Noncommunicable Disease and Poverty
The Need for Pro-poor Strategies in the Western Pacific Region

A REVIEW
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Noncommunicable disease and poverty: the need for pro-poor strategies in the Western Pacific Region: a review.

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Abbreviations

AIDS  Acquired immunodeficiency syndrome
BMI   Body-mass index
CINDI Countrywide Integrated Noncommunicable Disease Intervention
CNPM  Communicable diseases, nutrition, perinatal and maternal conditions
COPD  Chronic obstructive pulmonary disease
CVD   Cardiovascular disease
DALY  Disability-adjusted life year
GCSE  General Certificate of Secondary Education
GNP   Gross national product
ICCC  Innovative Care for Chronic Conditions
NCD   Noncommunicable disease
NCI   National Cancer Institute
NGO   Non-governmental organization
OECD  Organization for Economic Cooperation and Development
SES   Socioeconomic status
STEPS STEPwise approach to surveillance
WHO   World Health Organization
WPRO  Western Pacific Regional Office
Preface

In October 2005, WHO proposed a global goal for noncommunicable disease (NCD) prevention and control of an additional 2% reduction in chronic disease death rates worldwide, per year, over the next 10 years. Work towards attaining this goal is essential, especially in the Western Pacific Region, where around 25,000 people die every day from NCDs. Most of these NCD deaths occur in developing countries of the Region and at younger ages than in developed countries. The impact of early death and disability on the economies of the Region is immense. Between 2005 and 2015 China alone will lose an estimated US$ 550 billion from lost productivity due to death and disability associated with noncommunicable diseases.

Noncommunicable diseases are not, however, among the Millennium Development Goals (MDGs) because they tend to be erroneously characterized as diseases of affluence. Such beliefs obscure the need for urgent action to stem the growing tide of NCDs in low-income settings. Poor individuals who lack the resources to pursue healthy choices or access effective health care diagnosis and treatment for NCDs are particularly vulnerable. The knowledge and tools to reduce the burden of NCDs already exist and mobilizing support for prevention and control in developing countries will improve the health of millions, thereby contributing to poverty reduction.

This publication is an initial contribution towards a better understanding of the links between poverty and NCDs in the Western Pacific Region. It forms part of a family of resources being developed in this Region on the theme of poverty and NCD. This monograph is a review of available literature on this subject from within and outside the Region. Other initiatives include a forthcoming module on NCD under the series Integrating Poverty and Gender into Health Programmes: A Sourcebook for Health Professionals and a multi-country study on the associations between NCD risk factors and socioeconomic indicators.

Health and economic development are interlinked and must be simultaneously addressed. It is hoped that policy-makers in the Region...
recognise that any effective pro-poor policy must take into account the risk of NCD and that health promotion and NCD programmes should be designed and implemented to meet the needs of the poor.

Dr Shigeru Omi
Regional Director
Executive Summary

Based on a review of the available literature, this monograph explores the links between poverty and noncommunicable diseases (NCDs) with particular reference to the Western Pacific Region. The project was specifically designed to stimulate discussion on the relationship between poverty and NCDs, to contribute to the reduction of the impact of NCDs in developing countries, and to foster an understanding of how to improve health outcomes for the poor or socially marginalized groups with NCDs.

NCDs are not “diseases of affluence.” In wealthy nations, they have a disproportionate impact on the poor. Globally, the burden of NCDs is rising in developing countries, which also bear the greatest morbidity and mortality. NCDs, particularly cancer, cardiovascular disease (CVD) and diabetes are major public health issues in almost all countries and areas in the Western Pacific Region. Even in the Region’s developing nations, the NCD burden is greater than that of communicable disease and now causes the majority of deaths. Demographic and epidemiological transitions taking place in the developing countries of Asia and the Pacific are shifting the disease burden from communicable towards noncommunicable disease. As the burden of communicable diseases declined in developed countries it was replaced by a rising burden of noncommunicable disease. Developing nations, however, are experiencing a double burden, with communicable and noncommunicable diseases existing simultaneously.

The major NCDs, diabetes, cardiovascular diseases, cancers and chronic obstructive pulmonary disease (COPD), have common risk factors such as smoking, unhealthy diet, alcohol consumption and low levels of physical activity. These risk factors are high among poor people and poor nations. In the Western Pacific Region, all major risk factors for NCDs are increasing. Smoking is widespread in the Western Pacific, especially among the poor. As a result, NCDs are expected to rise sharply among vulnerable populations such as older people and those of low socioeconomic status. Due to common risk factors, the upward trend in NCDs can be mitigated by deploying effective prevention programmes which incorporate multi-level, multi-sectoral and community-based strategies. Interventions focused on risk factors and their environmental, economic, social and behavioural determinants are crucial. There is a strong link between low education levels and high rates of noncommunicable disease in both developed and developing nations. Improving social capacity in education has a significant positive impact on reducing NCDs.

The poor have the worst outcomes from NCDs. In developing nations,
deaths from NCDs are highest among economically productive age groups. More severe outcomes for the poor from NCDs are not only caused by greater risk behaviours and increased incidence of disease, but also from their inability to access or afford preventative services and treatment. Late diagnoses due to a delay in seeking care means more chronic illness and complications. Poor people may also receive inferior services and be subject to discrimination from care providers. In developing countries, more accessible health care for the poor improves equity. Noncommunicable disease prevention, education programmes and affordable treatment initiatives are an appropriate priority for the World Health Organization (WHO), development agencies, and national and local health service providers.

The economic impact of ill-health on low-income households can be substantial, creating a vicious cycle which forces people deeper into poverty and more illness. Reducing reliance on out-of-pocket payments for health care can lessen the impact of these diseases on the poor. Targeting NCD interventions on the poor leads to a more efficient health sector by improving the well-being of the group with the greatest burden of disease and mortality. From an economic perspective, providing higher quality health care for the poor increases their productivity and income, thereby assisting national development. Successful prevention programmes for the poor also reduce costly hospital admissions and the demand for acute care.

The assumption that NCDs are diseases of affluence has inhibited effective planning for, and servicing of, the growing incidence of NCDs among the poor in the Western Pacific Region. The issues are clear: incidence and prevalence of NCDs are increasing rapidly and the poor bear a disproportionate burden. What is now urgently needed are policies, mechanisms and budget allocations to address this growing pandemic. Health services first require a focus on prevention and primary care, followed by secondary and tertiary prevention that is based on established NCD intervention protocols for specific conditions. Health information systems should be developed to monitor incidence, service activity and costs of NCD programmes and identify services by geographic area to help disaggregate information about the poor. This data can be used to manage effective NCD programmes and establish an evidence base in the Western Pacific Region, which currently does not exist. Effective pro-poor interventions for NCDs need to be multi-dimensional and involve local, national, global and public and private initiatives, including elements outside the health sector. Interventions must be targeted and sustained over long periods with regular monitoring to ensure objectives are met. Pro-poor health systems combining formal and technical mechanisms as well as informal community or family-based structures should be in accessible locations and provide useful information. They should also be affordable, include
equitable financing mechanisms and be sustained on a long-term basis. As the NCD burden among the poor and their needs vary substantially between and within countries of the Western Pacific Region, pro-poor NCD policies should be developed at a country level with local input. Given the high and increasing burden of disease from NCDs in the Western Pacific among the vulnerable poor, a strengthened focus on NCD interventions for the poor in the Region is justifiable. This is not to argue for a diversion of resources from communicable diseases to NCDs, but rather for an appropriate investment in primary and secondary prevention to ensure both are effectively and efficiently controlled.
Introduction
This paper analyses the links between poverty and noncommunicable diseases (NCDs). The analysis is based on a review of the current literature with particular reference to the Western Pacific Region. The paper was commissioned by the World Health Organization (WHO) Western Pacific Regional Office to stimulate discussion on the relationship between poverty and NCDs, to contribute to the reduction of their impact on poor people in developing countries, and to promote a better understanding of how health outcomes for poor people with NCDs can be improved.

**Methodology**

Literature on poverty and NCD for the last 20 years was identified from Google, the National Library of Medicine Pubmed/Medline, the WHO website, the Asian Development Bank website, the World Trade Organization website and the World Bank website. Keywords used in searches are listed in Table 1. Keywords were progressively refined to ensure the relevance of literature to this review. Due to the immense volume of the literature on poverty and disease, this review is confined to a representative sample. Literature was extracted primarily from peer-reviewed journals, published texts and documents and reports from official WHO and related development agencies. The bibliographies and references in key articles identified additional literature sources.

<table>
<thead>
<tr>
<th>Table 1: Key-words used in literature search</th>
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<tbody>
<tr>
<td>“Poverty and Disease”</td>
</tr>
<tr>
<td>Poverty + Disease + Pacific</td>
</tr>
<tr>
<td>Poverty + “coping with disease”</td>
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<tr>
<td>Poverty + “health outcomes”</td>
</tr>
<tr>
<td>Poverty + “risk factors for disease”</td>
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<tr>
<td>“Poor people” + “noncommunicable disease”</td>
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<tr>
<td>Poverty + health + “best practice”</td>
</tr>
<tr>
<td>“Noncommunicable disease” + Poverty + “Western Pacific”</td>
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<tr>
<td>Poverty + NCDs + Pacific</td>
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<tr>
<td>“noncommunicable disease” + gender</td>
</tr>
<tr>
<td>“noncommunicable disease” + “rural/urban differences”</td>
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<tr>
<td>“noncommunicable disease” + “level of education”</td>
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<tr>
<td>Poverty + “noncommunicable disease”</td>
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<tr>
<td>Poverty + “Burden of disease”</td>
</tr>
<tr>
<td>Poverty + “access to health services”</td>
</tr>
<tr>
<td>Poverty + “structural barriers” + health</td>
</tr>
<tr>
<td>Poverty + “cost of care”</td>
</tr>
<tr>
<td>Poverty + “assistance programs” + health</td>
</tr>
<tr>
<td>“Links between poverty and disease”</td>
</tr>
<tr>
<td>Inequality + “Noncommunicable disease”</td>
</tr>
<tr>
<td>“Socioeconomic status” + “noncommunicable disease” + Pacific</td>
</tr>
<tr>
<td>“noncommunicable disease” + ethnicity</td>
</tr>
<tr>
<td>“noncommunicable disease” + inequity</td>
</tr>
<tr>
<td>Disease Specific searches (e.g., “Poverty and heart disease”; Poverty and Cancer) were also utilised.</td>
</tr>
</tbody>
</table>

The extent to which the links between poverty and health are the primary focus of the literature is highly variable. Thus, a large proportion
of the literature reviewed deals with health or communicable diseases specifically without reference to poverty. Documents were selected based on the extent of their discussion of the links between poverty and/or low socioeconomic status and noncommunicable disease or of pro-poor interventions. The review aims primarily to focus on literature relating to the Western Pacific Region, but the limited availability of relevant information required the use of information from other regions. Where used, information from other regions is interpreted as indicative of the poverty-NCD relationships and it is not necessarily representative of the Western Pacific Region.

Efforts were made to secure information from the broadest possible range of sources. However, WHO is a key source of information on the links between poverty and NCD and the dominance of this source is reflected in citations in the following sections.

**Poverty**

There are a number of different ways in which poverty can be defined and measured. Income measurements of poverty such as income below the nationally defined poverty line or living on less than one US dollar per day are the most widely used in the literature. The global definition of absolute poverty includes those living on less than one dollar per day. In nations with a higher average income, people can be earning more than a dollar a day and still be very poor compared with other
people in their society. This is termed relative poverty. Relative poverty is particularly important in discussing the Western Pacific Region, since most of the poor in this region would be classified as living in relative poverty as opposed to absolute poverty (see Figure 1).

