilities, particularly hospitals. Commissions or quality circles should be formed with authority to introduce the necessary changes in the organization of the institution and to modify the incentives that guide the behavior of the health personnel. The development of techniques and methods for quality assurance has been substantial over the last decade in industrialized countries. There is an urgent need to adapt these techniques and methods, and to train the health professionals in this relatively new area of health management (Ruelas, 1990).

The rise of cases affected by noncommunicable diseases will pose additional problems to health institutions that are currently not prepared to deal adequately with complex services. These policies to improve quality are more justified today by the epidemiological transition as the demand for hospital care increases while resources remain the same or fewer.

4. National Capacity Building for Strategic Health Planning

The debate on the policies for human resources development in these countries has often been polarized around two alternative approaches related to the content and tactics to provide health services, namely, preventive versus curative and vertical programs, as opposed to comprehensive health care. These short term concerns and other social and cultural factors have led governments to neglect investment in analytical capacity building in health policy, epidemiology and health economics. Unless this gap is filled, the application of modern methodologies and conceptual frameworks to the analysis of health needs and the appropriateness of the organized social responses may be seriously jeopardized.

The development of more adequate institutional and management structures to deal with the consequences of the epidemiological transition, will require multi-sectoral activities and multi-disciplinary inputs that exceed the limited, medically oriented approach, commonly used in the ministries of health and social security institutes in these countries (Marques, 1989).

To face this challenge, countries will need to invest in four critical areas:

i. Development of human resources in planning and management. The strengthening of planning and management activities at all levels will require to set new priorities for health personnel training. The relationships between universities, technical schools and the health institutions will need to be reinforced (Soberón, et al. 1988) in a few key areas where collaboration is critical: evaluation of services, cost-effectiveness analysis of alternative interventions, and updating of the curricula and medical personnel knowledge.

ii. Better quality of health information systems. Large amounts of health information are available in middle-income countries, but unfortunately, only a fraction of it is used in decision making (Cordeiro, et al. 1990). Even if all the available information was processed and presented adequately for decision making, critical pieces of information, such as data on expenditure by program, unit costs and resources and activities carried out by the private sector, would usually be missing. Finally, the information on births and mortality, collected through vital statistics, is essential for health planning, but the coverage and quality of the data, still is deficient in most Latin American countries (Chackiel, 1987).

iii. Development and strengthening of Essential National Health Research (ENHR). ENHR has been proposed (Commission on Health Research for Development, 1990) as one of the most effective means to overcome the heavy burden of disease in developing countries and to reduce the health status inequalities within and between them. This idea, which emerged from several national and international workshops and conferences, refers to the capacity to undertake research on health problems primarily relevant for the developing countries and to contribute to advance knowledge on global health issues. It embodies substantial political commitment, adequate financial support, and demand for research. It is a system where the main actors are both research oriented universities, schools of public health and research centers and providers of health services. Brazil, Colombia and Mexico have made substantial investments in higher education and research in the health field. However, their strength is in biomedical research, and less so in clinical and public health research (Bobadilla, et al. 1989; Cordeiro, et al. 1990). The epidemiological transition and the challenges posed to the health system will require a substantial growth in the quantity, relevance and quality of epidemiological and health systems research.

iv. Capacity building in health technology assessment. New technologies in clinical medicine are typically additive, inducing more diagnostic and therapeutic procedures and not substituting the existing ones (Possas, 1981). As a consequence of this characteristic and the high growth rate of technological innovation, the incorporation of technologies in the health sector has profound effects on the health care costs, with as much as 50 percent of the marginal increments of health care costs being due to new technologies (Panerai et al., 1989). The introduction of new technologies and drugs should be preceded by a thorough assessment of their likely effect on different parts of the health system (cost and effectiveness among other aspects) and on the health of the population (ethical and cultural issues). The sophistication of many modern technologies and the complex analysis required to anticipate likely effects suggest that a critical mass of professionals is required, with advance skills in epidemiology, engineering, health economics, behavioral sciences and health management. A broad range of modern technologies is already available in these middle-income countries, but limited information and research on the consequences of their incorporation into the health system was used to approve their purchase and diffusion (Marques, 1989).

