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# Anthropological Perspectives on the Health Transition

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## Introduction

Archaeological evidence points to constant changes in human health and illness, associated with changes in living conditions, housing, sanitation, and the distribution and prevalence of pathogens. But imperialism and colonization, together with developments in science, medicine, and public health since the Enlightenment and especially over the past 100–150 years, have had profound effects on population density and distribution, fertility and birth outcomes, and longevity. In turn, with development, changes in exposure to disease and access to medical interventions resulted in what was assumed to be a general and inevitable shift from the high prevalence of infectious diseases, characteristic of low-income countries and resource-poor communities, to the high prevalence of noncommunicable diseases (NCDs). This in turn has been characterized by the declining importance of infection on morbidity and mortality among people in the highly industrialized countries of Western Europe, North America, and the Pacific and, increasingly, in rapidly industrializing countries. This epidemiological shift, especially evident in the second half of the twentieth century, is reflected by the term health transition.

The explanation for differences in patterns of morbidity and mortality, explicated by Omran in 1971, initially appeared to be straightforward. The provision of potable water and sanitation, immunization, maternal and child health care, and improved nutrition all reduced infant mortality and child mortality rates, the incidence and prevalence of infectious disease, and increased life expectancy. Increased life expectancy in turn, combined with sedentary occupations, smoking, and the increased consumption of processed foods led to an increase in so-called lifestyle diseases, resulting in the greater incidence of chronic illnesses and degenerative conditions (Omran, 1971).

However, this is an overly simple model. Concurrent with the increased prevalence of diseases related to overweight and obesity and, in association with an increased aging population, other noncommunicable, chronic, and degenerative diseases, and deaths from injury (including vehicle accidents, intimate partner violence, and war) continue to be prevalent. Economic changes and medical and public health interventions, instrumental in the shifts from infectious to noncommunicable disease and from high to low mortality, combine with other environmental changes and varied standards of living associated with the global political economy. Premature deaths have continued in highly industrialized and urbanized societies with the resurgence of old and introduction of new infectious diseases. Additionally, infectious diseases have continued to have impact, even in countries where epidemiological and demographic transitions had influenced population structure and noncommunicable morbidity. Their impact is mostly marked on poor populations in countries that lack the resources for relevant research or for sustainable interventions: hence the increasing reference to these as neglected diseases of poverty.

Because of the distribution of both noncommunicable and infectious diseases with poverty, there is considerable variation in the epidemiology of diseases and in life expectancy within and between countries. Frenk et al. (1991) in particular have argued the relevance of biology, the physical and social environment, economic, political, and structural factors, and proximate factors as all influencing the health transitions that occur in different settings. Anthropology's interest has been to explore these differences in context and their interrelationships in influencing health outcomes. Social, cultural, and behavioral factors, belief systems and practices, geography and economy, all influence changes in health status and outcomes, and patterns of illness and disease, population structure, and survival.

## The First Health Transition

Although the term health transition is primarily used to refer to a shift from communicable to noncommunicable disease, the first health transition is associated with a rise in infectious diseases during the Neolithic period due to climate and population changes. Barrett et al. (1998) illustrate that, for much of human history, human populations were relatively stable and too sparse to sustain many communicable pathogens. However, there is strong evidence of the prevalence of infections with a long latency period and of infections that survive in other animal populations, including diseases associated with various parasites and enteric pathogens. As populations moved from nomadic hunting and gathering to sedentary living, changes took place in social organization, food production, and behavior. These factors led to an increase in the introduction of zoonotic infections to human hosts, increased virulence of existing pathogens, and increased exposure to new pathogens through increased contact between communities. The domestication of animals provided a reservoir for zoonoses such as tuberculosis (TB) and brucellosis, while the introduction of farming increased the exposure of populations to other vectors, such as mosquitoes, and to soil-, water-, and foodborne pathogens.

