HONG KONG ON THE MOVE

10 YEARS AS THE HKSAR

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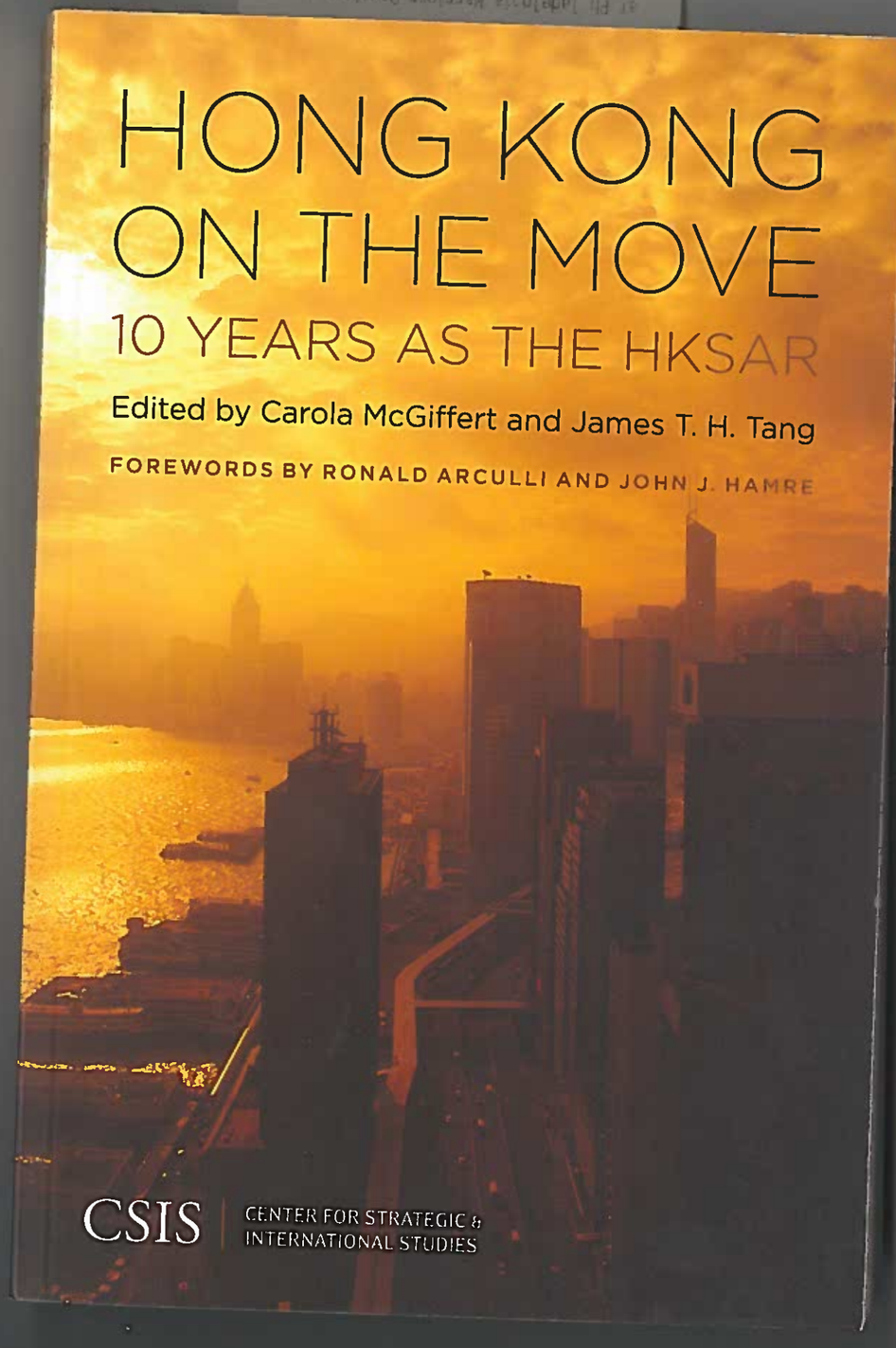

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HONG KONG AND THE UNITED STATES
SHARED HEALTH CARE CHALLENGES AND OPPORTUNITIES

SUSAN J. BLUMENTHAL AND MELISSA SHIVE

The tenth anniversary of the establishment of the Hong Kong Special Administrative Region (SAR) provides an opportunity to reflect on public health issues of common concern to Hong Kong and the United States over the past decade. In just this short time, Hong Kong has responded to several major public health challenges including SARS (severe acute respiratory syndrome) and avian flu, which have reawakened the region and the world to the threat of emerging and reemerging infectious diseases. During the outbreaks, Hong Kong has played an important leadership role in preventing and containing the spread of these contagions. The emergence of these two new diseases coupled with the bioterrorist attacks against the United States in 2001 and the rapidly escalating rates of chronic illnesses, such as heart and lung disease, stroke, cancer, and diabetes, highlight that in the twenty-first century Hong Kong and the United States, like the rest of the world, face a double jeopardy from both infectious and chronic diseases. Additionally, communities and countries must focus on other major public health problems, including environmental effects on health, the toll of motor vehicle injuries, and the provision of quality health care for all. This chapter addresses some critical health issues that Hong Kong and the United States face now and will share in the future, underscoring that global, interdisciplinary collaboration is a cornerstone to protecting and improving the health of people worldwide.