Income-based definitions do not effectively describe the multi-dimensional nature of poverty. Families can be earning above the poverty line, but women and children in the family may be subsisting on far less. Disadvantaged ethnic groups or people living in rural areas may be considered to be in poverty due to their inability to access health care. Poor education can lead to social exclusion and disadvantage. Differences in health status and health inequities result not only from purely economic differences, but also from disparities in education, occupation, race, ethnicity and gender. Poverty also involves exclusion from the political process, leaving groups voiceless and disempowered.

Unless otherwise specified, this paper uses this broader conceptualization of poverty.

**NCD**

Noncommunicable diseases are defined as those diseases which are not transmissible or caused by injury. Many of the most common NCDs share common risk factors and can be reduced through common preventative strategies. Many NCDs take a chronic course and are therefore “amenable to common approaches to care or management.”

Due to space limitations, discussion on NCDs in this report is limited to major NCDs such as cardiovascular disease (CVD), cancers, respiratory disease and diabetes.

Psychological diseases and disorders are not specifically addressed, although it is noted that disorders such as depression represent a significant proportion of the global burden of disease. Similarly, there is variance in the literature as to whether injuries are included among NCDs. This paper, taking them as a separate category, excludes a discussion of injuries.

Noncommunicable diseases are also referred to in the literature as “chronic diseases”. However, for the purposes of this paper this terminology is not generally applied because chronic diseases now also include communicable diseases such as HIV and hepatitis.

**Comment on Poverty and NCD Literature**

A Google search using the term “links between poverty and disease” produces approximately 40 hits. Of these, more than 90% refer to communicable diseases. It was found that relatively little literature is
specifically devoted to the relationship between NCDs and poverty, reflecting the historical linkage and focus on the relationship between poverty and communicable diseases. Most available literature specific to the topic explores the relationship between poverty and specific NCD conditions (e.g., CVD) in developed countries. Links between NCD and poverty are clearly under-represented in the literature. Further, data on poverty and NCDs in Western Pacific Region nations are even more limited. Although some surveys have been conducted, especially in the more developed nations in the region, there is a lack of good national or regional databases on NCDs. Available methodologies for NCD surveillance tend to be research-oriented, and resource intensive and therefore generally unsuited for small, isolated or less developed countries. Baseline data on NCD risk factors and mortality and morbidity from NCDs are not available from many developing and/or small island countries.¹

WHO has adopted and recommends the STEPwise approach to surveillance (STEPS) NCD surveillance tool as offering a common approach to “defining core variables for surveys with the goal of achieving data comparability over time within and between countries.” It provides an entry-point for low and middle income countries to begin NCD surveillance and control activities. ⁴ The STEPS programme is useful for low-income nations as it focuses on increasing national capacity to obtain recent and valid statistical information on NCD and risk factor prevalence, and arranges the conduct of annual surveys. ⁵ This tool is currently being implemented throughout the region. However, it is not specifically designed to assess the links between poverty and NCDs.

At the outset, it is noted that there are relatively few studies on the interrelationship between poverty and NCDs in the Western Pacific Region or elsewhere. Indeed, as stated above, regional data on NCDs are limited.
Noncommunicable Disease in the Western Pacific
NCDs are often regarded as “diseases of affluence.” However, in wealthier nations it is the poor who have higher risk factors and higher rates of NCDs. For example, in 1994 in the United States of America, 29.3% of children and adolescents in the lowest income bracket were classified as overweight, compared with 21.7% in the highest income bracket. From 1971, the percentage among the lowest income bracket had increased by 14.7%, compared with 8.6% in the highest income bracket. Mortality from CVD among people in the highest income brackets in the United States of America is believed to be one third of the mortality of those in the lowest income brackets. Similarly, mortality from CVD among those with university level education is approximately one third the mortality of those with only primary level education.

Furthermore, developing countries now bear the major burden of NCDs and WHO notes that NCDs cannot continue to be regarded as diseases of affluence. Globally, low and middle income countries now account for 80% of all CVD related deaths and 87% of CVD related disabilities, mainly in working-age adults (see Figure 2). In the Western Pacific Region, 75% of diabetes and 90% of new cancer cases diagnosed each year are in developing countries.

The Pan American Health Organization notes that erroneously identifying NCDs as diseases of affluence has led to misguided policy decisions and the growing awareness of how NCDs affect the poor as well as the rich requires greater attention be paid to NCDs in poverty reduction programmes. The assumption that NCDs, such as cardiovascular disease, mostly afflict the wealthy and elderly has resulted in the neglect of such diseases among the less well off and discounted their negative effect on the progress of developing nations. Besides, limited resources, low awareness of the risk factors and the low priority assigned to NCDs unfortunately “mean that many developing countries have been unable to respond effectively to rising levels of NCD.”

In 2000, Gwatkin noted that “no analyses of the recent burden disease data have yet been undertaken for poor and rich population groups.
The literature review conducted for the present paper has not identified recent data of this nature from the Western Pacific Region. Nevertheless, while the available information suggests that, globally, communicable diseases are still highly prevalent among the poor, NCDs are beginning to be recognised as the major cause of morbidity and mortality among this group.\textsuperscript{14}

Other studies also demonstrate that developing nations are experiencing an epidemiological transition, which involves rapidly increasing burdens of NCDs, as well as continuing high rates of communicable disease. In 1998, 77\% of all deaths attributable to NCD occurred in developing countries and 85\% of the NCD disease burden occurred in low and middle income countries.\textsuperscript{15}

There is a time-lag between the emergence of high levels of risk in populations and the emergence of major levels of NCDs. Superficially, this could be interpreted as an indication that NCD control measures are not immediately required. However, because most NCDs are thought to be intrinsically preventable, the growth of NCD risk factors means that immediate preventive and health education interventions are necessary to prevent or slow future increases in the scale of the problem, despite competing priorities for health care resources (see Figures 3-6).\textsuperscript{16} Analysis suggests that “the rapid rise of noncommunicable disease represents one of the major health challenges to global development in the coming century.”\textsuperscript{17}

NCDs, particularly cancer, CVD and diabetes “are major public health issues in almost all countries and areas in the region.”\textsuperscript{18} WHO has identified the prevention and control of NCDs as being a global and
Noncommunicable Disease and Poverty

regional priority. Stroke, COPD, ischaemic heart disease and lung cancer ranked first, second, third and sixth among leading causes of mortality in the region in 1998. In the Western Pacific Region, major risk factors for NCDs (e.g., tobacco use, unhealthy diet, physical inactivity and obesity) are all increasing. For example, tobacco consumption in China more than doubled between 1965 and 1990. NCDs themselves are increasing as a result, particularly among vulnerable populations such as older people and people of low socioeconomic status. Brenner from Harvard University has suggested that a 10% increase in the level of unemployment leads to a 19% increase in heart disease mortality, a 34% increase in mental hospital admissions and a 41% increase in the suicide rate.

**The NCD Burden: is it a global or regional priority?**

Gwatkin and Guillot (2000) argue that the global burden of NCDs faced by the poor is increasing, but that the rich are still the major group influenced by NCD conditions. They further state that NCDs are “distinctly less important for the poor than communicable conditions. …Among the poor, noncommunicable conditions cause 32% of deaths and 23.3% of DALYs [Disability Adjusted Life Years] loss” as compared with communicable diseases, which account for 58.6% of deaths and 63.3% of DALY loss. For rich people, all top five major causes of death are NCDs, while NCDs constitute one of the top five causes of death for the global poor.

Gwatkin et al. state that “figures showing an increasing burden of noncommunicable diseases do not necessarily reflect the situation among the poorest people” as communicable diseases tend to be concentrated among the poorest. The gap between rich and poor in 1990 was mostly due to higher levels of communicable disease among
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Noncommunicable Disease in the Western Pacific

The poor “rather than to differences in their burden of noncommunicable disease”. However, these estimates are “necessarily crude” and are mainly of relevance to interventions on the global, rather than national, scale.24

The large difference between the effects of NCDs and communicable disease among the poor reflects the concentration of deaths and Disability Adjusted Life Years (DALYs) lost to communicable diseases among the global poor. Specifically, 60% of all ill-health for the poor results from communicable disease as opposed 8-11% among the richest quintile. The figures also reflect differences in age among distribution of deaths. For example, more than half of all deaths among the poor occur before the age of 15, compared with only 4% for the rich. This is also a result of communicable disease. However, “death and disability from [communicable disease] is projected to decline rapidly by 2020, roughly equalizing the health damage from communicable and noncommunicable diseases among the poor.”25 By 2020 it is expected that NCDs will be the largest cause of death in all regions apart from sub-Saharan Africa.26

Gwatkin et al. conclude that any shift in emphasis by health policies and programmes from communicable to noncommunicable disease “would have important distributional implications” and that a shift of this nature “would work to the detriment of the poor” and work primarily in favour of the rich.27

Sen and Bonita (2000) criticize Gwatkin’s conclusions as undermining the “developing momentum towards addressing the growing epidemic of noncommunicable diseases in less developed countries” with a “flawed interpretation of data of the global burden of disease study.”28 They argue that the focus on the poorest and richest quintiles of the global

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Figure 6: Disease profile projected to 2020

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*CNPM: Communicable diseases, nutrition, perinatal and maternal conditions

population ignores the fact that “most of the remaining 60% live in less well-developed countries [and] the major burden of noncommunicable disease rests in this segment of the world’s population.” In other words, this 60% of the global population contains a significant share of poor people and there is considerable evidence that risk factors for NCDs are concentrated among low-income and disadvantaged groups within the global population. In 1998, of the total global mortality from NCDs, 77% occurred in low and middle income countries, and 85% of the global burden of disease attributed to NCDs was borne by low and middle income countries. Yach et al. (2001) comment that although NCDs are viewed as diseases of wealthy nations, it is the poor in these nations who are most affected. Furthermore, as the epidemiological transition progresses in developing nations, rising numbers of poor people in these nations are expected to be affected by NCDs.

NCD mortality in developing countries is predicted to increase from 47% in 1990 to 69% in 2020. NCDs are now the leading cause of death and disability worldwide, accounting for 60% of all deaths and 43% of the global burden of disease in 1998. Factors driving the increase in chronic disease incidence and disability and death among the poor include social and demographic changes, shifts in patterns of consumption, undernutrition, trauma and the structure and focus of health services. Material deprivation and low levels of education exacerbate the burden of disease.

Age-specific death rates from all causes have a tendency to decline with development, but death rates from communicable diseases tend to decline more rapidly. Combined with demographic change this is a reason why NCDs tend to become the dominant diseases as countries develop. Age-specific mortality rates from NCDs, particularly before age 60, tend to be higher in developing countries than in developed countries. There are some exceptions, as age-specific incidence of type 2 diabetes, obesity and smoking related diseases tend to increase in many populations.

In the Western Pacific Region, the NCD burden is greater than that of communicable disease. For example, NCDs represent 92% of the burden of disease in DALYs in Western Pacific Regional Office-A nations (WPRO-A) and approximately 63% in Western Pacific Regional Office-B nations (WPRO-B) (see Table 2). Further, Western Pacific Regional Office-B nations have more than a quarter of the global total burden of disease in DALYs for malignant neoplasms and musculo-skeletal disorders, and close to a third

<table>
<thead>
<tr>
<th>Cause</th>
<th>WPRO-A (000)</th>
<th>WPRO-B (000)</th>
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</thead>
<tbody>
<tr>
<td>All Communicable Disease</td>
<td>1 064</td>
<td>56 205</td>
</tr>
<tr>
<td>All Noncommunicable Disease</td>
<td>13 720</td>
<td>150 556</td>
</tr>
</tbody>
</table>

of the global total in respiratory disorders. Western Pacific Region-B nations also have a fifth of the global total burden of disease in DALYs for diabetes, neuropsychiatric disorders, sense organ disorders, cardiovascular disease, digestive diseases and diseases of the genitourinary system, congenital abnormalities and oral diseases (see Table 3).