The intensification and specialization of agriculture also resulted in a decline in dietary diversity, leading to nutritional deficiencies and particular vulnerability during drought (Harrison and Waterlow, 1990). Physical anthropological research in China, for example, links a decline in health status to the rise of hierarchical states from 5000 BC. Skeletal remains from this period indicate increased porotic hyperostosis (related to nutritional stress) and dental caries (associated with increased processing of food and a decline in nutrients), as well as decreased adult stature associated with increased population density (Pechenkina et al., 2002). There is also extensive archaeological evidence of signs of immunocompromise and the prevalence of infectious diseases, including leprosy, TB, and malaria, among early sedentary populations,

probably due to increased colonization and thus the introduction of diseases to immunologically naive populations (Mitchell, 2003). Further developments in urbanization and nascent industrialization created the preconditions to favor the further spread of infectious diseases such as smallpox, measles, plague, cholera, typhus, and sexually transmissible infections. Disease spread with population movement, shipping, and commercial trading. By the fourth century BC, port cities in Greece, North Africa, South Asia, and East Asia were lively centers of commerce, internationally and between the coast and inland centers, facilitating the spread of disease as well as goods and people.

## The Second Health Transition

The term health transition conventionally refers to changes in health outcomes as a result of changes in the cultural, social, and behavioral determinants of health, so drawing attention to the broad factors that affect fertility, morbidity, mortality, and life expectancy (Caldwell, 1993). The term draws attention to how societies and individuals interact with the environment, with the presumption that demographic and epidemiological transitions take place with development and consequently with changes in living standards. Although Caldwell explicitly excluded medical advancement and changes in the material environment as contributing to the health transition, quality of health care, access to medical advances, housing, sanitation, and the presence or absence of other infrastructure, communications, and the provision of and access to goods and services, all contribute to health outcomes. These factors are also shaped by cultural context. Ideas, beliefs, and interactions, social structures, and institutions all in diverse ways influence health status and complicate the nature and direction of the transition.

The health transition in developing countries followed these broad changes. The decline in infectious disease in part derived from changes in public health, water, sanitation, and housing, discoveries of the causes of potentially fatal diseases, and the development and application of technologies such as pasteurization, vaccination, and antimicrobial treatments (McKeown, 1976). Improved understanding of the etiology of vectorborne disease and the application of insecticides and pesticides, the management capacity of infectious disease control programs, the acceptability and sustainability of interventions, and changes in production all reduced exposure of humans to vectors and so reduced the incidence of infection. The concurrent increase in NCD and degenerative conditions reflected improved life expectancy, the effectiveness of early medical interventions, and changes in living conditions, nutrition, and other behaviors, including those that are specific risk factors for the development of disease such as smoking, overnutrition, and occupational health risks and injuries.

Developments in public health and immunization, and the extension of primary health care, particularly maternal and infant health programs, reduced infant and child mortality rates. Improved child survival and increased life expectancy occurred in many countries coincident with increasing industrialization, wage labor, urbanization, and increased female literacy and formal education. These factors in turn interacted

to influence ideas about the value of children, desired number of children, and timing of first and subsequent births. From the early 1960s, new contraceptive technologies, including oral, injectable, and implantation methods, assisted in ensuring smaller family sizes. These factors resulted in changes in population structure in both advanced and developing economies.

These demographic changes were accompanied by an increase in NCDs associated with longevity, changed conditions of labor and patterns of residence, and, as already noted, changes in diet, behavior, and levels of activity – hence their categorization as ‘lifestyle’ diseases. By the early twenty-first century, NCDs already accounted for 63% of deaths globally, with 80% occurring in low- and middle-income countries (Bloom et al., 2011). These diseases, discussed further below, include cardiovascular disease, type 2 diabetes, cancer, and respiratory diseases. All often occur concurrently with other mental and physical health problems due to changes in personal behavior, conditions of living, and patterns of employment. These have outpaced developments in health-care provision and expenditure, raising concerns by anthropologists and others about inequalities that are increasingly evident in health outcomes in advanced and developing economies.