Over the past century, the world has witnessed unprecedented scientific and technological advances and innovations that have revolutionized how people live, work, and play. The blueprint of life—DNA—was discovered in 1953. Soon after, in 1958, the microchip was invented, paving the way for the creation of computers, cellular phones, and other transformative technologies. There were triumphal public health interventions in the industrialized world, such as ensuring safe water and food, and countries witnessed the fruits of progress in the biomedical sciences, with groundbreaking discoveries such as vaccinations, antibiotics, and a new generation of drugs to treat and prevent both infectious and chronic disease. These achievements, however, including the eradication of smallpox and polio over the past 50 years, resulted in a complacency and belief among many health care professionals and the public that the era of infectious disease threats was over. In fact, in 1969 the Surgeon General of the United States declared, "We can now close the book on infectious diseases." Sadly, nothing was farther from the truth. At that time, AIDS was undreamed of, and many health care professionals and scientists were not thinking globally. In fact, since the Surgeon General's declaration four decades ago, more than 39 new diseases have emerged—one every year. Furthermore, in the past five years alone, the World Health Organization (WHO) has identified 1,100 epidemics.[1] And while recent news headlines have focused on the war in Iraq, public health professionals in Hong Kong and the United States know that there are other international enemies that kill millions of people every year that must be addressed. These enemies include heart and lung disease, cancer, stroke, AIDS, and obesity. And in today's interconnected world, the spread of infectious diseases, the propagation of health-damaging behaviors, and the threat of bioterrorism do not respect national or regional borders. But solutions can cross national boundaries too, underscoring that the quest to improve health worldwide will require global strategies for communication, containment, and prevention.

This chapter emphasizes that whether we are addressing infectious disease epidemics, chronic illnesses, or bioterrorism, the power of prevention and preparedness to handle emerging disease threats represents our greatest opportunity to improve the health of people in the United States, Hong Kong, and the world. To be prepared, the approaches and tools of science, technology, and public health must be joined to explore the exciting new medical frontiers ahead, as well

as to respond to health concerns that face us now and those that may emerge in the future.

INFECTIOUS DISEASES

Throughout time, infectious diseases have been major killers of people and therefore decisive shapers of history. According to the World Health Organization, one out of five deaths annually worldwide is due to an infectious illness.[2] In the world, 1,200 people die every hour from one of these diseases. Many factors contribute to the emergence and reemergence of infectious diseases, including environmental changes, such as global warming, human behavior, socioeconomic issues, and the impact of new technologies.

International travel and trade have led to the spread of infectious diseases that may have otherwise remained contained in a particular region of the world. In 2006, 2.1 billion passengers flew on airplanes,[3] and currently an estimated 2 million people cross national borders every day. Because of the growing interconnectedness between villages and cities, pathogens that exist in one location can easily spread as people move between towns and across countries. For example, SARS spread internationally from a hotel in Hong Kong when a 78-year-old woman who acquired the infection there flew back to her home in Toronto.[4] In 2007, a man who had drug-resistant tuberculosis caused widespread panic when he traveled on two transatlantic flights against doctors' advice. Furthermore, crowded conditions and dense populations facilitate the transmission of disease from human to human and from animals to humans. The origins of many dangerous infectious diseases in people, such as hantavirus, monkeypox, SARS, and avian influenza, are consequences of animal-to-human transmission.

SARS AND AVIAN FLU

Two of these newly emergent diseases—SARS and avian flu—have particularly affected Hong Kong. The first reported cases of SARS occurred in 2003 in Hanoi, Vietnam, although it was later discovered that there had been previous outbreaks in other areas, including mainland China, as early as November 2002.[5] The outbreaks caused great concern, fear, and economic hardship in Hong Kong. Soon after, cases in Singapore, Toronto, Germany, and the United Kingdom were found, sparking additional waves of anxiety in the public. In an effort to contain the outbreak, Hong Kong instituted a series of public health measures, including isolation, surveillance, containment, and public and health care professional education. Because of the rapidity of its response, Hong Kong was able to contain the disease within five months, but not before it had infected almost 1,800 people, led to the deaths of nearly 300, and resulted in severe economic consequences.[6]

Although SARS has been contained, avian flu remains a threat to the health of the world. The impact of this virus in Hong Kong and in other parts of the globe has been significant. The first human cases were discovered in 1997, but it was not until 2003 that the industrialized world took notice. Given the public's sensitization to infectious diseases because of the SARS outbreak, Hong Kong moved quickly to take important actions to prevent further spread of the avian flu virus there and to collaborate internationally to address the possibility of a global pandemic. The threat of future avian influenza outbreaks remains real, and rigorous surveillance is necessary to rapidly detect and contain cases of this dangerous virus in birds and humans now and in the future.