There is significant debate about the extent of NCDs among poor people both globally and in the region. However, the

extent (and increasing proportion\textsuperscript{10}) of NCD burden points to the need for greater priority to NCDs in the Western Pacific, with specific attention to reducing risk-taking behaviour among poor populations. For the poorest nations (particularly in Sub-Saharan Africa, where only 19.4% of the burden of disease is a result of NCDs\textsuperscript{10}), the focus on communicable disease may be an accurate assessment, but the Western Pacific Region has the second highest mortality rate from NCDs globally.\textsuperscript{40} Almost two thirds of the world’s poor live in Asia and the Pacific.\textsuperscript{41} When using a definition of living on less than two dollars per day, it has been estimated that 60% of the population of developing nations in Asia and the Pacific live in poverty.\textsuperscript{42} NCDs are a significant cause of the burden of disease (see Table 2) and mortality among these populations. As many as 76.9% of all deaths (when grouped by broad cause group) in the Western Pacific Region were a result of NCDs.\textsuperscript{41} In the Western Pacific Region, Pacific island countries and territories consistently have the highest rates of death from ischaemic heart disease, cerebrovascular disease and diabetes. These rates are significantly higher than in the Region’s developed countries. As an indication of the rate of increase in NCDs among developing nations in the region, from the period 1967-1969 the incidence of the most common cancers among Fijian men had tripled by 1997.\textsuperscript{44} Therefore, in the Western Pacific region in particular, a focus on NCD interventions for poor people, and developing nations is more justified than the general debate indicates.

\begin{table}[h]
\centering
\begin{tabular}{|l|c|}
\hline
\textbf{Cause} & \textbf{WPRO-B as % of Global Total} \\
\hline
Malignant Neoplasms & 27.70 \\
Other Neoplasms & 14.61 \\
Diabetes Mellitus & 18.02 \\
Nutritional/Endocrine Disorders & 15.91 \\
Neuropsychiatric Disorders & 21.63 \\
Sense Orga Disorders & 20.24 \\
Cardiovascular Diseases & 19.46 \\
Respiratory Diseases & 29.72 \\
Digestive Diseases & 20.36 \\
Diseases of the Genitourinary System & 21.56 \\
Skin Diseases & 6.13 \\
Musculoskeletal Diseases & 27.11 \\
Congenital Abnormalities & 20.19 \\
Oral Diseases & 19.92 \\
\hline
\end{tabular}
\caption{Burden of disease in DALYs: Western Pacific Regional Office-B Nations as a % of global total for each broad cause group}
\end{table}

There is agreement in the literature that the demographic and epidemiological transitions in Asia and the Pacific are shifting the disease burden from communicable towards noncommunicable disease. The aging population in particular has trends away from diseases associated with poor nutrition and infection towards more degenerative diseases.\textsuperscript{6} However, there is a significant difference between the Asia Pacific region and the more classic epidemiological transition that occurred in Western countries where the burden of communicable disease declined and was replaced by a rising burden of noncommunicable disease. By contrast, developing nations in Asia and the Pacific are experiencing a double burden with noncommunicable and communicable diseases now existing simultaneously.

Over time, the overlap is expected to become more like the classic transition with a reduction of communicable disease and an increase of noncommunicable disease.\textsuperscript{4} In the meantime, the double burden of communicable and noncommunicable disease is likely to have the greatest impact on the Western Pacific Region’s poor. In China, the poor have greater mortality not only from communicable diseases, but also from NCDs which cause substantially more deaths (see Figure 7). The poor in China have higher rates of mortality than wealthier groups from both communicable diseases and NCDs, with NCDs causing the absolute greater amount of mortality.

In the Region, there are examples, such as the Pacific island nations, Cambodia and the Lao People’s Democratic Republic (see Figure 8), where communicable disease remains dominant. The phenomenon of overlap between communicable and NCD clearly varies not only

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure7.png}
\caption{Female adult mortality rates by cause of death and average community income, China 1987-1988}
\end{figure}

between regions around the globe, but also between and within countries and regions. For example, all the Pacific island nations record both communicable and noncommunicable diseases as their leading causes of death. Communicable diseases remain major killers in nations such as Papua New Guinea, whereas Nauru has very high rates of diabetes (above 20% of the population) with diabetes, CVD and cancer now the leading causes of mortality. The decline in communicable diseases may stall in some groups within a population, while other groups within the same population may be primarily affected by NCDs.\(^7\)

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**Figure 8: Disease profile by country grouping in the Western Pacific 1995**

- Injury
- NCD
- CNPM\(^*\)

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\(^{*}\)CNPM - Communicable diseases, nutrition, perinatal and maternal conditions
Asia I: Brunei Darussalam, China, China, Hong Kong Special Administrative Region; China, Macao Special Administrative Region, Malaysia, Singapore, Republic of Korea
Asia II: Mongolia, Philippines, Viet Nam
Cam/Lao: Cambodia and Lao People’s Democratic Republic
Aus/NZ: Australia and New Zealand
Japan: Japan
Pacific I: American Samoa, Cook Islands, Fiji, French Polynesia, Guam, Northern Mariana Islands, Nauru, New Caledonia, Niue, Palau, Samoa, Tokelau, Tonga, Tuvalu, Wallis and Futuna
Pacific II: Kiribati, Marshall Islands, Federated States of Micronesia, Papua New Guinea, Solomon Islands and Vanuatu
China: China

Prevention Programmes
The WHO Director General’s report to the 53rd World Health Assembly notes that four of the major NCDs (CVD, diabetes, cancer and COPD) are linked by common preventable risk factors related to lifestyle (e.g., tobacco and alcohol use, unhealthy diet and physical inactivity). Action to prevent these diseases should therefore focus on controlling the risk factors in an integrated manner. Intervention at the level of the family and community is essential for prevention because the causal risk factors are deeply entrenched in the social and cultural framework of society. Addressing the major risk factors should be given the highest priority in the global strategy for prevention and control of noncommunicable diseases. Interventions need to be focused primarily on the risk factors themselves and their environmental, economic, social and behavioural determinants.

The Preventing Chronic Disease report discusses the major burden of disease and mortality from Chronic NCDs among low socioeconomic groups within the Australian population, and notes that special emphasis is required to ensure disadvantaged groups are included in prevention.
and treatment programmes, including targeting the social and life-course determinants of disadvantage. However the proposed measures do not describe specifically how the interventions can be targeted to meet the needs of poor people.\(^9\)

WHO has initiated the CINDI (Countrywide Integrated Noncommunicable Disease Intervention) programme, which has provided successful examples of comprehensive long-term NCD prevention programmes. The approach of the programme has been to address behavioural risk factors “through multi-level prevention strategies, while aiming to control biological risk factors and conditions through early detection and effective management to prevent progression to chronic disease and complications.” These programmes have “achieved a certain level of success in European countries”, but there is a further challenge posed by the “disproportionate impact of the rapid increase of NCDs on poor and disadvantaged populations.”\(^1\)

The lack of a specific pro-poor focus within NCD programmes may undermine their long-term success. Providing health for poor people is not only a matter of providing appropriate services and quality care but is also integrally linked with the provision of an enabling environment for the poor to protect health as an asset for their livelihoods. Health for the poor should be approached from a rights and security perspective which requires strengthening the capacity, skills and knowledge of poor people.\(^3\)

In South Africa, awareness of disease and risk factors (as well as treatment and use of medication) has been found to increase significantly with increased wealth.\(^5\) Dissemination of information on NCD risk factors through the mass media, health campaigns, public information systems and schools can thus be crucial. Effective information, education and communications can facilitate personal behavioural change.\(^4\)

RAND Corporation studies on poverty and health links in developing countries in Asia show that interventions which are focused on individual case management in high level facilities are often too costly to be effective for the majority of the population and have little impact on reducing societal health burdens. However, the wealthy elites often use political leverage to ensure governments allocate resources to expensive medical/surgical treatment of [increasing rates] of NCDs. This disadvantages poorer segments of the population and eats into scarce public health resources.

The implication is that for the good of society as a whole, interventions on NCDs should concentrate on health education, promotion and prevention activities and screening, as well as low cost interventions in order to reduce long-term and high-cost complications. Specific
interventions with efficient cost-effectiveness values include reducing smoking and alcohol consumption (cost per DALY averted $25) and cancer pain palliation (cost per DALY averted $150). As national incomes increase, other programmes such as cancer screening for easily treatable and preventable cancers (cost per DALY averted $50-100), health education on cardiovascular risk factors (cost per DALY averted of $75-$250) and the medical management of diabetes (cost per DALY averted $25-$250) should be prioritized.55

WHO is adopting a broad range approach to NCD prevention and has formulated a global strategy on Diet, Physical Activity and Health. The guiding principles of this strategy are:

• providing stronger evidence for policy (synthesizing existing knowledge, science and interventions on the relationship between diet, physical activity and chronic disease);
• advocacy for policy change (informing decision makers and stakeholders of the problem, determinants, interventions and policy needs);
• stakeholder involvement (agree on the roles of stakeholders in implementing the global strategy); and
• a strategic framework for action (to propose appropriately tailored policies and interventions for countries).56

Education and NCDs

Socioeconomic status, literacy and access to health services have a strong impact on the development of NCD and the delivery of health care.57 The benefits of good educational attainment in childhood are consistent across the life-course (see Figure 10). According to Hayward et al. (2001), populations that undergo a major increase in social capacity (defined as the linkage between individual life-course and institutional conditions favourable to health such as increasing the level of education among a population) are likely to experience a substantial decline in the burden of disease.58

Poor children are at much greater risk of low educational achievement and, hence, poor health in their adult years. For example, children of families experiencing financial difficulties are almost nine times more likely to have no educational qualifications and more than 3.5 times more likely to have a limiting illness (such as diabetes or asthma) than children who grow up in a financially secure environment. In developed nations, it has been shown that material and environmental disadvantage tends to increase over the life-course for poorer, older people. Thus if a person is poor, and suffers ill-health as a child, their chances of ill-health throughout life, and experiencing a health disadvantage as they grow older, are significantly higher than for their wealthy and healthier counterparts.59
Disease in adulthood (e.g., cancer or CVD) is often brought about by a cumulative effect of pathogens, incidents and behaviours which may develop in infancy or in childhood. Studies in the United Kingdom of Great Britain and Northern Ireland have shown that low socioeconomic status throughout the life course is perceived to be a major contributor to the likelihood of the early onset of many types of disease, including NCDs, and reduced chance of survival. Men and women aged between 26 and 54 who have experienced low socioeconomic position in childhood are twice as likely to die as people in the highest socioeconomic brackets. Those whose socioeconomic disadvantage continued into early adulthood are between three and five times more likely to die of diseases such as cancers and circulatory diseases.

Low education reduces the ability of poor people to ask questions or read preventive information. Poor people may be less “acculturated” to using health care due to low levels of education. According to the World Bank, “participatory health education for schoolchildren … is one of the most timely and effective ways of promoting healthier lifestyles and averting the emerging pandemic of noncommunicable diseases among the next generation of the poor” (see Figure 11). Crucially, poverty-related interventions should not only address the specific health needs of the poor; they should also create an environment which addresses the broader determinants of health such as education, opportunities for work and income, adequate food and social and political integration of the poor.
Tobacco Controls

Tobacco taxes can have a significant effect on reducing rates of smoking and providing revenue for other health activities. Studies in a number of countries show that for every 10% increase in tobacco prices via taxation, tobacco consumption declines by 5%-8%, with the most marked impact among poor people.

The short-run price responsiveness of cigarette demand in low- and middle-income countries is twice that of developed nations. It has been estimated that increasing the price of cigarettes by 10% globally through taxation would reduce premature deaths from smoking by 10 million in the current cohort of smokers. Almost 90% of the improved life expectancy would be for people in low and middle income countries.

Young people are particularly responsive to price increases in tobacco, and price increases would reduce the number of young smokers leading to a significant long-term health gain. Studies from the United States of

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**Box 1: Modifying Diets in Chile**

In Chile, prevention interventions have focused on enhancing the capability of women of low socio-economic status to purchase healthy and inexpensive food, instead of cheap but unhealthy alternatives. Classes have been conducted which emphasise such alternatives as home-made granola instead of sugared cornflakes. The classes provide a venue for sharing of ideas and recipes, and information on the comparative nutritional value of low-cost foods.