While lifestyle diseases escalated, it became apparent that infectious diseases were not declining significantly in either developing or highly developed countries. In the early 1980s, because of its novelty, distribution, and poor prognosis, HIV attracted the most attention in this regard, although other infectious diseases transmitted sexually or via blood, such as genital herpes, chlamydia, and hepatitis B and C, had also increased. But from this time, increased anthropological research was undertaken in developing countries on established and well-known infectious diseases such as TB, malaria, schistosomiasis, and dengue. These are not diseases unique to the geography of the countries in which they had remained endemic, but rather, they are associated with poverty. Diseases have continued or reemerged in urban settings because of poor infrastructure, poor or declining socioeconomic and physical conditions, and lack of capacity to provide safe water and hygiene, accessible health services, and sustainable disease control. In remote and rural areas, the continued transmission and reemergence of vectorborne diseases are influenced by ecological conditions that favor vector breeding and parasite reproduction. The reemergence of old and the emergence of new infectious diseases, such as SARS (severe acute respiratory syndrome) and H5N1 avian flu, concurrent with rapid increases in certain NCDs such as diabetes, led to the idea of a third health transition.

The characterization of the second transition became increasingly problematic too because of its representation as a linear pattern (economic development is accompanied by changes in the distribution of disease) and because it failed to account for variations in health status within countries as a result of social, economic, and cultural differences. Inequalities within countries due to race, ethnicity, class, and locality all influence exposure to pathogens, the prevalence of certain risk behaviors (e.g., smoking), and access to health services. Poverty produces its own pathogenic environments, influencing interpersonal and community-level violence, depression and anxiety, work place, vehicular and everyday accidents, and physical and mental trauma from war and

displacement, affecting people of all ages. Moreover, inadequacies in governance and health systems in fragile states result in 'chronically acute epidemics,' as occurred with Ebola in 2014 (Henry and Shepler, 2015). As discussed below, the health status of aboriginal populations in North America, Australia, and New Zealand in particular fails to fit with a simple health transition model and highlights the ways in which social inequality complicates morbidity, mortality, survival, and life expectancy.

### The Continued Transmission of Vectorborne Disease

The health transition of the twentieth century was characterized initially by the decline in infectious diseases and the concomitant increase in the numbers and proportion of people with NCDs. This has now been disproved, because of the continued prevalence of parasitic, viral, and mycobacterial infections. Multiple factors contribute to their sustained or potential epidemic transmission. The transmission of parasitic infections is linked to patterns of human settlement and land use. Vectorborne diseases rely on population density in an environment ideal for vector habitat and breeding. Deforestation and the introduction of irrigation systems, mining, dams, and human resettlement programs all sustain cycles of infectious disease by changing the local ecology to favor vector breeding and disease transmission (Heggenhougen et al., 2003). Climatic variations, including as a direct consequence of human behavior, global warming, and increased humidity and inundations, also have significant effects on pathogens and disease vector environments.

The distribution and transmission of malaria depends among other things on the habitat and behavior of the vector (primarily *Anopheles* sp.), and this is changing, so increasing the risk of infection to new populations and in new contexts. Malaria has become increasingly an urban disease, as endemic countries lack the capacity to provide the infrastructure for water, sanitation, and dry waste disposal to meet the needs of rapidly expanding informal settlements on the periphery of cities (Uttinger and Keiser, 2006). In African cities, for example, unplanned suburbs have developed along rivers and lakes; the waterways provide residents with both water for household use and the means to wash away human waste. Urban waterways also provide an ideal environment for vector breeding and a sufficiently dense human population to maintain the cycle of infections such as dengue and malaria. People lack the resources to pay for complete medication, and the partial exposure only of parasites to drugs has resulted in drug resistance and the need therefore to use more expensive second- and third-line drugs. Given that at least 1.2 million people die from malaria each year and that it is pervasive throughout Africa, with continued transmission also in much of Asia, it is not surprising that people have distinctive ideas of its etiology, diagnosis, and treatment. One common feature is that caregivers (primarily mothers) of children consider malaria to be an ordinary fever without serious implications, and accordingly use home-based and village treatment, and local herbalists and drug sellers compete with hospital clinics and pharmacies to sell antimalarials. Delays in treatment seeking, associated with ideas about the normality of fever, contribute to

continued severe morbidity and mortality among infants and children from malaria. The same understanding of fever and childhood illness also influences patterns of treatment seeking for dengue, acute respiratory infections, and other febrile infections.

Attitudes toward the prevention of malaria also vary according to affordability, viability, and local understandings of disease transmission and prevention. In the Philippines, for example, poor rural householders are rarely able to afford to buy and use bed nets but are often also reluctant to accept residual wall spray, because they dislike the smell and appearance of the spray and question the possibility of infection taking place in the village environment rather than in the rice fields or forest. In Ghana, rural women see the value of bed nets, but these are not always affordable, while urban women are more likely to pay for mosquito coils or, if they have the funds, install electric fans to keep mosquitoes away. Access to cash, technology, and appropriate services all shape what people can do in order to minimize the risk of being bitten and infected.