The question the public faces at this time is, "Will H5N1 avian flu cause the next global influenza pandemic?" In birds, the aggressive strain of avian flu H5N1 has killed tens of millions of birds worldwide, with a near 100 percent mortality rate within 48 hours.[7] It has resulted in the culling of several million more birds in an attempt to eliminate the potential for transmission from birds to humans. The disease is endemic to many bird populations, particularly in Asia and Southeast Asia, and has emerged from Asia where humans and animals often live in close proximity. H5N1 has already mutated three times as it has spread around the world. It is highly virulent in humans with a mortality rate of more than 50 percent, and as of September 2008, 245 deaths and 387 cases have been reported by the World Health Organization.[8] The virus's ability to mutate, coupled with the rapidity with which it can spread across countries, is what makes it such a concern.

In 2005, the United States government responded to the potential threat of a pandemic flu by moving this issue to the forefront of the U.S. health agenda, providing leadership in international efforts for surveillance, containment, prevention, and response; mobilizing and leveraging resources; and urging increased transparency in disease reporting globally. A National Strategy for Pandemic Influenza was developed that includes three major goals. The first is to stop, slow, and limit the spread of the pandemic to the United States. The second is to

limit the domestic spread of a pandemic and mitigate disease, suffering, and death. And the third is to sustain infrastructure and reduce the impact to the economy. The focus of the United States' actions has been on research, surveillance, prevention of the spread of the disease from animals to humans, and the creation of global partnerships. The strategy also underscores the urgent need to build local capacity for emergency preparedness, as well as to develop new vaccine approaches and drugs, as there currently is no widely available vaccine for H5N1 avian influenza or efficacious antiviral medications for the disease.

Despite an anthrax scare from bioterrorism in 2001, technology from the 1960s continues to dominate the field of vaccine production. Even with the myriad biomedical and technological advances that are rapidly improving the ability to combat disease, most commonly used vaccines are still made through a lengthy nine-month process whereby eggs are injected with pathogens. This technology needs to be updated and would also be problematic during a pandemic. For instance, egg-producing flocks could decline, diminishing the source of the eggs that are central to this process. New cell-based and DNA-based strategies are being developed for vaccine production, but the results of these efforts are still years away. The United States currently lacks the capacity or the production ability for large-scale vaccine creation, and most of the nation's vaccines are produced overseas. This situation is dangerous. If a pandemic breaks out and borders close, the United States will lose access to these crucial materials when they are most needed.

As of May 2008, the United States has invested more than $6.9 billion in domestic and international emergency preparedness funding to address the threat of pandemic flu domestically and internationally. As of December 2007, the United States had pledged $629 million to support an international response model based on three pillars: preparedness and communication, surveillance and detection, and response and containment. This pledge represents the largest contribution of all 36 international donors to the fight against pandemic flu and supports international efforts in more than 100 nations. Moreover, the United States is supporting activities in more than 50 countries to generate public awareness about avian influenza and to promote actions to reduce the risk of disease transmission in birds and humans.[9]

While much progress has been made, the United States and many other nations still have much work ahead to establish effective public health preparedness systems. Recently, the U.S. Department of Homeland Security established a presidential initiative focused on building resilient communities that will work toward preventing the spread of a possible pandemic. The World Health Organization has also issued recommendations and guidelines to create infrastructure in preventing further spread of avian flu. These steps include treating a pandemic as a truly catastrophic event; establishing pandemic planning committees; developing a plan that considers the spectrum of response, recovery, and restoration of activities; identifying critical pharmaceutical and non-pharmaceutical interventions and procuring them now; developing communications strategies; and estimating and planning for post-pandemic consequences. From the lessons learned from early experiences with this disease, there is a need for enhanced surveillance of birds and people, early and immediate reporting, transparency in reporting cases, farmer compensation whenever possible when birds are culled, sharing of biological samples internationally, hygiene requirements in markets and retail outlets, and, importantly, open communication and collaboration.

The experiences with SARS, the anthrax attacks in America, and the threat of avian flu have taught many important lessons to the publics, health professionals, and governments of Hong Kong and the United States. These diseases have in fact reawakened the world to the constant threat of infectious diseases and their impact on economies and national security. These illnesses remind us that disease epidemics do not respect national borders and can quickly spread around the world. They have also highlighted the critical importance of international collaboration to prevent and contain new and reemerging diseases.