*Source: Shaw, J., Chronic Disease: The New Face of Poverty in Chile, American Dietetic Association Foundation* http://www.eatright.org/Public/7772_17341.cfm (last accessed 18 August 2005).
America have shown that the price-elasticity of cigarette demand by people at or below the median income was 70% larger than the rates for people with family incomes above median levels.69

Box 2: The North Karelia Project

The North Karelia Project was launched in 1972 to reduce very high levels of Coronary Heart Disease in North Karelia in Finland, a low-income area with scarce medical resources and many socio-economic problems. The original objective was to reduce the incidence of NCDs through programs involving health services, schools, NGOs, innovative media campaigns, local media, food industry, supermarkets, agriculture and other stakeholders.

In North Karelia, the project was extremely successful. Over 25 years, smoking rates among middle-aged men have been reduced by over 20%, vegetable intake has increased markedly and use of butter on bread has been reduced by around 83%. Changes in behaviour have led to a reduction of 17% in the mean serum cholesterol level of the population. Blood pressure levels “have been brought well under control”. The annual mortality rate from CHD in the middle aged male population has been reduced by 73%. Lung cancer mortality has been reduced more than 70%. This has led to greater life expectancy, an increase of approximately 7 years for men and 6 years for women. However, smoking has increased among women.

Over its lifetime, the scope of the North Karelia project was enlarged to include the broader objectives of integrated prevention and control of major NCDs, health promotion and the prevention of risk related lifestyles in childhood and youth. It was also expanded to cover the entire nation.

Success of the North Karelia project has been attributed to a number of factors. It was sustained over the long-term, with strong leadership and “appropriate institutional basis.” At the time of commencement, there was widespread public concern over the scale of the problem of Coronary Heart Disease, so there was existing public support for the project. Theoretical frameworks were carefully developed in consultation with WHO and leading experts, both in terms of underlying risk factors and with social and behavioural frameworks. Community organisation was a key factor. A wide variety of community groups and stakeholders were directly consulted and there was strong involvement from the community itself. The interventions were flexible, based on ongoing monitoring and feedback, and advantage was taken of opportunities as they arose. Multiple strategies were pursued, including innovative media and communications activities, systematic involvement of primary health care (especially from GPs and public health nurses), collaboration with the food industry and policy changes. The project also worked in close collaboration with national health authorities.

Although this approach can be seen as a general intervention to reduce NCDs overall, regardless of income profile, the success of the North Karelia project in a low income region demonstrates that multi-dimensional and multi-level prevention initiatives can be successful in reducing NCD rates in poor areas. However, it has not yet been determined if the approach can be generalised to control NCDs in poor populations in the Western Pacific Region.

Poverty and NCD Risk Factors
There is agreement in the literature that there are relatively few major risk factors for the major NCDs. The literature also agrees that these risk factors can be minimised relatively cheaply through health promotion and other community-based interventions. High levels of risk and lifestyle factors for NCDs have been shown to exist across socioeconomic strata. Many lifestyle factors such as smoking, alcohol dependence, poor diet and exposure to polluted air have been associated with poverty.

In Asia and the Pacific, changing lifestyle patterns, including an increased reliance on imported food rich in fat and sugar, changing physical activity patterns resulting in an increasingly sedentary lifestyle and increasing alcohol and tobacco use, have resulted in the growth of the incidence and prevalence of circulatory disorders, coronary artery disease, stroke, diabetes, dental decay and cancer(s). As a result, chronic NCDs have replaced infections and parasitic disease as the principle cause of morbidity and mortality. In Fiji, for example, NCDs now account for more than 50% of deaths among the entire population. Availability of unhealthy consumer goods is increasing and public sector health services are often already overstretched, which makes expansion of their programmes into specifically pro-poor interventions increasingly difficult.

In Western Pacific Regional Office-A nations, risk factor attributable mortality in 2000 was greater among men than women, however, with some exceptions, in Western Pacific Regional Office-B nations the reverse is generally true (see Table 4). Women in Western Pacific Regional Office-B nations have moderately greater mortality from most NCD risk factors, and significantly greater mortality than men from indoor smoke from solid fuels (2.6 times greater). However, men in Western Pacific Regional Office-B nations have significantly greater mortality than women from exposure to carcinogens.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>WPRO-A</th>
<th>WPRO-B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>Blood pressure</td>
<td>85 000</td>
<td>76 000</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>39 000</td>
<td>39 000</td>
</tr>
<tr>
<td>Overweight</td>
<td>21 000</td>
<td>20 000</td>
</tr>
<tr>
<td>Low fruit and veg intake</td>
<td>26 000</td>
<td>19 000</td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>23 000</td>
<td>19 000</td>
</tr>
<tr>
<td>Tobacco</td>
<td>128 000</td>
<td>49 000</td>
</tr>
<tr>
<td>Alcohol</td>
<td>23 000</td>
<td>-28 000</td>
</tr>
<tr>
<td>Urban air pollution</td>
<td>10 000</td>
<td>8 000</td>
</tr>
<tr>
<td>Indoor smoke from solid fuels</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Carcinogens</td>
<td>4 000</td>
<td>1 000</td>
</tr>
</tbody>
</table>

Poverty and NCD Risk Factors

(2.8% greater), airborne particles (7.6 times greater), alcohol use (7 times greater) and tobacco use (4.8 times greater).

Smoking and Polluted Air

In the Western Pacific Region, the prevalence of smoking among adult men is around 60%, which is the highest of all WHO regions. However, smoking prevalence among Asian women is also rising rapidly. There remains a significant gap in smoking prevalence between men and women in the Western Pacific. Of those age 15 years or older in 1998, 62.3% of men smoked as compared with 5.8% of women. Smoking "is generally more prevalent among lower-income populations.” World Bank studies show that tobacco consumption is most common among the poor within both wealthy and poor nations and is rising rapidly in low-income countries. Analysis of the impact of smoking on men of low socioeconomic status in Poland in 1996 showed that smoking is responsible for two thirds of the excess risk of mortality for men with only primary education. Studies from other countries (Canada, the United Kingdom and the United States of America) indicate that smoking is responsible for approximately half the difference in adult male mortality between those of highest and lowest socioeconomic status.

In China, the 1996 National Prevalence Survey of Smoking Patterns showed that people with no education were 6.9 times more likely to smoke than people with university education. In Japan, men with junior high school education are more than three times as likely to smoke as men with university education. Japanese women with junior high school education are more than five times as likely to smoke as women with a university education. The World Bank notes that, “Smoking prevalence in most developing countries is already highest among the poor; and that if these countries experience a similar pattern to the high income countries, the gap in smoking between rich and poor will widen over time.”

Smoking prevalence is generally higher in rural than in urban areas in the Pacific. In 1995, it was reported that 70% of men age 46-65 smoked in rural Fijian villages compared with the 60% overall smoking rate in the Western Pacific Region cited above. However, young urban women are increasingly taking up smoking. In 1993, in the Lao People’s Democratic Republic, smoking prevalence was three times higher among rural men than urban men and 30 times higher among rural women than urban women. Studies in the United States of America have shown that the gender gap in adult smoking prevalence tends to narrow over time, eventually stabilising at a difference of 5%. Smoking among women in the United States of America is nearly three times higher among women with 9 to 11 years of education than among those with more than 16 years of education. The educational
divide among women who smoke has also been noted in India. Among women in Mumbai, the smoking prevalence among illiterate women is 72%, among those with only primary education 52% and among college graduates 10%. In Bangladesh, more than 50% of men in the poorest income groups smoked in 1997, as opposed to 31.7% in the highest income group. Similarly, 59.5% of Bangladeshi men with no education smoke as opposed to 31.6% among men who had completed secondary education. Smoking cessation rates are higher for women than men, particularly in the Pacific islands. Religious factors and pregnancy influence higher cessation rates among women.

In South Africa, the poor are at high risk of exposure to passive cigarette smoking and smoky fuels, especially in rural areas. There was approximately 15% greater exposure to environmental tobacco smoke in the home for the poorest men as opposed to the wealthiest men, and more than 50% less exposure for men with more than 12 years of education as opposed to those with no education. In contrast, increases in education and wealth in women did not improve their chances of avoiding this risk. Exposure to polluted air climbed with increasing wealth among women, exposure being around 80% higher in the poorest quintile than in the richest quintile, but among men of the highest income quintile the risk of exposure was 25% less than that among the poorest.

Those who cook on stoves using wood or other organic matter fuel, mostly women, inhale the equivalent of two packets of cigarettes per day in toxic chemicals. Cooking smoke is estimated to cause 1.6 million deaths per year, mostly among women and children. In households using traditional stoves, women are up to four times as likely to suffer from a long-term obstructive pulmonary disease such as chronic bronchitis. The risk of exposure was also more than four times greater in rural areas. Mortality among women in Western Pacific Regional Office-B nations attributable to indoor smoke from fuels is more than twice as high as for men.

**High Alcohol Consumption**

Excessive alcohol use has been associated with poverty in numerous studies. This risk factor contributes to high levels of hypertension among poor people and produces a range of physical and psycho-social pathologies as well as injury. In Malaysia, heavy alcohol consumption is reported among rural Indian labourers, particularly those working on rubber and palm oil plantations. The cost of regular heavy drinking also contributes to the exacerbation of poverty.

In China, 26.3% of men with less than six years of education and 1.3% of women with less than six years of education reported drinking more than once a day. By comparison, only 7.4% of men and 0.2% of women...
with more than 13 years of education reported drinking more than once per day.\textsuperscript{95}

In some Asian and Pacific countries, alcohol use is “a masculine activity, and while heavy drinking is tolerated in males, it is usually disapproved in women.”\textsuperscript{96} Anthropological studies have shown a trend among some working women to emulate male drinking patterns, though there is the suggestion that this behaviour is concentrated among women with greater earning capacity.\textsuperscript{97}

In many Asian countries, alcohol advertising is specifically targeted to poorer sections of the community. The “Guinness Stout is Good for You” campaign in Asia during the 1980s appealed to the poorer working class, through the tag line that the drink would “put back what the day takes out.”\textsuperscript{98} The drink also contained a higher alcohol content than beer for the same price. In Malaysia, special offers and redemption schemes entice the poor to purchase more of the product, such as a free promotional plate being offered with a carton of stout. Alcohol companies target poorer ethnic minorities, such as the Indians in Malaysia, by offering special concerts or scholarship programmes for their children.\textsuperscript{99}

High levels of alcohol consumption are strongly associated with difficulties in finding and gaining employment, or acquiring the necessary educational qualifications for employment. Family and social support networks are adversely affected by alcohol dependency. Alienation from these networks can exacerbate existing health problems. High levels of alcohol consumption (and other forms of substance abuse including smoking) can be seen as “a means of coping with social isolation and other effects of poverty.”\textsuperscript{100} Alcohol abuse and dependence can lead to scarce financial resources being diverted from essentials such as food and health care. Children raised in families of low socioeconomic status may be at increased risk of early onset drug and alcohol abuse.\textsuperscript{101}

**Weight and Diet**

Obesity in the Pacific “is a serious epidemic”\textsuperscript{102} which is correlated with diseases such as diabetes and heart disease. Obesity is also increasing in Asian nations. Obesity affects all ages and social classes and in poorer populations it co-exists with under-nutrition.\textsuperscript{103} In some cultures there is resistance to perceiving obesity as a health issue due to the link between beauty, social status and large size.\textsuperscript{104} Higher education and socioeconomic status has been associated with lower risk of obesity (see Figure 12).\textsuperscript{105}

In China, changing patterns of food consumption are leading to a rapid increase in the number of overweight people. According to Barry Popkin,
“what took a century to happen in the West has taken a decade in China.” The increase in people obtaining 30% or more of their energy from fat is higher among lower income groups. Historically, obesity has been associated with wealth. However, while rates of obesity remain generally higher among more wealthy segments of the population, data from China shows that the rate of increase is greatest among the poorest. For example, in 1991, 51.4% of high income earners and 14.3% of those on a low income received 30% or more of their energy intake from fat. By 1997, the rates had increased to 54.6% of high income people (an increase of 3.2%) receiving 30% or more of their energy intake from fat, compared with 21.4% of low income people (an increase of 7.4%). In a six year period, the increase in prevalence of poor people receiving 30% or more of their energy intake from fat was more than double the increase of those on a high income.