V. Concluding Remarks

In the past seven years many developing countries and most of the international agencies that work in the health field, have become increasingly aware of the importance of the epidemiological transition. The policy implications of the transition have attracted the attention of scholars and health specialist from wide variety of disciplines, including medicine, demography, epidemiology, health planning and policy, health economics, and other social sciences. As a consequence of this renewed interest in the transition, four major positive changes in the conceptual model to examine health can be identified: 1) the need to examine health policy through a multidisciplinary approach has been reemphasized; 2) health policies deal increasingly with outcomes in the health status of populations, and the evaluations of the health system are linking more often resources with health improvements; 3) the epidemiological profiles of populations are now described more comprehensively to include health problems of all age groups and not only children, to analyse the burden of disease with mortality and morbidity data, and to include noncommunicable diseases and injury in the spectrum of preventable causes of ill-health; and 4) the scope of health interventions has been broaden to encompass social policies, mainly intersectoral, aimed at reducing environmental risk factors and to modify negative life styles.

The analysis of the health policies in Brazil, Colombia and Mexico has led us to conclude that there are five main implications of the epidemiological transition to health policy in developing countries. First, the transition offers an empirical framework for strategic planning of the health system, since it allows to anticipate future trends of mortality and its causes, and it suggests some of the future scenarios in the burden of disease. Second, since the transition anticipates a greater burden of disease in the adult and elderly population, the mission of the health system need to be revised, giving more emphasis to disease prevention and control, and less to demand satisfaction. Third, the current defficiencies of the health system, organizational and operational, must urgently be corrected, as they would be major obstacles in the implementation of other health policies intended to improve the health status of the population. Fourth, explicit criteria to set priorities in the health sector need to be defined, so that resources can be distributed between competing socioeconomic groups and health needs. And fifth, the capacity to analyse the health status of populations, to evaluate the performance of the health system, and to design cost-effective interventions to deal with noncommunicable diseases needs to be strenghtened.

Most of the policy issues identified in this paper deal with the current defficiencies of the health system, and propose ways in which they can be corrected within the existing legal and financial constraints existing in these countries. A second group of issues suggest ways to deal with the growing burden of disease due to noncommunicable diseases and injury. Special efforts were made to construct a coherent health system with the proposed recommendations. Most of them can be implemented without extra financial resources, but rather call for a substantial reallocation of the available resources.

Only the national level was analysed, and this clearly lead to some generalizations that can not be sustained when provinces or districts are examined. The intra-country variations on the health profiles and the performance and organization of the health system is substantial in the three countries, and warrants a more detailed analysis of the issues and recommendations made in this paper. Finally it is worth remembering that immediate political interests have not been considered as they were beyond the purpose of the analysis.

One question summarizes the challenge that all developing countries will have to face in the next century: how to define realistic and feasible strategies able to avoid the increasing burden of

noncommunicable diseases and injuries before they reach the peak rates observed in developed countries, and at the same time mantain the efforts to reduce the "unfinished agenda"? More than a decade ago, John Evans and colleagues (1981), said that "no satisfactory strategy has been developed to meet the health needs of older children and adults within the financial means of most developing countries," and that "the search for health technology appropriate to the financial and organizational circumstances of developing countries must be seen as a high priority for the research and development community of the entire world". Research, innovation, creativity and imagination are readily available for many social problems worldwide. The most rational policy to future health problems in developing countries is to apply our best resources to search for appropriate answers, and fill this gap already identified more than a decade ago.

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Table I: Economic, Social and Health Status Characteristics
in Brazil, Colombia and Mexico