HIV/AIDS: A GLOBAL PANDEMIC

The need for collaboration is evident in addressing the ongoing global pandemic of HIV/AIDS, which has killed more than 25 million people worldwide—the equivalent of almost four times the population of Hong Kong. The 2005 United Nations Development Report underscored that "the HIV/AIDS pandemic has inflicted the single greatest reversal in human development." There are 33.2 million people currently living with the disease, including 2.5 million children under the age of 15,[10] and many of these people lack access to the lifesaving drugs they need. It is estimated that for every person who receives treatment, at least three new people are infected with the virus. In 2007 alone, there were 2.5 million people newly infected with HIV. Moreover, these all-too-

high numbers are compounded by the fact that, worldwide, fewer than one in five people at risk of becoming infected with HIV has access to basic prevention services. Many of those are unable to protect themselves from the virus because of such complex issues as poverty, gender inequality, violence, lack of education, and pervasive stigma.

In the 25 years since its discovery in 1981, AIDS has infected more than 1.5 million people in the United States alone, resulting in 500,000 deaths.[11] In some communities in the United States, HIV infection rates are higher than those in southern Africa. If Washington, D.C., were a country, its estimated HIV prevalence of 1 in 20 adults would rank it among the 25 nations with the highest rates in the world—higher than half the countries in sub-Saharan Africa. Currently, one million people in the United States are infected, and the disease has taken a heavy toll on both the lives and economy of the country.

Over the past decade, the availability of antiretroviral (ARV) medications in developed countries has turned HIV into a chronic disease for many people, lengthening life expectancy and improving quality of life. Currently, 30 ARV medications for treating HIV/AIDS have been approved by the U.S. Food and Drug Administration (FDA), and the people receiving these drugs are living on average 13–14 years longer than those who do not receive them. Additionally, as a result of medical advances, maternal-infant transmission has declined to less than 2 percent today in the United States. In total, research advances in HIV/AIDS treatment have resulted in at least 3.0 million years of life saved in America.[12]

New treatments are not cures, however, and do not benefit all people with HIV. An estimated 42 percent to 59 percent of Americans living with HIV/AIDS are not receiving regular HIV care, and a recent study found that only 55 percent of the people with HIV/AIDS in the United States who needed antiretroviral therapy were actually receiving it. The circumstances are worse in low- and middle-income countries, where fewer than one in five people who need ARVs are receiving them.

As HIV/AIDS continues to spread and expand its reach across the world, international communities must devote time and resources to the emerging frontiers of this virus, especially in Asia and Russia. According to the 2007 UNAIDS report, there were an estimated 4.9 million people living with HIV, 440,000 new infections, and approximately 300,000 AIDS-related deaths in Asia. In 2006, an estimated 700,000 people in China alone were living with HIV. In Asia, with

a regional population that is roughly 60 percent of the world's total, even low prevalence translates into huge numbers of people infected with HIV.

In Hong Kong, HIV/AIDS rates are measured by the Department of Health through a voluntary reporting system. These statistics indicate a steadily increasing number of new HIV infections each year, with 414 cases reported to the Department of Health in 2007—the highest number ever recorded and reflecting an 11 percent increase from the previous year. While sexual transmission remains the primary route of infection in Hong Kong, infection rates among injection drug users are increasing. Moreover, women are becoming a larger proportion of the epidemic in Hong Kong—comprising 17 percent of new infections in 2007 and signaling the need to increase women-focused interventions and attention to this critical portion of the population.

Furthermore, the stigma surrounding HIV/AIDS is still pervasive in Hong Kong and in the United States. A lack of understanding about how the virus spreads and about available treatment options often leads to isolation and ostracism of infected individuals. Stigma is a major barrier to effective treatment and prevention. Stigma against women is a particularly important issue to address, as many women are also subject to gender inequality, economic dependence on their partners, and gender-based violence—all factors that can directly and indirectly increase risk of HIV infection. Men who have sex with men are another vulnerable population at risk with rising rates of HIV infection in the United States and Asia, including Hong Kong.