Undernutrition is a double burden for poor people, as the poorest groups in society have high rates of both undernutrition and obesity. In Asian countries, between 3% and 15% of households have both an overweight and underweight person, usually an underweight child and an overweight adult. These households are most often among the urban poor.

Obesity is traditionally associated more with urban than rural areas. This distribution is observed in both Asia and the Pacific, where obesity and consumption of imported foods seems to be “an urban phenomenon.” Obesity also appears to be correlated with ethnicity. “Populations differ in the level of risk associated with a particular waist circumference.” South Asians, for example, have high levels of abdominal obesity although they may not be considered obese by conventional BMI criteria. While Asian populations may be predisposed to abdominal obesity, Pacific Islander populations have lower levels of body fat than Europeans for the same BMI. The cause of these correlations between ethnicity and obesity may be genetic factors, diet, lifestyle, acculturation and body image. Increasing obesity rates in the region is expected to increase a number of obesity related NCDs, including CVD, cancer and Type 2 Diabetes.
In the last fifty years, fat consumption has dramatically increased in many parts of Asia and the Pacific. With the trend of supplementing traditional foods with foreign foods that is associated with increased urbanisation, cooking methods have changed from “fat-free to fat assisted”. Imported and store-bought foods are convenient and low in cost. Cheap, high-fat foreign food is readily available in stores and is a major dietary component of the poor. For example, in Hong Kong SAR, 50% of Chinese with higher education reported buying western hot dogs at least once compared with 39% of those with lower education. However, 22% of people with lower education reported consuming hot dogs three to four times per week, while people with higher education usually only ate them once or twice a month. Imported foods are often consumed in addition to, and not instead of, local foods. According to Hughes, most Pacific people prefer locally produced food. However, social and economic barriers to access, especially among poorer people, force reliance on nutritionally inferior foreign foods. In Vanuatu, rural populations consume more calories, but they have a lower incidence of obesity. The proportion of total fat consumed from imported foods was 44.8% for urban populations, compared with 8.4% for rural populations. People are 2.2 times more likely to be obese and 2.4 times more likely to be diabetic if they consumed fat from imported foods rather than from traditional sources.

Poorer people are often constrained in their food choices, because high-fat, low fibre foods are usually cheaper. As a result, people from low income groups are less likely to consume the healthy diets recommended by nutritionists. For example, a British National Food Survey shows that the diets of those from lower socioeconomic groups consisted primarily of “cheap energy” from meat products, full cream milks, fats, sugars, preserves, potatoes and cereals. This type of diet contained less essential nutrients than the diets of those from upper socioeconomic groups.

In Australian studies, children with low socioeconomic status have been found to have approximately 20% higher skin-fold thickness than children from higher socioeconomic groups. Children with fathers having completed tertiary education also have a body mass index (BMI) of 16.6 compared with a BMI of 17.4 for those whose fathers had only primary education. Children whose mothers had only primary level education recorded higher diastolic and systolic blood pressure than children whose mother’s had university level education, and the level of mothers’ education had the greatest impact on the likelihood of children having risk factors for heart disease. The proportion of overweight children has been found to be 19.0% among households with low socioeconomic status, compared with 16.8% among households from other groups. Similarly, the proportion of obesity among children is 8.9% among households with low socioeconomic status, compared with 5.8% among households with higher socioeconomic status. Working-age adults
with only primary education were around twice as likely as working-age adults with tertiary education to be obese. This relationship also holds for income. Adults on a weekly income of more than $1500 were 30-40% less likely to be obese than people on a weekly income of $0-$199.¹²³

In developing nations, recent studies have shown that the probability of obesity for groups of low socioeconomic status exceeds the probability of obesity in groups of higher economic status once a nation’s per-capita income reaches US$ 2500. This study shows that obesity can no longer be considered solely a disease of higher SES groups in developing nations and that as Gross National Product (GNP) increases the burden of obesity tends to shift to groups of lower SES. The shift towards obesity among the poor appears to occur earlier among women than among men.¹²⁴

**Physical Activity**

There is some general information regarding overall levels of physical fitness in China¹²⁵ but information on this topic in the Western Pacific Region for poor populations is hard to find.

People living in poor, unsafe neighbourhoods who work long hours often find it extremely difficult to increase their levels of physical activity.¹²⁶ “The aggressive and insecure environment that often characterises life in peri-urban areas prevents the poor population from engaging in systematic physical exercise [and people living in those areas] usually receive less information on the health and quality of life benefits of exercise.”¹²⁷

Reduced physical activity and habitual inactivity accompany nutritional transition in people of all ages. Furthermore, modernization and industrialization lead to reduced physical activity in the work place and at home for both men and women. In the United States of America, less than 20% of adults now engage in regular exercise (see Figure 13). This trend is due to the shift from agriculture and manual labour to service industries and manufacturing and “office based” physically sedentary work. In developing nations, the reduction of physical activity occurs most prominently in areas where urbanization has been rapid.¹²⁸
In the United Kingdom, 60.9% of people with an annual income of below £33,480 were likely to be classified as sedentary as opposed to 39.5% of people with higher income. It is worth noting that while there is no standardized definition of poverty in the United Kingdom, the national income poverty line is most commonly considered to be household income of £6000 annually, approximately 60% of median income. Therefore, these levels of sedentary lifestyle by income relate not only to people in poverty, but also to those with a much higher income. People in the highest income bracket are much less likely to be sedentary. The findings were also related to education with 55% of people above certificate for higher secondary education (GCSE) level education sedentary, as opposed to 70% of people without GCSE level education. Sedentary lifestyles are also more prevalent with increasing age.
Selected NCDs in Poor Populations
With a higher incidence of risk factors, the poor are also more likely to develop noncommunicable diseases. The following illustrates this for a selection of NCDs.

**Cardiovascular Disease and Hypertension**

In the United States of America, minority groups in poor neighbourhoods have significantly higher rates of mortality from CVD. CVD mortality rates for people earning more than $50,000 per year are less than one third of those in the lowest income groups. Similarly, CVD mortality rates among those with the lowest educational attainment are three times higher than rates among those with the highest educational attainment. In Canada, poverty contributes 3% to variation in mortality from cardiovascular disease and additional community characteristics such as high population density, immigrant and minority population status add a further 5%.

Two thirds of CVD-related deaths globally occur in developing nations. Almost half of these deaths in developing countries in 1990 occurred among those below the age of 70 years, compared with just 22.8% of CVD deaths among those below that age in high-income industrial countries. For example, in Tatarstan (a republic of the Russian Federation), CVD mortality rates increased by more than 70% among men aged 35-39 between 1984 and 2002. Projections for developing nations expect an increase in ischemic heart disease mortality of 120% for women and 137% for men between 1990 and 2020, while in developed nations the increase is expected to be between 30% and 60%.

In Singapore, the share of CVD as a cause of death has increased from 8.2% to 37.8% and in Fiji, it increased from 20.6% in 1970 to 36% in 1988. However, in the Republic of Korea, CVD declined by 0.9% between 1987 and 1996. Studies from China, India and Malaysia indicate that higher levels of education reduce the risk of developing NCDs. Benefits of higher education include reduced rates of smoking, healthier diets and healthier diets among children.

Studies in African developing nations (Cameroon, Dar es Salaam and the United Republic of Tanzania) show elevated levels of high blood pressure among those living in urban as opposed to rural areas. Studies have shown similar results in the South-East Asia Region. Illiterate people in urban areas of Cameroon had a mean systolic blood pressure of 121 as opposed to 110 for university educated people. In the United States of America, a study of an urban and low income population showed that hypertension is related to age, education, income, race and church attendance. Adherence with medication treatment regimes for hypertension over 12 months is approximately 20% higher in skilled compared with
unskilled workers. In Japan, manual workers have 71% higher rates of hypertension than higher level professionals, and men with junior high school education have 68% higher rates of hypertension than men with a university education.

Studies in Australia show that adults of low socioeconomic status have higher mortality rates from cardiovascular disease, higher rates of suspected heart attack, higher mortality from strokes and are more likely to have high blood pressure. For example, in 1983, the proportion of hypertensive men in manual occupations was 25%, as opposed to 15.6% for men in professional occupations. Men in manual occupations were at least 35% more likely to die from coronary heart disease and 60% more likely to die from strokes than men in professional occupations.

Diabetes

Studies in the United States of America have shown a link between poverty and diabetes. In 2003, prevalence of diabetes in the Hispanic population of Los Angeles was highest (17.2%) for those with annual incomes below the federally defined poverty line. This prevalence was higher than that for those from all socioeconomic groups who reported obesity (15.5%). The precise cause for this correlation was unclear, but it was presumed that living below the poverty line indicated greater risk of diabetes, or that a diagnosis of diabetes caused a decline in income.

Risk of diabetes also increases with age, especially for people over age 40. Studies from Trinidad and Tobago show that diabetes is associated with indicators of low socioeconomic status and especially affects elderly people and women. Globally, there are more women than men with diabetes, particularly in developed countries. In the United States of America, women account for approximately 52% of all persons over age 20 with diabetes. In 2002, the socioeconomic status of women with diabetes was shown to be markedly lower than that of women without diabetes. Women with diabetes were more likely than women without diabetes to be more than 45 years old, non-white, divorced, separated or widowed, living alone, retired or unable to work. Women with diabetes are also more likely to have lower levels of education and twice as likely to have an annual household income under $25,000. Higher levels of education equate to better decision-making, and higher levels of income improve access to health care and better living standards, both of which translate into health benefits. Low socioeconomic status compromise the ability of women to benefit from treatments that reduce complications and risk of death.
Comparisons between developing and developed nations show that in developing countries more deaths from diabetes occur between the ages of 20 and 64. Poverty reduces the likelihood of diabetes being prevented and/or diagnosed at an early stage. It also decreases access to adequate care and the probability of complications being diagnosed and treated effectively. The inability to afford health care, or lack of effective care can contribute substantially to the onset of complications.

In the Polynesian Region, women have a higher prevalence of non-insulin dependent diabetes than men. For example in Tokelau in 1982, 14.2% of women had non-insulin dependent diabetes mellitus compared with 6.97% of men. Other developing countries also show a higher risk for non-insulin dependent diabetes mellitus among women compared with men. This is attributed primarily to gender-based differences in the lifestyles of men and women. In Polynesia, women’s activities, for example, are typically more restricted and sedentary, resulting in higher risk of obesity.

The erosion of traditional lifestyles in Asia and the Pacific increases the likelihood of people in the region developing the disease. Diabetes declined in Singapore between 1987 and 1996, but more than doubled in the Republic of Korea and, in Fiji, increased from 3.4% in 1970 to 5.5% in 1985. In Japan, manual workers are more than twice as likely as high-level non-manual workers to be diabetic. This correlation is even more marked when levels of education are compared: men with junior high school education are more than three times as likely as university educated men to be diabetic.

Cancers

Cancer is one of the three leading causes of death in 26 of the 37 countries in the Western Pacific Region. Cancer has been increasing as a cause of death in the region since the 1960s (see Figure 14).