COUNTRIES	ECONOMIC	SOCIAL	HEALTH STATUS
BRAZIL	o Per Capita GDP, (1989): US$ 2,540, [1].	o Population in Poverty,[(A)] (1987) 45%[3].	o Life expectancy at birth, (1984): 66 years [1].
	o Average annual inflation (1980-89): > 200%[1].	o Access to safe water (1983-1986): 75%[4]	o Mortality under 5 (1989): 8.5%[1].
	o Very high income concentration, (1983): highest 10% with 46% of income, and lowest 20% have 2.4% of income [1].	o Access to sanitation facilities (1983-1986): 78%[4]	o % Deaths due to infectious diseases (1985): 12%[6].
		o Illiteracy rate in adult population, (1985): 22%[1]	Malaria, Tuberculosis and AIDS are rising very fast. Cholera is spreading fast from the north and northeast.
			o Health inequalities: Life expectancy is 16 years lower in the Northeast than in the South.[7]
COLOMBIA	o Per Capita GDP, (1989): US$ 1,200 [1].	o Population in Poverty, (1986) 42%[3].	o Life expectancy at birth, (1989): 69 years [1].
	o Average annual inflation (1980 -1989): 24%[1].	o Access to safe water, (1985): 88%[4].	o Mortality under 5 (1989): 5.0%[4].
	o Very high income concentration (1988): highest 10% with 37% income and lowest 20% with 4% income[1].	o Access to sanitation facilities, (1985): 65%[4]	o % Deaths due to infectious diseases (1986): 10%[6].
		o Illiteracy rate in adult population (1985): 12%, [1].	Violence and other cause of injury are probably the major cause of premature mortality. Malaria and Cholera are resurging.
MEXICO	o Per Capita GDP, (1989): US$ 2,010 [1].	o Population in Poverty, (1984): 37%[3]	o Life expectancy at birth, (1989): 69 years [1].
	o Average annual inflation (1980 -1989): 72%[1].	o Access to safe water, (1983-1985): 69%[4].	o Mortality under 5(1989): 5.1%[4].
	o Very high income concentration (1983): highest 10% with 40% of income and lowest 20% have 1.3% of income, [2]	o Access to sanitation facilities, (1983-1985): 45%[4].	o % Deaths due to infectious diseases (1986): 20%[6].
		o Illiteracy rate in adult population (1985): 10%, [1]	Malnutrition in rural areas is still a high public health priority. Inequalities of health status between population groups are very wide: Oaxaca has a life expectancy 12 years lower than Nuevo Leon.

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4. The World Bank. Global Health Statistics (unpublished tables), 1992.
5. United Nations Development Programme. Human Development Report 1991. New York, Oxford, Oxford University Press 1991.
6. See sources of Table III.

Note: (A) Population in poverty is defined as those who earn an income less than two times the required amount to purchase the basic food basket.

Table II: Population Dynamics in Brazil, Colombia, and Mexico. Selected years.

	Population (millions)	Total Fertility Rate			Age Structure of Pop. (percent) 0 - 14		15 - 64	
Country	1989	1965	1989	2000	1989	2025	1989	2025
Brazil	147	5.6	3.3	2.4	36	23	60	67
Colombia	32	6.5	2.9	2.2	36	22	60	68
Mexico	85	6.7	3.4	2.4	38	23	58	68

Source: The World Bank. World Development Report 1991, The World Bank, Washington, D.C. 1991.

Table III: Distribution of deaths by causes of death in Brazil, Colombia and Mexico. Around 1986.

Causes of Death	Country		
	Brazil (1985)[1]	Colombia (1986)	Mexico (1986)
Infectious and Parasitic diseases, and Malnutrition	12	12	20
Perinatal and Maternal causes	7	6	7
Injury and Violence	11	19	16
Cardiovascular Disease	28	27	19
Cancer	9	13	9
Other	12	19	26
Ill defined and senility	21	4[2]	3
Total	100 (787,341)	100 (146,400)	100 (396,565)

Notes:
1. Data for Brazil includes only some reporting areas which concentrate in the more developed parts of the country. Therefore, the figures underestimate the share of deaths due to infectious disease and overestimate the deaths due to non-communicable diseases.
2. Only ill-defined.

Sources:
1. For Brazil and Mexico: 1989 World Health Statistics Annual. World Health Organization, Geneva 1989.
2. For Colombia: La Salud an Colombia, Tomo I. Ministerio de Salud, Bogota 1990.

Table IV: Mortality rates for children under 5 years old, according to the formal education of the mother in Brazil, Colombia and Mexico.

	Country		
Mother's Education	Brazil (1978 - 1986)	Colombia (1978 - 1986)	Mexico (1979 - 1987)
None	136	78	112
1 - 3 years	137	65	91
4 - 6 years	70	40	54
7 - 11 years	40	25	29
Ratio of between highest and lowest rate	3.4	3.1	3.9

Source:

1. Rutstein, O.S. "Levels, Trends and Differentials in Infant and Child Mortality in the Less Developed Countries". Paper presented at the seminar on Child Survival Interventions: Effectivness and Efficiency, at the Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland, June 1991.

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