Organizations like amfAR, The Foundation for AIDS Research, are working to address these problems and to support cutting-edge research to eradicate this disease. In the late 1990s, when little attention was being paid to the looming HIV/AIDS crisis in Asia, amfAR recognized the need for a cooperative approach to expanding capacity for the broader introduction of HIV/AIDS therapeutics in Asia and the Pacific. Its response was to create a lifesaving initiative called TREAT Asia (Therapeutics, Research, Education, and AIDS Training in Asia), which is a network of clinics, hospitals, and research institutions working with civil society to ensure the safe and effective delivery of HIV/AIDS treatments throughout Asia and the Pacific. This amfAR program seeks to strengthen HIV/AIDS care, treatment, and management skills among health care professionals through education and training programs developed and delivered by experts in the region. TREAT

Asia operates in 22 adult and 23 pediatric sites across Asia and the Pacific, including at Queen Elizabeth's Hospital in Hong Kong. The four components of this initiative are research, education and training, public policy, and strengthening civil society's ability to address AIDS in Asia. TREAT Asia takes a comprehensive approach in the fight against AIDS, with a strong focus on developing observational databases, exploring the course and complications of the disease in adult and pediatric populations, developing methods of community medication distribution and education, and evaluating resistance to ARV drugs.

Throughout history, infectious diseases have been significant causes of mortality, and they will continue to pose significant threats to human health in the twenty-first century. The potential spread of infectious diseases across nations of the world underscores the importance of continuing collaborations between Hong Kong and the United States, as global cooperative efforts are a foundation to prevention and control of these diseases. Together, the Special Administrative Region, the United States, and countries worldwide must remember the public health lessons of the past and combine them with new scientific advances to create twenty-first century solutions to these disease threats as well as to effectively prepare for what might emerge in the future.

CHRONIC DISEASES

While infectious diseases remain major global health concerns in Hong Kong, the United States, and other regions of the world, over the past century the effects of urbanization, changes in lifestyle, and public health and medical advances have led to a shift from infectious to chronic diseases as the major cause of death worldwide. In Hong Kong, deaths due to infectious diseases have dropped from 15 percent in the early 1960s to 3 percent of annual mortality in recent years. In fact, the triumph of public health and medical advances over the course of the twenty-first century have dramatically increased life expectancy in many countries around the world, particularly in developed nations. Currently, Hong Kong has one of the highest life expectancies globally at 81.68 years. The United States' life expectancy is lower—78.1 years—in part because of health disparities that exist for the poor and some minority populations and the fact that there are 47 million uninsured people in the United States who do not have access to health care.[13] Life expectancy in mainland China is lower at 73.18 years.[14]

As life expectancies in most countries around the world continue to increase, so does the prevalence of chronic diseases, including heart and lung disease, cancer, stroke, and diabetes. These are the leading killers of Americans and citizens of China, as well as people in most other countries of the world. Though infectious disease outbreaks often make news headlines, chronic diseases take a tremendous toll on the health, productivity, and economies of nations. In 2005, 35 million people died from chronic diseases worldwide, and the predicted trajectory and associated economic burden will rise rapidly if left unchecked. This is true in the developing world as well. According to the World Health Organization, 79 percent of chronic disease deaths today occur in developing countries.

In both Hong Kong and the United States, the chronic disease pandemic is linked to behavioral and environmental factors, including tobacco use, poor diet, lack of physical activity, alcohol and drug abuse, and unsafe sexual behavior among others. In fact, 50 percent of the causes of the ten leading killers of people in the United States, Hong Kong, and many nations worldwide are linked to lifestyle and environmental factors. Chronic diseases create a severe economic burden, with nations spending a significant portion of their gross national product (GDP) on the health care costs associated with these illnesses, leading to lost productivity and major expenses for businesses. If chronic disease prevention and management are not adequately addressed, the projected lost national income due to heart and lung disease, stroke, and diabetes in many countries will spiral out of control. In the United States alone, 80 percent of the nation's $2 trillion health care budget is spent on diagnosis and treatment of potentially preventable diseases. In 2004, Hong Kong spent 5.3 percent of its GDP on health care, while in that same year the United States spent 15.4 percent of its GDP on health care costs—a figure that has risen to 16.3 percent today.[15] The massive tidal wave of chronic diseases is robbing countries of their human productivity and of the funds needed to build healthy communities and countries. That is why it is critical for communities, schools, businesses, and governments to emphasize the power of prevention to improve health and reduce the social and economic costs.

SMOKING

To highlight the importance of disease prevention, consider the impact of smoking on the health of people in the United States and Hong

Kong. Smoking is the number one preventable cause of death in both the United States and Hong Kong. One out of five deaths in the United States is due to tobacco use,[16] which means a loss of about 440,000 lives each year; more than 45 million Americans currently smoke cigarettes, even though the average smoker dies 13 to 14 years earlier than nonsmokers. Environmental tobacco smoke—passive smoking—is responsible for an estimated 38,000 lung cancer deaths in the United States among nonsmokers each year.[17] Annually, tobacco use costs America more than $193 billion, with more than $96 billion in health care costs and an estimated $97 billion in lost productivity.[18]