In the United States of America, groups who are under-served by health services are more vulnerable to mortality from various forms of cancers. Survival rates, if not rates of the disease itself, are often much lower among poor and minority
groups. These findings are explained by such factors as low rates of health insurance among the poor, limited access to high quality care, geographical and/or cultural isolation, limited education and linguistic differences limiting the ability to read and/or understand preventive information.\textsuperscript{13} The director of the United States of America National Cancer Institute (NCI) declared in 1991, “poverty is a carcinogen.” The total cancer incidence attributable to poverty among the white American population in the United States of America (as measured in terms of a family income of less than $15,000) is 16.5%.\textsuperscript{19}

In Australia, analyses of tracheal, bronchus and lung cancers show that manual labourers have almost twice the mortality rate of professionals.\textsuperscript{160} After taking into account age differences, professionals have 5% lower, and tradesmen and labourers 19% higher, than average rates of mortality from respiratory cancer.\textsuperscript{161}

As rates of tobacco smoking increase in developing nations in the Region, there is potential for dramatic increases in smoking-related cancer. Projections suggest that 70% of the estimated 10 million smoking-attributable deaths expected in 2030 will take place in low-income nations.\textsuperscript{162}

Poverty can reduce the probability of early diagnosis of cancer. In developed nations, 80% of patients with breast, cervix or mouth cancer are diagnosed at an early stage compared to only 20% in developing nations. As a result, most cancer patients in developing nations come to seek care only when they are already incurable. This tendency is due to factors such as inability to afford primary care, low levels of education reducing awareness of symptoms, poor access to health services and inappropriate balance between primary and prevention and acute treatment services.\textsuperscript{163}

**Respiratory Diseases and COPD**

The burden of COPD in the Western Pacific Region is three times higher than the global average. Lung disorders have been linked with low socioeconomic status in numerous studies. COPD accounted for 12% of total deaths in the Western Pacific Region in 1998. Most of these deaths occurred in rural areas with poor living conditions and inadequate health services.\textsuperscript{164}

Studies on COPD by the US Centers for Disease Control and Prevention show that adults living below the poverty line are about 75% more likely to report COPD than those with incomes 200% or more above the national poverty line. While women were 60% more likely to self-report COPD, when obstructive lung disease is objectively measured by lung capacity, men have higher prevalence.\textsuperscript{165} Australian studies show that working-age men of low socioeconomic status have 203% higher death
rates from bronchitis, emphysema and asthma than working-age men in the higher income quintile. In other words, working-age men in Australia in the lowest income prestige group are 2.03 times as likely to die from these conditions as men in the highest occupational prestige group.
Seeking Treatment and Treatment Programmes
The World Bank notes that “it is the world’s poor who are most adversely affected (by NCDs and injuries) since they have less access to quality curative health services.” According to the World Bank, 900 million of the world’s 1.3 billion poor have no access to basic health care.  

In Australian studies from the early 1990s, low-income groups were found to be more likely to visit a hospital once sick (71% more likely for low-income men), but those from low-income groups were 10% less likely than others to use preventive services. Poor people in rural areas were also less likely to have regular visits to a doctor or use preventive services. Lower use of primary services can reduce access to advice on smoking cessation or cancer screening.

The failure of health services to reach the poor in both developed and developing countries is not only because the more affluent are able to use their higher incomes to purchase medical care, but also due to regressive benefit reflected in a lower share of government health care subsidies for the poor. In Viet Nam, 29% of government subsidies for health services overall went to the richest quintile of the population and only 12% reached the poorest quintile. The difference was most marked in hospital care, where 39% of the government funding went to the richest population quintile and only 9% to the poorest quintile.

Public health care spending can disproportionately benefit richer groups because health systems are often designed to serve the needs of the
wealthy rather than the poor. Health services themselves are often located in more affluent areas. Since services are usually scarcer in areas where poor people live, the poor may be forced to travel relatively long distances in order to obtain care. Poor roads and high transport costs make this expensive, time-consuming and difficult. Particularly for people living in rural areas, difficulties in accessing health services are a cause of stress due to the lack of local facilities. In Indonesia, the poor must travel 50% further than the non-poor to obtain access to a modern medical care provider. Health “visitors” (health professionals who volunteer to service areas with low availability of health services) devote a large proportion of their time to poorer patients, but are still unable to compensate for the large differences in demand between poor and non-poor patient caseloads.

Reaching the extremely poor may require a disproportionately high level of resources. This is a key resource mobilization and allocation challenge, which is difficult to resolve in the absence of adequate resources and competing demands.

The traditional focus on acute treatment for NCD conditions is a reactive response and is ineffective in minimising the growth of NCD conditions, particularly for the poor who are often unable to afford or obtain preventative medical care and have limited ability to afford acute care at later stages of disease progression (see below). The Innovative Care for Chronic Conditions (ICCC) framework demonstrates a multi-faceted, multi-level approach to improving outcomes for people with chronic conditions and provides a focus on prevention as well as treatment. The ICCC aims to improve health care at the macro, policy level, the meso level of the health care organisation and the community, and the micro level of patient interaction.

The Emphasis on Personal Responsibility for Health

Studies of heart disease in Canada show that the disadvantaged are often blamed for smoking, physical inactivity or poor diet as contributing to their morbidities. However, this attitude does not adequately recognize that income differences can contribute to cardiovascular disease independently of risk behaviours. Unhealthy lifestyle choices related to NCDs such as smoking and high alcohol consumption are often a response and/or a coping mechanism for the stresses and challenges poor people face in their everyday lives. There may also be structural reasons for poor people being at greater risk for NCDs. For example, in Australia, people of the lowest socioeconomic status have 2.5 times the exposure to fast food restaurants than their wealthiest counterparts. In Melbourne, in the lowest income area, there was one fast food outlet per 5641 people, as opposed to one per 14 256 people in the highest income area.
Similarly, the argument that “because of externalities, the control of communicable diseases is a public good, but treatment of noncommunicable diseases and injury is mostly private” also warrants rebuttal.181 From an equity perspective, the attitude that treatment for NCDs is a private responsibility places an unfair burden on those poor people with NCDs.182 From an economic perspective, primary and secondary prevention of NCDs costs less than acute treatments, and healthy populations (made up of healthy individuals) are generally more economically productive than comparable unhealthy populations.

**The Cost of Care**

Affordable health protection services, curative services and innovative health insurance programmes for poor men and women are vital to improving access to care for people living in poverty.183 However, for many poor people, the cost of health care is prohibitive. Poor people, due to their inability to afford care, may delay seeking care until their illness becomes more severe or chronic or terminal. In Viet Nam, annual medication for asthma represents almost two months income for nurses. Those in more socioeconomically disadvantaged groups are forced to either spend significantly higher proportions of income on medicine or to forego care entirely, leading to greater burden of disease and mortality.184

Poor people are thus significantly more likely than wealthy people to have unmet health care needs (see Figure 16). The poor may also be forced to take out loans, sell assets and/or go into debt in order to meet service fees or “indirect costs” related to service. Consequently, people may be forced into poverty or go deeper into poverty as a result of

![Figure 16: Unmet need for health care by income, United States of America 1994-1995](source: Pamuk, E. et al. Socioeconomic status and health chartbook; Hyattsville, National Centre for Health Statistics, 1998.)
becoming ill. Studies of the effects of health care costs in rural areas in China have shown that the average cost of a one-time hospital visit can be well over the annual income of a poor peasant, that other health care expenses consumed 10%-15% of household income and that 80% of poor people needing hospitalisation did not obtain it because of the expense.

Studies from Latin America show that potentially effective interventions for existing NCDs are not producing adequate results, due to the high cost of care. For example effective anti-hypertensive treatments, which can cost US$ 100 per month, are out of reach for people on an average monthly income in the range of US$ 50-200. More than half of Jamaicans with cancer and diabetes became medically indigent given the high proportion of costs that required direct payment from patients. Up to 50% forego treatment due to the inability to pay. This study also showed that 70% of care foregone was because of inability to afford treatment and medication. Poor people often lack health insurance, which dramatically reduces their ability to afford care, particularly high cost treatments for NCDs. In the United States of America, health insurance coverage is significantly greater among the wealthiest income quintile than among the poorest (see Figure 17).

In Viet Nam, approximately 70% of those in the poorest income quintile self-medicate as opposed to 55% in the wealthiest quintile (see Figure 18). Those in the poorest quintile bypass professional diagnosis and treatment in favour of self-diagnosis and treatment. This may have an impact on the use of preventive services and accurate diagnosis and treatment. Data from Indonesia (and there are similar patterns in studies from Viet Nam) shows that the poorest income group make 0.14 health care visits per month, compared with 0.31 visits per month.
by the richest group. It has been estimated that only 2% of people with disabilities in developing countries have access to rehabilitation and appropriate basic services.

When poor people delay diagnosis or seeking treatment of a condition such as cancer, they may find it impossible to obtain health insurance because people with high medical care costs may be denied coverage directly or effectively by being charged premiums which are equal to the actual cost of care and administrative costs. These charges “may be prohibitively expensive, leaving these individuals effectively uninsured.”

Poverty and Inferior Treatment Services

Poor patients, in both developed and developing countries generally receive poorer quality care. Studies from the United States of America on the relationship between poverty and breast cancer show that women receiving Medicaid assistance, which is available only to people living below the poverty line, are 41% more likely to be diagnosed with late-stage breast cancer, 44% less likely to receive radiation after breast-conserving surgery, and more than three times more likely to die than women not insured by Medicaid (i.e., those over the poverty line).

Similarly, studies in the United Kingdom show that people in the lowest socioeconomic groups have about three week longer waiting times for cardiac surgery than those in the highest socioeconomic groups. Disadvantaged patients are also about half as likely to have their surgery classified as urgent. Despite poor patients being more likely to develop cardiovascular disease (see chapter Poverty and NCD Risk Factors), they are less likely to be investigated or offered surgery once it has developed.

In Scotland, socioeconomically disadvantaged patients were found to be 44% more likely to develop heart failure, but 23% less likely to see their general practitioner on an ongoing basis than the most affluent group.

In a study of health among poor people in Yemen, half of the focus groups reported discrimination by health care workers according to ability to pay for services and social status.

Language difficulties can also create barriers for people from different ethnic groups, and people may also be subjected to institutionalised racism, which can lead to limited access to information and services.
may affect people’s access to preventive and treatment services. For example, a study from the United Kingdom showed that 46% of white patients visiting their doctor for routine examinations received mammography as opposed to only 20% of other ethnic groups. Vietnamese and Chinese patients in the study were half as likely as Caucasian patients to have regular blood pressure checks.

Doctors and health service providers often tend to be less effective at communicating with people with low levels of education. A study of diabetes care and treatment in the United States of America showed less effective dissemination on symptoms, test results, treatments and prognosis to people of poor education. Furthermore, health service providers are more likely to adopt a “directive approach” with less educated patients, who are therefore less likely to have their expectations met. This factor has been shown to influence poor outcomes from diabetes among people with low levels of education.

Demands for unofficial “fees” or “gifts” in return for ordinary services from health staff are commonly reported experiences by poor people seeking care. Explicit co-payment systems can reduce “under the table” patient payments while increasing the transparency of the system can address indirect costs. NGOs are often appreciated where they exist, but poor people may not always perceive NGOs as empowering or accountable to them. As a result, poor people may primarily rely on their own informal networks of family, kin and friends for financial support.

Changes in the timing and staffing of services, including training or employing staff with language and cultural-anthropological skills, can enable them to fit in with culturally acceptable practices and overcome communication barriers.

**Box 3: NCD Management in Resource Poor Areas of South Africa**

In South Africa, an NCD disease management program designed for resource-poor areas focused on enabling nurses to provisionally diagnose patients with NCDs, decide on the initial management, to alter treatment in non-complex cases and to identify patients requiring referral to hospital. Each patient was seen by a doctor at a primary care clinic for confirmation of diagnosis and detection of complications. Treatment focused on the use of essential drugs, health education on the importance of long term management of the condition, simplifying the treatment and involving the patient in agreeing to an acceptable drug regimen. A hospital clinic, mobile clinics and village clinics were utilised as the base contact point for people seeking treatment. A focus on providing management in local clinics was of particular benefit to the rural poor. Adherence of patients to treatment regimes increased by almost 10% over a two year period. Control of Hypertension, NIDDM and Asthma was achieved in between 80 and 95% of cases.