Dengue fever illustrates how vectorborne disease can become increasingly prevalent with globalization. Airplane travel has introduced larvae, mosquitoes (*Aedes* sp.), and infected individuals to new areas. Methods of controlling dengue in the 1950s – spraying areas of epidemic outbreaks – ceased to be effective, and the cost of this kind of strategy, such as the cost of the use of molluscicides for schistosomiasis control or insecticide for malaria or filariasis, is often beyond country capacity. As a consequence, anthropologists have been involved in community-based interventions to reduce the risk of transmission and to encourage early diagnosis and appropriate treatment. The work on community participation to control dengue fever has been especially important, because it highlights difficulties in resources, continuity, and sustainability, and how these are dependent upon relations between the population and the state. This has been well illustrated in comparing dengue prevention programs in the Dominican Republic, where the population resisted community participation because of their lack of confidence in the government, in contrast to Cuba where, at least until the 1980s, popular support of the government was mobilized in local programs designed to reduce breeding sites (Whiteford, 2000). However, Winch et al. (2002) have illustrated how because early programs ignored gender relationships, women resisted interventions that involved the male vector control personnel intruding into the home. Women may need to make significant investments of time and money to carry out recommended control measures, highlighting the need for control programs to take account of structural factors such as gender in developing interventions (Vlassoff and Manderson, 1998).

Environmental changes through human activity, as occur when large dams are built to provide hydroelectricity or water for irrigation, have contributed to the spread of schistosomiasis. Dams and other changes to water resources affect water flow, creating new ecological niches for the vector. In addition, the settlement conditions for migrant workers are poor, and bathing and toileting take place near or in infested water, maintaining the cycle of infection. Migrant workers, without prior infection and so without immunity to infection, move to work in areas where schistosomiasis is already transmitted;

conversely, people already infected with schistosomiasis move to work in areas without infestation but with the vector, and hence establish new sites of infection. Other social factors also influence the risk of infection. People are exposed to water for various purposes: agriculture, fishing, bathing, washing dishes and clothing, and recreation. These activities are undertaken to different degrees, and at different times of the day, according to economic organization and cultural region, age, and gender, influencing the likelihood and intensity of infection. People's ability to recognize schistosomiasis infection and to prioritize its treatment over other severe and acute conditions varies and is influenced by the social context in which people use water. For example, in Hunan, Anhui, and other provinces in China where schistosomiasis is still endemic, young children and their parents have extensive knowledge of the nature of infection, its transmission, and prevention, because of the energetic efforts in health education by the village Anti-Schistosomiasis Stations. However, this has had limited effect on the changing use of water resources: men still wade through water to fish and to water domesticated animals, women gather reeds from marshy areas to feed pigs, and children – particularly young boys – swim in the lakes in summer as this provides a key recreational activity during school holidays (Manderson and Huang, 2005).

Vectorborne diseases require prompt diagnosis and appropriate treatment to reduce the risk to others of transmission, severe morbidity, and mortality. Considerable work has been undertaken by anthropologists on the distribution and promotion of pharmaceuticals (Whyte et al., 2003). Allopathic drugs produced in industrialized countries such as France and Switzerland are increasingly available, as are analogs and generic drugs produced in developing countries. Drugs are available from hospitals and biomedical practitioners and from local vendors who often sell small affordable quantities. These drugs meet the needs of people who accept the efficacy of pharmaceuticals for symptomatic relief. People may believe concurrently in the need for other approaches to disease treatment and cure: herbs, roots and tonics, massage, incantation, and trance. The inappropriate use of drugs, such as failure to complete a full prescription, purchasing too few drugs to be effective, and using particular medications unnecessarily, has led to growing drug resistance, for instance, of parasites (resulting in the ineffectiveness of chloroquine for malaria in much of the world) and bacteria, resulting in drug resistance to various antibiotics. Delays in seeking medical advice, inappropriate use of drugs, and resort to home-based care or traditional therapy may indicate the absence or inaccessibility of formal health services. They also illustrate the lack of financial resources of people to seek advice for particular illness episodes and reflect the diversity of healing practices and different ideas of illness and treatment.