Smoking was and still is a major public health problem that demands public health solutions. In 1964, when the first U.S. Surgeon General's Report on Tobacco and Health was released, 55 percent of Americans smoked. Since then, as a result of public health interventions, policies, and regulations, that number has dropped by more than half to 23 percent of Americans. Globally, however, there are more than 1 billion smokers, and tobacco kills one in ten adults—more than 5 million people a year. Another alarming trend is the rapid shift of the burden of tobacco-related deaths and disease to developing countries. This is because tobacco use is being aggressively marketed to those nations. Today, more than 80 percent of the world's smokers are living in low- and middle- income countries. Without intervention, the WHO predicts that tobacco will cause 8 million deaths a year and that 80 percent of those deaths will be in the developing world by 2030.[19]

While Hong Kong has lower smoking rates overall than the United States, the prevalence of smoking among teenage girls is rising there, and lung cancer is the number one cause of cancer death in both men and women, as it is in the United States. It is in this area that Hong Kong can potentially use a lesson learned from the United States to prevent further rises in smoking rates. Historically, prevention policies in the United States did not specifically target women. As tobacco companies identified that potentially lucrative market, they began to target women as consumers and heavily promoted cigarettes to them in advertising campaigns, encouraging them to smoke. Although there were initial taboos against women smoking in public, the tobacco industry launched campaigns to advertise cigarettes as "torches of freedom" that glamorized a woman's right to smoke. In 1987, an equal

opportunity tragedy occurred as lung cancer surpassed breast cancer as the number one cancer killer of women in the United States, even though only 50 years prior the disease was rarely reported in women. That is why in the 1990s, with a new national focus on women's health in the United States, prevention campaigns began targeting women as a special population.

While smoking remains a significant public health challenge in the United States, the country has taken many significant actions to reduce the prevalence of smoking. Because it is so difficult to stamp out smoking one person at a time, a public health approach and comprehensive strategy were needed—education campaigns, taxation, restriction of marketing to children, and smoking bans in public places. In 1965, the U.S. Congress passed the Federal Cigarette Labeling and Advertising Act requiring that all cigarette packages include a Surgeon General's warning on the health-damaging effects of smoking. As of 2007, 21 states had approved comprehensive smoke-free-air laws, which ban smoking in public places and workplaces, including many bars, nightclubs, and public outdoor areas. Seven more states have significantly strengthened their smoke-free-air regulations, and in January 2007 the U.S. Capitol became smoke free. The United States has also implemented economic disincentives to smoking. Half of the states have a cigarette tax of $1.00 or higher per pack, and eight states increased this tax last year, bringing the average state cigarette tax to $1.12 per pack—an increase from $0.45 per pack only six years earlier.[20] Cigarette advertising is also banned on television and radio. These actions are some of the regulations that are included in the comprehensive tobacco prevention and control efforts under way in the United States that have helped to decrease smoking rates. Consequently, since the Surgeon General's report was issued in 1964, the smoking rates of men and women have continued to decline, and the percentage of pregnant women who smoke has decreased from 20 percent in 1989 to 10 percent in 2005 (figure 11.1). Sharing prevention and public policy strategies and learning from each other about successes and failures in these efforts will help prevent tobacco-related deaths in the future and contribute to the common goal of improving health.

In a demonstration of global unity against smoking, the World Health Assembly of the WHO unanimously passed the WHO Framework Convention on Tobacco Control in 2003, which was signed by 168

Figure 11.1. Cigarette Smoking among Men, Women, and Mothers during Pregnancy, United States, 1965–2005

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, *Health, United States, 2007*, available at http://www.cdc.gov/nchs/hus.htm.

countries.[21] The stated objective of the treaty is to "protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke by providing a framework for tobacco control measures to be implemented by the Parties at the national, regional and international levels in order to reduce continually and substantially the prevalence of tobacco use and exposure to tobacco smoke."[22] This framework accomplishes its goals by requiring countries to implement restrictions on tobacco advertising, sponsorship, and promotion; establish new packaging and labeling of tobacco products; establish clean indoor air controls; and strengthen legislation to prohibit tobacco smuggling.[23]

OBESITY

Another global epidemic that must be addressed is obesity. In the United States, obesity and lack of physical activity represent the second leading cause of death. While the obesity rates in the United States are higher than those in Hong Kong, the number of people who are overweight or obese is increasing in Hong Kong as well. According to 2007 statistics from the Hong Kong Department of Health, 21.6 percent of adult Asians in Hong Kong are obese. In the United States, more than 66 percent of adults are overweight and one-third of adults—33.3 percent of men and 35.3 percent of women—are obese. Obesity is associated with a greater risk of many diseases, including cardiovascular illness, diabetes, and hypertension, along with an increased risk of disability and all-cause mortality. Obese pregnant women have a significantly higher risk of having babies with a birth defect, particularly neural tube problems.[24]

With changes in lifestyle and food content, the proliferation of fast foods and food advertising, the supersizing of portions, and decreased physical activity, obesity has become an extremely serious and rapidly growing problem in the United States and in many other nations. Overweight people are also at increased risk for one of the most widespread diseases in industrialized nations today—type 2 diabetes. Worldwide, diabetes is estimated to affect more than 170 million people and is predicted to more than double to 366 million by 2030.[25] In the United States alone, obesity prevalence has doubled between 1980 and 2004 and is rising at a dramatic rate in children and adolescents.