The Cycle of Poverty and Ill-health
In the case of both communicable and NCDs poverty and ill-health form a vicious cycle. Poverty leads to ill-health which in turn creates greater poverty. By mutually reinforcing each other, poverty and disability can lead to increased vulnerability and exclusion (see Figure 19).

High levels of expenditure on health can have major impacts on households. The coping mechanisms of poor households faced with increasing health costs are varied. They may divert expenditure away from other vital areas such as food and education, which in turn reduces the level of the health of a population. Families may go without adequate food when money is required to buy medicine or obtain treatment. Increased household borrowing and higher debt shift spending from expenses such as education and cause delay, reduction or avoidance in seeking health care. In addition, “distress sales” are made to meet the costs of health care. In some rural areas of Viet Nam, families sell their buffalo to meet health costs. Sales such as this have a major negative impact of future livelihoods and earning capacity.

The poor often dread sickness the most, as it can result in loss of income and increased debt. Sickness of primary income earners may be especially difficult for poor people. Food and income ceases, and payment for treatment brings further impoverishment. This downward spiral of poverty and ill-health results in malnutrition from scarce food and children being withdrawn from school and sent to work. Surveys of poor
people have shown that illness ranks highly as a cause of destitution, being the most frequently mentioned of 15 causes of a downward slide into poverty. Ill-health was mentioned even more frequently than loss of employment as a cause of poverty.\textsuperscript{210}

There are also indications that the increasing reliance by Western Pacific Region nations on user fees and out-of-pocket payments for health care may increase poverty and decrease the equitable distribution of health care, especially if national health funding is reduced. Although health insurance can provide some protection for the poor in terms of their ability to meet health costs, this protection is “sometimes marginal and rarely more than modest,”\textsuperscript{211} since families must still pay the insurance premiums as well as co-payments for services covered and full payments for services not covered.\textsuperscript{212}
NCD Outcomes for the Poor
At 85% and 81% of total deaths in Western Pacific Regional Office-A and Western Pacific Regional Office-B nations respectively, NCD mortality is substantially higher than that from communicable diseases (see Table 5). The primary causes of death are cardiovascular diseases, malignant neoplasms and respiratory diseases. There are more deaths from cardiovascular diseases and malignant neoplasms in Western Pacific Regional Office-B nations than from all communicable diseases combined. In 1999, were 15 000 new cases of AIDS were reported in Western Pacific Regional Office nations and an estimated 900 000 people infected with HIV. In contrast, CVD alone causes no less than 3 million deaths in the region annually.

In low- and middle-income countries, NCDs are the largest cause of death (see Table 6).

There is some evidence that poor people have significantly worse outcomes from NCDs than their richer counterparts, both in terms of mortality and morbidity. Australian studies demonstrate that “the impact of chronic illness morbidity falls disproportionately on those of lower socioeconomic status.” Both reporting of disease and disease severity are greater for those from lower socioeconomic groups. The greater morbidity and mortality from NCDs among those of low socioeconomic status are believed to be due to the progression and accumulation of disadvantage and risk factors over the life-course.

Table 5: Mortality from communicable diseases, NCDs and key NCD groups in the Western Pacific Region in 2002, comparisons between Western Pacific Regional Office-A and Western Pacific Regional Office-B nations

<table>
<thead>
<tr>
<th>Mortality from Disease</th>
<th>WPRO-A</th>
<th>WPRO-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicable disease</td>
<td>136 000</td>
<td>1 565 000</td>
</tr>
<tr>
<td>Noncommunicable Disease</td>
<td>924 000</td>
<td>8 076 000</td>
</tr>
<tr>
<td>Malignant Neoplasms</td>
<td>354 000</td>
<td>1 961 000</td>
</tr>
<tr>
<td>Other Neoplasms</td>
<td>10 000</td>
<td>18 000</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>17 000</td>
<td>174 000</td>
</tr>
<tr>
<td>Nutritional/Endocrine disorders</td>
<td>9 000</td>
<td>43 000</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>369 000</td>
<td>3 448 000</td>
</tr>
<tr>
<td>Respiratory Diseases</td>
<td>59 000</td>
<td>1 550 000</td>
</tr>
<tr>
<td>Digestive Diseases</td>
<td>44 000</td>
<td>435 000</td>
</tr>
<tr>
<td>Diseases of the genitourinary system</td>
<td>27 000</td>
<td>175 000</td>
</tr>
<tr>
<td>Skin Diseases</td>
<td>1 000</td>
<td>3 000</td>
</tr>
<tr>
<td>Musculoskeletal diseases</td>
<td>6 000</td>
<td>20 000</td>
</tr>
<tr>
<td>Congenital Abnormalities</td>
<td>4 000</td>
<td>104 000</td>
</tr>
</tbody>
</table>

Table 6: Causes of Death in Low and Middle Income Countries, 1998

<table>
<thead>
<tr>
<th>Cause</th>
<th>Number of deaths (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
</tr>
<tr>
<td>Communicable diseases, maternal and perinatal conditions and nutritional deficiencies</td>
<td>8.0</td>
</tr>
<tr>
<td>Noncommunicable diseases</td>
<td>12.9</td>
</tr>
<tr>
<td>Injuries</td>
<td>3.5</td>
</tr>
</tbody>
</table>

People from low socioeconomic groups in Australia were found to be significantly more likely than their richer counterparts to die from respiratory illness, lung cancer, ischaemic heart disease and diabetes. Specifically, compared to the highest income group, men from low-income groups were 55% more likely to die from lung cancer, 102% more likely to die from cerebrovascular disease and 74% more likely to die from diabetes. Women from low-income groups were 211% more likely to die from diabetes and 53% more likely to die from lung cancer. Men from low income groups were 54% and women 124% more likely to die from ischaemic heart disease.

The Australian Burden of Disease and Injury study found that “the excess mortality burden associated with socioeconomic disadvantage is particularly high for diabetes, chronic respiratory diseases, [injuries] and acute respiratory conditions (in males).” Death rates from heart disease are nearly twice as high in people living in the most disadvantaged areas of Australia as compared with those who live in areas of least disadvantage. Between 1985 and 1995, the differential in death rates between most well-off and most disadvantaged areas increased for respiratory system diseases, circulatory system diseases and lung cancer. In Australia, coronary heart disease in 1996 was 30% higher for men and 21% higher for women who live outside capital cities. This gap had widened significantly since 1986. Indigenous people in Australia are particularly vulnerable to CVD, diabetes and end-stage renal disease, with rates very significantly higher than averages for the population.

Later diagnosis and/or poor diagnosis means chronic conditions and complications are more likely to develop. For example, greater rates of deaths from cancer among poor peoples and minority groups in the United States of America can at least partially be explained by late diagnosis and poor access to health care. Lack of treatment/medicine means that the poor are more likely to die from, or suffer, long-term from chronic illness.

Studies in the United States of America have found that:

- Heart disease mortality is 2.5 to 3 times greater among people on annual incomes of less than $10 000 compared with those on an income of more than $15 000.
- Men age 25-64 on an income of $10 000 or less per year suffer a mortality rate from lung cancer 2.4 greater than those on an income of more than $25 000.
- Women on a family income of less than $15 000 suffer a 40%-60% greater mortality rate from lung cancer than those earning more than $15 000.
- Women on an income of less than $10 000 annually are three times more likely to die from diabetes than women with an
income of more than $25 000.

- For men the lowest income group was 2.6 times more likely to die from diabetes than the highest income group.\textsuperscript{24}

In the words of Ghaffar, et al., “as the rich are likely to recognize their risk earlier and seek medical attention, they will develop chronic but manageable disease; as the poor are likely to be less aware of their risk and less able to access medical care, they will develop rapidly progressive disease with early and sudden fatal outcomes.”\textsuperscript{23} In summary, the poor tend to be more disadvantaged, carry a heavier burden and have greater barriers and poorer outcomes than those who are more advantaged. Table 7 summarizes this progression among the poor.

### Table 7: Progression of NCDs: stages, barriers and outcomes for poor people

<table>
<thead>
<tr>
<th>Stage</th>
<th>Progression of NCD</th>
<th>Barrier for Poor People</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>Low education, low access to health care and therefore less ability to be informed of preventive information</td>
<td>Increased likelihood of risk taking activity</td>
<td></td>
</tr>
<tr>
<td>Risk</td>
<td>Greater risk taking activity, e.g., higher smoking rates, greater consumption of alcohol, unhealthy diet</td>
<td>Increased likelihood of developing NCD</td>
<td></td>
</tr>
<tr>
<td>Develop NCD</td>
<td>Greater likelihood of developing disease</td>
<td>Pain and suffering, reduced income</td>
<td></td>
</tr>
<tr>
<td>Seek Health Care</td>
<td>Delayed care seeking due to inability to afford treatment, geographical barriers, inability to recognise symptoms</td>
<td>Diagnosis comes when disease is incurable</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>High cost medicines, high cost tertiary care, discrimination, poor quality of care</td>
<td>Inadequate treatment, income diverted to treatment, food supply reduced, education reduced, other family members become ill</td>
<td></td>
</tr>
<tr>
<td>Final Outcome</td>
<td>Early mortality or chronic illness affecting livelihood</td>
<td>Loss of wage earner, productive years reduced, increased pain and suffering</td>
<td></td>
</tr>
</tbody>
</table>

Table developed by the author as a summary of the findings from the literature.
Justifying a Focus on the Poor
Efficiency

It has been argued in relation to communicable diseases that “It is not possible to make an impact on the health status of the population… without addressing the areas and the populace where most of the disease burden exists. Also, addressing the major causes of morbidity and mortality among the poor… is the most cost effective solution giving the maximum and the most rapid return on health investments.” This argument also holds true for addressing NCDs.

Since the poor face a higher NCD burden than the rich and more severe barriers to access, the success of NCD-control programmes may be jeopardized if the situation of the poor and their needs are not taken into account. Moreover, NCD programmes that are better tailored to the needs of the poor are more likely to be successful for NCD control than those that are “neutral” or focus on the better off.

In the Organization for Economic Co-operation and Development (OECD) nations people of lower SES often use health services more than the wealthy, particularly acute care facilities when disease conditions have progressed. In developing countries the inability and/or failure of health services to reach the poor is the major cause of inequalities in health outcomes. Thus, improvements in health outcomes for people in poverty in developing nations is a matter of improving access to health knowledge and services.

Specifically targeting interventions to the poor improves the health of the whole population, due to high disease burden and mortality among these groups. It can also constitute more efficient use of limited available resources and result in a greater health impact for the same expenditure. Studies of pro-poor targeted programmes relating to provision of health care clinics and food subsidies in Latin America show that the share of programme benefits accruing to the lowest two income groups range from 59%-83%. An initiative in Lodz, Poland designed to improve primary health care for homeless men presenting at shelters, typically with conditions including alcoholism, coronary disease and high blood pressure, provided considerable savings in terms of avoiding hospital admissions. This initiative was shown to not only improve the health of the homeless directly, but also improve general public health “reducing one of the factors that make people poor.”

From an economic development perspective, improving the health status of the poor increases their productivity and income thereby benefiting all society. Assets which would be diverted by the poor to medical care can be saved and invested in the welfare of the household. The human and social capital of the nation can be increased by preventing NCDs and expenditure on prevention will
off-set the alternative need for treatment in the acute care and hospital sector.

**Equity**

As discussed above, there is evidence of significant poor-rich gaps in NCD risk, prevalence and outcomes. Age-specific death rates for almost all causes, whether communicable or noncommunicable diseases, are higher for the poor than for the rich. The rich-poor differences in NCD risk, prevalence and outcomes may be due to structural factors more than to personal decisions, and are thus unfair. Equity requires that NCD policies should address this poor-rich gap and be tailored to the needs of the poor as well as the non-poor.