### Noncommunicable Diseases

Noncommunicable diseases (NCDs), including cardiovascular disease and hypertension, various cancers and diabetes, dominate the global burden of disease. Increasingly, the term cardiometabolic disease is used to refer to obesity, diabetes, and cardiovascular disease as a single syndrome, the control of which is often complicated by depression. In highly and newly

industrialized countries, the majority of the population lives and works in urban settings in sedentary occupations and in impoverished conditions. Much industrial work requires a limited expenditure of energy, but can be highly stressful on the musculoskeletal system, leading, for instance, to lower back pain and joint pain. Workers may lack varied work tasks, resulting in particular musculoskeletal stress; in poorer countries where there is little regulation of industry, they may also work without adequate furniture, lighting, ventilation, and noise control, all resulting in physical health problems. However, the most prevalent diseases globally – heart disease, cancer, and diabetes mellitus – are associated with lifestyle risk factors, including the consumption of high levels of saturated fats and excess salt, lack of physical activity, obesity, psychosocial stress, and smoking. Typically, people lack discretionary time to exercise and to prepare their own food, and tend to eat energy-rich food, including a high amount of preprepared and processed foods, which are typically high in sodium, sugar, unsaturated fats, and trans fats. Anthropological research on understandings of disease causality, their prevention and treatment, illustrates variations in cultural understandings and a poor fit between lay and biomedical explanatory models. Diabetes mellitus, for instance, is often treated as an indexical disease of the health transition: a lifestyle disease that, while it has a genetic basis, reflects environmental factors including diet and physical activity. Like other NCDs, diabetes has tended to be linked to high levels of industrialization, but it is increasingly a problem in developing countries with large numbers of people working in urban environments as wage labor, with little discretionary time to grow their own food or prepare home-cooked meals. In Bangkok, Thailand, for example, people often live in apartments or rooms without cooking facilities and may need to spend long hours on public transport commuting to and from work. Without the facilities or time to prepare food, they rely increasingly on bought food, the quality of which is compromised by the need to mass-produce to feed a rapidly expanding population, and for producers to maximize profit. In addition, tourism has precipitated changes in food markets, including the adaptation of local menus and recipes to cater for foreign taste preferences, the proliferation of and prestige associated with American-based fast food outlets, and commercially produced snack foods. The consequence has been major shifts in taste preference from savory to sweet. The lack of opportunity, sufficient knowledge of chronic disease and its management, and lack of affordable places to exercise have further compromised people's general health, reflected now in a marked increase in obesity and type 2 diabetes. But, in addition, peoples' different understandings of diabetes as a disease, the meaning of chronicity, and the structure of their everyday lives influence their deviations from medical advice and strict adherence to regimes of disease control.

This example is one of rapid industrialization, urbanization, and development. In contrast, the epidemic of NCDs in Micronesia illustrates the health effects of a shift from subsistence production to a wage-based economy, in which context people have lost the time to maintain gardens and to fish; consequently traditional staples, such as plantain and yam, and fresh seafood have been replaced by canned fish and beef and white rice. In one district in Micronesia, Kosrae, 88% of adults are



regarded as overweight and 53% as obese, and increasingly, the poorest in the population here – as in highly industrialized societies – are most likely expending less energy while eating foods high in sugar, salt, and fats (Brownell and Yach, 2006). In The Gambia, West Africa, a country in the early stages of the demographic transition, a similar pattern has emerged, with older women especially being overweight or obese through greater reliance on highly processed food, with a high fat intake and cheap calories (Siervo et al., 2006).

Dietary change and changes in energy expenditure, previously associated with modernity and industrialization, also occur with migration. A study conducted with Cambodian refugees resettled in the United States, for instance, observed that while some changes in behavior clearly affected health status, in other respects people's health had improved substantially, due to access to certain forms of health care unavailable in the country of origin and by supporting behavioral change promoting good health. Changes in life circumstances and cultural attitudes to weight, eating, exercise, and medication schedules were important in these changes, and life events and social circumstances frequently dictate that adherence to public health or medical advice are secondary considerations. Similarly, demands of family and community for indigenous Australians consistently impede people's ability to follow dietary and other regimes.