Ten to 15 percent of children and teens in the United States today are overweight—about double the number of two decades ago. Consequently, the incidence of type 2 diabetes in children has risen in recent years as well. This trend has many potential consequences for the health of Americans. If the obesity rates continue to rise dramatically, it is estimated that one in three children will develop diabetes as adults, making this generation the first to have a lower life expectancy than their parents.[26]

These statistics underscore the fact that smoking, obesity, and lack of physical activity will continue to take their tolls and be a public health burden over the next several decades in the United States, Hong Kong, and the world. To make significant progress, a multifaceted, multipronged public health approach is needed. If we do not act now, the chronic disease epidemic will skyrocket over the next 25 years, creating a great burden on future generations. Interventions are needed in the United States and Hong Kong at the government, business, community, school, and individual levels to reduce obesity.

The United States has implemented a number of federal, state, and local prevention and treatment programs to address this major public health concern. A U.S. surgeon general's "Call to Action to Prevent Obesity and Overweight" was issued in 2001, calling on all sectors of society—individuals, families, businesses, communities, governments, and the media—to play a role. Hong Kong has also taken on the challenge

of preventing childhood obesity. In particular, several interventions have been implemented that focus on promoting healthy eating and increased physical activity in youth, such as the EatSmart@school.hk and EatSmart@restaurants.hk campaigns.[27]

Additionally, the World Health Organization has launched a Global Strategy on Diet, Physical Activity, and Health that is working to promote and protect health by developing environments at the individual, community, national, and global levels to reduce the disease burden and death rates related to unhealthy diet and physical inactivity—two major modifiable risk factors for many chronic diseases.[28]

THE POWER OF PREVENTION

Despite the potential for widespread and cost-effective gains in health, there is a surprising lack of policy worldwide that supports wide-scale implementation of interventions for chronic disease prevention. Many nations are now at a crossroads between health and disease. So what is the next step? It is putting prevention first. Today, many nations have *sick* care systems, not *health* care systems. The public and private sectors must invest more in combating chronic disease, emphasizing the power of disease prevention and health promotion. The United States, for example, spends enormous amounts of money on treatment when a person becomes ill, but only 3 to 5 percent of the U.S. health care budget is allocated to preventing disease in the first place. Investing in prevention would yield significant improvements in life expectancy, productivity, and economic growth.

Prevention begins with ensuring that every child has a healthy start in life. This means ensuring that women have access to prenatal care and, after birth, ensuring that every child has a safe and nurturing home, that all children receive an education, immunizations, and access to quality health care, and that they are protected from violence, abuse, and toxins, including lead, drugs, and tobacco. After all, young people are 100 percent of the world's future.

Importantly, prevention also means emphasizing healthy aging. Both Hong Kong and the United States are facing a rapidly aging population. By 2030, the number of Americans aged 65 and older in the United States will more than double to 71 million, comprising roughly 20 percent of the population. In some states in America, fully a quarter of the population will be aged 65 and older. Hong Kong faces a correspondingly rapidly increasing population of seniors. From 2007 to 2033, the country expects a doubling in the proportion of older people (aged 65 and above) in the population, from 1 in 8 today to 1 in 4 in 2033. The ratio of Hong Kong's working-age population (aged 15–64) to its older population (aged 65 and above) will rapidly decrease, from 6:1 today to an estimated 5:1 in 10 years to a problematic 3:1 in 20 years.[29] As this trend continues, health systems will be challenged, and health care costs will rise dramatically. With aging populations comes an increase in chronic disease prevalence and the costs associated with them in terms of human suffering and economic impact. To address these issues, the Hong Kong SAR has begun a health care financing reform initiative, which involves public consultation on a wide range of proposals to effectively meet the health care needs of an aging population while containing rising health care costs.[30] Similarly, the aging of the population in the United States has resulted in several proposals to remedy the Medicare and long-term care crisis in America as well as to promote healthy aging.