In the case of developing countries it has been argued that the causes of health inequalities are different from those of developed countries. In high income countries, where there is commonly universal access to health care, inequalities tend to be directly related to income and other socioeconomic factors. In developing countries, improved health among the wealthier groups, particularly in urban areas, tends to be related to better access for these groups to improved health care knowledge and services rather than income level per se.

Out-of-pocket payments account for more than a third of total health expenditure in most developing countries in the region. Low income families spend a higher percentage of their income on health than richer households. This is exacerbated when access to health services is diminished and there is no social protection mechanism against increasing health care costs. User fees thereby affect the livelihood of low income people, and can lead them to total exclusion and poverty. In addition, a lack of appropriate policy and regulation to guide health care financing has led to erosions in the equity, quality and efficiency of health care systems.

The fact that the high costs of health care contribute to keeping people in poverty is increasingly seen as an issue of social justice. Income losses due to poor health “are involuntary and simply the consequence of unwanted health ‘shocks’.” Health costs are categorized differently from other items of household expenditure, and the community as a whole, especially those more able to afford and absorb the impact of such shocks, has a responsibility to share this financial burden, rather than allowing it to disproportionately fall on those least able to afford them. Equitable health expenditure mechanisms avoid placing additional burdens on poor households in the form of catastrophic out of pocket expenses. Payment for health care should not only be proportionate to levels of household income, but a fair proportion should be applied to those on low incomes.
Human Rights

In the World Health Organization’s constitution, health is defined as a fundamental human right, regardless of race, religion, political belief or economic and social condition. This right is also, though less forcefully, proclaimed by the Universal Declaration of Human Rights. These binding international human rights instruments require that health outcomes for all sections of society are not unduly influenced by conditions beyond the control of individuals.
Conclusions
There is a limited literature specifically on poverty and NCDs in the Western Pacific Region and very little disaggregated data on the prevalence of NCD risk factors and the incidence of NCDs among the poor in the Region. The literature available on links between poverty and disease is primarily related to communicable disease. Most information on the topic of NCDs and poverty relate to areas other than the Western Pacific, and primarily come from developed nations such as the United States of America and Western Europe, although the Pan American Health Organization is currently developing a significant body of literature on the topic.

The literature that is available shows that the burden of NCDs in the region is high and increasing. Furthermore, all the major risk factors for NCDs have established links with poverty. Despite limited actual data, there is agreement in the literature that poverty and NCDs are strongly correlated. The literature also indicates that risk factors for NCDs are significantly greater among the poor than among the wealthy. As a result, the poor are particularly susceptible to CVD, respiratory illness, diabetes and cancers.

The extent to which the literature cited supports hypotheses concerning the relationship between poverty and NCDs is summarised below (see Table 8). The summary is based on sources cited for the conduct of this review, which represents a partial sample of literature available on poverty and noncommunicable disease. Gaps in the literature are also identified.

Initiatives such as the North Karelia Project in Finland have proven effective in reducing rates of NCDs across socioeconomic lines. Effective pro-poor interventions for NCDs need to be multi-dimensional and involve global, national, local, public and private initiatives including elements outside the health sector. Interventions must be targeted, monitored regularly to ensure that objectives are met, and sustained over long periods. Pro-poor health systems should combine both formal, technical mechanisms and informal community or family based structures; be accessible in terms of both location and information, be affordable (with equitable financing mechanisms); and be sustained over the long term. The literature favours prevention rather than treatment as the focus for interventions both from a social equity perspective and as a cost-effective measure.

People living in relative poverty in the Western Pacific Region have limited ability to afford and access care. Poor people are more likely to use high level tertiary care rather than primary and preventive measures such as regular medical check-ups, but are least able to afford such care. Costs often lead to delays in seeking care and people with diseases such as cancer and diabetes may forgo treatment due to the inability to
The need for pro-poor strategies in the Western Pacific region: A review

Conclusions

Pay. The poor are more likely to self-medicate, bypassing professional diagnosis and treatment. Measures to strengthen poor people’s access to appropriate NCD prevention and education programmes and affordable treatment initiatives should be a priority focus of WHO, development agencies, and national and local health service providers.

The traditional focus of the health system on acute care for people in the latter stages of disease progression can be detrimental to the poor who are unable to afford such care which does little to prevent the growth of NCDs among the poor and in developing nations. An increased focus on prevention and a multi-faceted, multi-level approach such as the WHO Global Strategy on Diet, Physical Activity and Health and the ICC framework can be useful in making the system more responsive to prevention, and improve outcomes once diseases have developed.

Costs of accessing health care contribute to maintaining the cycle of poverty. Though data specifically related to NCDs is scanty on this issue, the high cost of tertiary treatment and medication for NCDs combined with the high and/or increasing proportion of health costs borne by individuals in the region is likely to contribute to the effect of ill-health on poverty.

Outcomes for poor people with NCDs are consistently worse than for their richer counterparts. Poor people are more likely to die an early death and have significantly higher mortality rates from NCDs. Australian studies have indicated that people of low socioeconomic status suffer between 50% and 200% higher mortality rates than people of the highest socioeconomic status for conditions such as ischaemic heart disease, diabetes mellitus and respiratory illness.

The assumption that NCDs are diseases of affluence has inhibited effective planning for, and servicing of, the growing incidence of NCDs among the poor in the Region. Globally, and particularly in Sub-Saharan Africa, communicable diseases are still the major cause of mortality and morbidity among the poor. However, in the Western Pacific Region, communicable diseases form a minority of the causes of burden of disease and mortality. Given the high and increasing proportion of burden of disease from NCDs in the Western Pacific, and that poor people are highly vulnerable to these diseases, a strengthened focus on NCD interventions for the poor in the Region is justifiable. Here, we do not argue for a substitution of resources diverted from communicable diseases to NCDs, but for an appropriate investment in primary and secondary prevention to ensure both are effectively and efficiently controlled.

Protecting and improving the health of the poor can have significant, positive national economic impact. Improving social equity leads to better
Table 8: Evidence on relationships between poverty and NCDs

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Evidence for/ against</th>
<th>Comments/gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>The poor have a greater burden of NCDs</strong></td>
<td>The literature reviewed agrees that NCDs occur with greater frequency among poor populations in both developed and developing countries.</td>
<td>Much of the literature referring to this issue was limited to simple and anecdotal comments e.g., “the poor are particularly vulnerable to NCDs.” More research acquiring specific data on rates of NCDs among low income and vulnerable groups in the region is required to confirm these statements.</td>
</tr>
<tr>
<td><strong>The poor are less able to cope with NCD conditions</strong></td>
<td>Literature available shows that the poor cope less well in general with ill-health.</td>
<td>Information on how the poor cope with (specifically) NCD conditions is largely lacking.</td>
</tr>
<tr>
<td><strong>Health outcomes from NCDs may be worse for the poor than the non-poor</strong></td>
<td>Most studies agree that health outcomes from NCDs are worse for the poor than the non-poor; and that the poor are more likely to suffer early mortality from NCDs.</td>
<td>More up-to-date studies need to be produced. Also studies throughout the region, especially in developing and isolated nations. Generally it is widely acknowledged that the poor have worse health outcomes from all types of disease.</td>
</tr>
<tr>
<td><strong>The poor face a double burden of communicable and noncommunicable disease</strong></td>
<td>Sources examining trends in the epidemiological transition show that rates of NCD will continue to rise while co-existing with communicable illness in poor nations. The poor in almost all studies of socioeconomic status and health have been shown to have higher rates of both NCDs and communicable disease than the rich.</td>
<td>This hypothesis is well supported by the projections which have been developed. Greater analysis on how the progression of epidemiological transition affects the poor as opposed to the rich would increase the validity of this argument.</td>
</tr>
<tr>
<td><strong>Ethnicity is a predictor of increased NCD risk</strong></td>
<td>Ethnic background does appear to confer an increased or decreased risk of developing NCDs, however disadvantaged ethnic groups may also be of low socioeconomic status, complicating attempts to quantify which factor is more important in predicting risk of NCD.</td>
<td>Most data relating to ethnic differences in rates of NCD is from the United States of America or the UK. More data is required on NCDs among different ethnic groups within the Region.</td>
</tr>
<tr>
<td><strong>The poor face greater structural barriers</strong></td>
<td>The structural barriers faced by the poor in terms of health are well documented.</td>
<td>More research needs to be done on structural barriers for the poor in relation to NCD care and how they can be addressed.</td>
</tr>
<tr>
<td><strong>Risk factors for NCDs are greater among the poor</strong></td>
<td>Many of the major risk factors for NCDs have been found to be associated with poverty. Higher rates of smoking, heavy drinking, poor diet and physical inactivity are consistently recorded among poor populations.</td>
<td>Links between poverty and risk factors for NCDs are fairly well documented, though greater research focusing on the WPR would be useful.</td>
</tr>
<tr>
<td><strong>Cost of NCD care is keeping people in poverty</strong></td>
<td>The “vicious cycle” of ill-health and poverty is very well established in the literature. There are some indications that NCD care is contributing to keeping people in poverty and forcing people below the poverty line.</td>
<td>More research on the costs of NCD care and their impact on the poor in the region are required.</td>
</tr>
<tr>
<td><strong>NCD interventions for the poor are relatively ineffective</strong></td>
<td>The literature shows that some interventions, especially prevention and education, can be extremely effective in reducing rates of NCDs among poor people, however much of this information is related to other regions.</td>
<td>Poverty specific NCD interventions need to be further documented and trialled in the Western Pacific Region.</td>
</tr>
<tr>
<td><strong>Increasing pro-poor NCD programmes will improve the impact</strong></td>
<td>It is generally acknowledge that focussing on pro-poor preventive programmes, outcomes from health programmes themselves can be improved, both in terms of reduced expenditure at high-cost</td>
<td>More research could address the specific outcomes of pro-poor NCD projects in the region to verify whether such beneficial outcomes do apply.</td>
</tr>
</tbody>
</table>

Continued on next page.
human capital in society. Binding international agreements focus on health as a human right for all people. Health for all requires addressing the barriers to care for poor people and meeting the growing rates of NCDs among the poor, rather than considering the treatment of NCDs to be a private issue. A focus on poor people in NCD programmes can reduce national mortality rates, and the efficiency of NCD programmes themselves requires that the needs of the poor are addressed.

The literature suggests that both NCDs and the needs of the poor vary substantially between and within countries of the Western Pacific Region. Pro-poor NCD policies should, therefore, be developed at country level with local inputs. There are many interesting questions that can be further examined to strengthen arguments that NCDs and poverty are related in the Western Pacific Region. However, many of these questions are of academic interest and have no immediate practical relevance to reducing the NCD burden for the poor.

The issues are clear; incidence and prevalence of NCDs are increasing rapidly and the poor bear a disproportionate burden. What is required now are policies, mechanisms and budget allocations to address these needs. Specifically, health services require a focus on prevention and primary care and then secondary and tertiary prevention, based on established NCD intervention protocols for specific conditions. Investments in such services would generate health gains and savings. Health information systems should be developed to monitor incidence, service activity and costs of NCD programmes and identify services by geographic area to help disaggregate information about the poor. This information can be used to manage effective NCD programmes and establish an evidence base in the Western Pacific Region, which currently does not exist.
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WPRO-A: Australia, Brunei Darussalam, Japan, New Zealand, Singapore. WPRO-B: Cambodia, China, Cook Islands, Fiji, Kiribati, The Lao People’s Democratic Republic, Malaysia, Marshall Islands, Micronesia, Mongolia, Nauru, Niue, Palau, Papua New Guinea, Philippines, Republic of Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Vanuatu, Viet Nam.


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Medically indigent is a person who is unable to meet their medical bills. This may either be a result of poverty or a person with generally adequate income who is suddenly facing catastrophically high medical bills.


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