## Smoking

Smoking causes or exacerbates acute respiratory diseases, TB and asthma, and NCDs such as chronic lung disease, cardiovascular diseases, and cancer; it is estimated to kill around 5 million people per annum. Tobacco consumption involves a set of learned, patterned social behaviors. The incidence of smoking, such as other risk factors for chronic disease such as dietary change, typically increases with increased exposure to Western influence, as occurred with colonization and occurs with tourism and migration. Anthropologists have taken a particular interest in smoking because it illustrates how the tobacco industry constantly defines and penetrates new markets, and because of the meanings given to its practice that encourage uptake. However, while people may associate smoking with modernity and so take up smoking on migration, acculturation may also lead to individuals adopting health-promotive behavior, giving up risk-related behaviors (including smoking) and accessing services not available in their own country.

While the number of people smoking in highly industrialized countries has decreased in response to the evidence of the relationship between smoking and NCDs, tobacco companies have persistently promoted smoking in Asia, Africa, Eastern Europe, and South America. By 2025, the number of smokers worldwide will have increased by 45% and the deaths attributed to smoking will have increased to 10 million (Beaglehole and Yach, 2003). Apart from the aggressive marketing strategies of tobacco companies, reasons for increased rates of smoking in poor countries have received limited attention. In India, however, a number of studies have been conducted on trends in smoking. In general, advertising is targeted at men rather than women, and men are significantly more likely than women to smoke commercial

filter cigarettes as well as traditional bidi and cigars. Male students believe that cigarette smoking enhances their manliness, but also, they smoke to relieve boredom and ease tension. In general, however, smoking is inversely related to class and occupation: it is most prevalent among illiterate, unskilled, unemployed, and service workers, for whom motivation of uptake has yet to be established. Increasingly, too, tobacco smoking is being marketed to women (Kaufman and Nichter, 2010).

## Chronic Infectious Disease

The most prevalent new infectious disease, now regarded as a chronic condition because of the effectiveness of drug therapy, is HIV (human immunodeficiency virus); without ART (antiretroviral therapy), HIV can quickly develop to AIDS (acquired immunodeficiency syndrome) and early death. Anthropological research on HIV and AIDS has been substantial since the first diagnoses in the United States in the early 1980s and has drawn attention to the ways in which HIV has tracked – and served as an index of – poverty, stigma, and marginalization (Farmer et al., 1996; Farmer, 2006). The shift from a discourse of risk to one of vulnerability, drawing attention to practices rather than populations, has been important in contributing to successful interventions. The approach supported a focus on safe practices, such as the use of condoms in the case of sex, or the use of disposable needles and bleach in the case of drug injecting, rather than suggesting a fixed category of people – for example, sex workers and drug users. This research has also drawn attention to the realities in which very poor people in highly industrialized settings such as the United States as well as the poorest countries in the world are in need of cash to meet basic needs, leaving many women with little choice other than sex work to cover emergency health costs, food, and other living expenses. The spread of HIV also highlights links between the movement of commodities and people and the fluidity of borders. Increasingly, itinerant and other mobile workers, such as soldiers, traders, and truck drivers, have the cash to pay for commodities, and sex, as they travel across poorer landscapes; those stationed along traffic routes of trade (including bar and brothel workers), and those left behind, usually women, are vulnerable to infection when they trade with such local migrants and their partners when they return home. Political, social, and economic inequities, including those structured by ethnicity, gender, and sexuality; armed conflict and natural disasters; and macro-level structural changes that affect employment, housing, and social stability all create conditions in which HIV is transmitted and limit the resources available to avoid infection. Adherence to medication regimens is important with combination of antiretroviral therapy as for other chronic conditions, but access to medical services, social beliefs in relation to medication, stigma associated with the regimen, and the side effects of drugs all interfere with adherence and the course of illness.