In the twenty-first century, prevention must also include a significant focus on critical environmental influences on health. It is estimated that approximately 20 to 30 percent of disease is linked to inherited genes. That means that as much as 70 to 80 percent of disease risk is due to environment-gene interactions. That is why it is urgent to increase knowledge about what environmental factors in homes, workplaces, and the atmosphere might be contributing to the rising rates of some forms of cancer, Parkinson's disease, asthma, and other diseases, and how these factors interact with genes to cause mutations that lead to the emergence of illnesses. The environment will be increasingly challenged by population growth, climate changes, toxic exposures, and continued urbanization in the twenty-first century. More research is urgently needed on environmental influences on health, and strategies must be implemented to eliminate these preventable health hazards from the lives of people worldwide

Furthermore, prevention means addressing educational and economic disparities for people in the United States and Hong Kong. Socioeconomic status is the most powerful predictor of a person's health. In 1995, a WHO report found that poverty was the number one cause of premature death worldwide. People who live in poverty or have less than a high school education have higher rates of illness, injury, and

death as well as shorter life spans and more limited access to health care than those with higher income levels. Globally, 1 billion people live on less than $1 a day, and 40 percent of the world's population—2.6 billion people—live on less than $2 a day.[31] For health to be improved in the twenty-first century, the provision of educational and occupational opportunities worldwide is fundamental.

COMPLEMENTARY MEDICINE

Another health issue that the United States shares with Hong Kong is the growing use of "complementary medicines," such as Chinese herbs and acupuncture. In Hong Kong, these interventions play a significant role in health care, with many people being treated by Chinese medicine practitioners or clinics. The Hong Kong Chinese Materia Medica Standards Project is developing standards for more than 60 Chinese herbs. Other initiatives are under way in Hong Kong to foster the development, certification, and commercialization of these substances. Establishing a regulatory framework for Chinese medicine to protect public health while making Hong Kong an epicenter for Chinese medicine worldwide has been an area of emphasis in recent years for its Department of Health.

In the United States, East is meeting West in health care today. According to a U.S. government survey released in May 2004, 36 percent of adults aged 18 years and older use some form of alternative medicine, defined as a group of diverse medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine in the United States. Another study found that fewer than 40 percent of those patients told their doctor about their use of alternative therapies. Based on the most recent figures available from the National Institutes of Health, it is estimated that in 1997 Americans spent $36 billion to $47 billion on alternative therapies. Of this, between $12.2 and $19.6 billion was spent out of pocket for services of professional alternative medicine providers, such as chiropractors, acupuncturists, and massage therapists.[32]

Given the widespread use of these interventions by Americans, the dearth of scientific evidence about their effectiveness, and their exemption from regulation by the FDA, a Center for Complementary and Alternative Medicine was established at the U.S. National Institutes of Health to study these interventions' potential for treating and preventing disease. Many alternative and complementary medicine centers have been established at major medical centers across the country in addition to the proliferation of practitioners in the community. Exploring the optimal blend of Western and Eastern approaches in the treatment and prevention of disease is an area of shared interest between Hong Kong and the United States.

HEALTH INFORMATION TECHNOLOGY

In the twenty-first century, communication and collaboration are critical components to effectively address public health concerns. This is where information technology plays an important role, connecting people across communities and countries. Today, more than 1.4 billion people use the Internet, and more than 2 billion people use cell phones. Information technology is being harnessed to improve the treatment and prevention of disease, to conduct scientific research, to advance public and health care professional training and education, to enhance disease surveillance and the provision of health care services, to reduce medical errors, and to create online collaborative networks for knowledge exchange and collaboration. Exploring new ways to apply information technology to improve health is another imperative shared by Hong Kong and the United States

CONCLUSION

Health in the twenty-first century is very much a global issue. Looking toward the future, not only will there be remarkable advances from biomedical research in the decades ahead; so too will new health challenges emerge that must be addressed by Hong Kong, the United States, and other nations worldwide. Some of these challenges include developing more effective strategies to address infectious and chronic diseases, focusing on the importance of public health preparedness and disease prevention, planning for the needs of aging populations, ensuring access to quality health care for all, and containing the rapidly rising costs of health services. But challenges also present unique opportunities to collaborate and exchange best practices and knowledge and to develop innovative solutions. After all, the common quest for good health crosses cultures, governments, languages, and politics.

Since the establishment of the Special Administrative Region more than a decade ago, the public health threats shared by Hong Kong and

the United States, including SARS, AIDS, avian flu, tobacco use, and obesity, have underscored the importance of establishing international partnerships to improve health and to implement effective public health preparedness and prevention programs. During this time, significant prospects for progress and innovation in the twenty-first century have also emerged and will continue to advance if Hong Kong and the United States combine breakthroughs from scientific research and technology with the public health lessons of the past and apply them to emerging disease threats now and in the years ahead. Partnerships are a cornerstone of public health work in this century. That means that globally, we must leverage our skills, resources, and creativity across governments and the private sector to address health challenges and opportunities. Working together, we can ensure a healthier future for the people of Hong Kong, the United States, and our world.

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Part Three

HONG KONG–MAINLAND CHINA DYNAMICS