With the spread of HIV, there has been increased coinfection with TB, and anthropological research on TB has been important in drawing attention to the parallels between economic and social vulnerability, poverty, and disease. TB has persisted in poor countries and in poor conditions: in

factories, mines, crowded urban slums, shelters for the homeless in inner-city areas, prisons, and dense squatter settlements characterized by poverty, high rates of unemployment, and structural and interpersonal violence; as discussed further below, this interrelationship of the two diseases with social conditions is referred to as a syndemic (Singer and Clair, 2003). As several studies have identified, most patients accept biomedical ideas of TB and anti-TB chemotherapy and desire to finish treatment, but may be unable to do so, because they cannot afford the direct and indirect costs of services and are often poorly treated by health providers. However, the resurgence of TB has provided an opportunity to build partnerships between biomedical and traditional healers, and between private and government-employed doctors, both in health education and counseling programs and for DOTS anti-TB programs. The latter approach to TB – the direct observation of short-course multidrug therapy – is critical with the increase in drug resistance to chemotherapy.

## Conclusion

The first health transition describes the rise of infectious disease with increases in sedentarism and population mobility. The second health transition refers to the major changes that occurred with advances in economics, medicine, science, technology, and public health, resulting in the apparent decline in infectious disease and a concurrent escalation of NCDs. Current understandings of the patterns and distributions of disease acknowledge far greater complexity, resulting in the characterization of the third health transition: the continued transmission of long-established infectious disease, now often mutated and resistant to earlier drug regimens, and the emergence of new infectious diseases, concurrent with NCDs and degenerative conditions. Yet even this is inaccurate. Transitions in mortality and morbidity occur routinely as a result of population movement, changes in population density, and natural and engineered changes to the environment. These factors influence exposure to pathogens and transmission of disease. They are complicated by the introduction of goods and technologies and the appropriation of behaviors, including those that prevent disease, sustain health, and extend life expectancy: the extension of early preventive technologies such as the provision of potable water or vaccination, for instance, the extension of primary health care and screening, or the introduction of new diagnostics as well as surgical and medical interventions. They also include goods, services, and behaviors that are detrimental to health and cause disease, such as alcohol and drugs, tobacco, overnutrition, inactivity, and particular work and living environments. Overlying all of these risk factors and variables is the impact of poverty, at individual, household, community, and national levels. The so-called third transition refers, therefore, to the continued transmission of infectious diseases and the continued incidence of chronic diseases, complicated by the globalization of disease and changes in disease ecology. International trade, temporary and permanent migration for work and pleasure, and globalized information networks contribute to people's knowledge of disease, access to goods, ideas of modern living, and patterns of how people live and how they care, or fail to care, for their bodies.

It is in this context that anthropologists have introduced the term syndemic to describe with greater accuracy and acuity current patterns of epidemiology, health, and illness. The term refers to the interaction of two or more coexistent diseases – HIV and TB, diabetes and cardiovascular disease, malaria and schistosomiasis, the resultant excess burden of disease, and the interactions of the two (or more), both at the level of physiology and at the levels of individual psychology and society (Singer et al., 2006; Singer and Clair, 2003). Anthropologists have consistently argued the articulation of culture, society, and disease. But anthropologists have also drawn attention to the fact that socioeconomic conditions, typically associated with higher prevalence of both infections and NCDs, produce widespread structural and personal disadvantage. Coinfections impact at biological, social, and community levels, shaping personal experiences of diagnosis, treatment, and prognosis, and also – as expressions of structural inequality and disadvantage – shaping the life opportunities of entire communities.

**See also:** Health Technology Assessment: Ethical, Legal and Social Issues; Health-Related Stigma; Mental Health Etiology: Social Determinants; Populations at Special Health Risk: Indigenous Populations; Principles: Stigma; Social Determinants of Health, the United Nations Commission of; Social Dimensions of Epidemics; Social Dimensions of Infectious Diseases; Social Epidemiology; Social Gradients and Child Health; Social Science Contributions to Public Health: Overview; Social and Cultural Perspectives on Ecology and Health; Sociocultural Construction of Medical Knowledge; Undernutrition and Its Social Determinants.

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- <http://www.medanth.org/> – Medical Anthropology Web (last accessed 02.07.16.).
- <http://www.medanthro.net/> – Society for Medical Anthropology (last accessed 02.07.16.).
- <http://www.who.int/tcdr/> – UNICEF – UNDP – World Bank – WHO Special Programme for Research and Training in Tropical Diseases (TDR) (last accessed 02.07.16.).
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