According to World Health Organisation Commission on the Social Determinants of Health (CSDH), social and economic determinants of health are the conditions in which people are born, grow, live, work and age. Evidence has shown that being healthy is a status which is not enjoyed by all alike, and there are diverse factors contributing to health inequalities among different population groups as well as between geographical locations within a country. A growing number of studies indicate that the ability of the healthcare system to promote good health for all is limited by factors that lie outside and beyond its control. Differences in socioeconomic factors, such as educational background, occupation, income, living environment, culture, gender, ethnicity, urbanization, transport, access to healthcare, etc., have been highlighted as powerful determinants of health and suggest the need for a holistic approach to improving health and addressing inequality.

Social and economic determinants of health pose a significant challenge not only to populations but also to health policy makers in both rich and poor countries. The extent to which these complexities and multidimensional pathways lead to differential health outcomes is not fully clear. In 2005, the World Health Organisation (WHO) established the Commission on the Social Determinants of Health (CSDH) to support tackling the social causes of poor health and avoidable health inequalities. The Commission was charged with recommending interventions and policies to improve public health and narrow health inequalities through action on social and economic determinants. According to the Commission's report submitted to WHO Director General and subsequently published in August 2008, the dramatic health inequalities are triggered by physical, social, economic and cultural environments. The report calls for a new global agenda for health improvement and health equity. It advocates an approach to health and human development in which equity is a fundamental objective of reform. The report consequently calls upon countries to commence action in tackling social and economic determinants of health.

The sixty-second World Health Assembly adopted a resolution calling for the reduction of health inequalities through action on the social determinants of health in May 2009 as recommended by the CSDH report (Resolution WHA62.14). Similar calls have been made in the World Health Report 2008, the Algiers Declaration, the Libreville Declaration, the Ouagadougou Declaration and the Nairobi Call to Action. In 2010, the Regional Committee of African Ministers of Health adopted the Regional Strategy for addressing the key Determinants of Health in the African Region and a resolution which, among others, urges Member States to initiate or intensify studies to document the current situation with respect to the distribution of the key determinants of health. This analysis would further consolidate the evidence-base on the impact of SDH in order to inform policy making and establish a baseline or evaluation of the outcomes of these policies.

Table of Contents

Situation Analysis of Health Equity and Social and Economic Determinants of Health in Seychelles

Ministry of Health Seychelles

10/10/2011
Table of Contents
1.0 Introduction: Background and Policy Context ................................................................. 5
THE COUNTRY PROFILE .................................................................................................................. 5
1.1 Background to the Report ...................................................................................................... 6
1.2 Health Inequalities: Concepts and Definitions .................................................................... 6
1.3 An overview of the Socio-Economic condition of Seychelles .............................................. 8
   Economic and social development ............................................................................................ 8
   Percentage/Figure.................................................................................................................... 9
   1.3.5 Social Security Provisions .............................................................................................. 10
   1.3.3 Mortality Trends ............................................................................................................. 12
   1.3.1 Population Structure ..................................................................................................... 13
   1.3.2 Fertility Trends ............................................................................................................. 15
   1.3.6 Millennium Development Goals ................................................................................ 16
   1.3.7 Water Supply and Waste Disposal ............................................................................. 17
   1.3.8 Key Development Indicators ....................................................................................... 17
2.0 Objectives of the report ........................................................................................................ 18
   2.0.1 General objective ......................................................................................................... 18
   2.0.2 Specific objectives ......................................................................................................... 18
3.0 METHODOLOGY .................................................................................................................. 19
   3.1 Conceptual Framework ...................................................................................................... 19
   3.2 Analytical Approach/Measurement of Inequalities .......................................................... 19
      3.2.1 Data type and sources .............................................................................................. 20
      3.2.2 Desk Research .......................................................................................................... 20
      3.2.3 Expert Opinion Input ............................................................................................... 20
4.0 FINDINGS ............................................................................................................................ 21
4.1 Overview of Population Health Status: ............................................................................ 21
      4.1.1 Overview of the Seychelles Health Status ................................................................ 21
4.2 Underlying Social and Economic Determinants of Health in Seychelles ......................... 22
      4.2.1 Poverty and Income Distribution ............................................................................. 22
      4.2.2 Salary Distribution ................................................................................................... 23
      4.2.3 Inequality Analysis .................................................................................................. 23
4.3 Health Status Inequalities .................................................................................................... 25
      4.3.1 Self-Reported Illness (to be redone … these are for Vietnam) .................................. 26
      4.3.2 Mortality pattern by geographic areas, by social and economic groups, by gender, etc...26
4.4 Health System Inequalities ................................................................................................. 31
      4.4.1 A Description of Seychelles Health System ............................................................. 32
      4.4.2 Access to and Use of Health Care Services .............................................................. 33
4.4.3 Health Care Financing.................................................................35
4.4.4 Resource Allocation and the Burden of Disease ............................37
4.5 Inequalities in Communicable Disease Burden and Implications for the Health MDGs 38
  4.5.1 Immunisable Diseases and Immunisation Coverage .....................41
  3.5.2 Other Communicable Diseases....................................................42
4.6 Inequalities in Non-Communicable Diseases (NCDs) Burden and Health Conditions and NCD Risk Factors ..........................................................42
  4.6.1 Overview of Trends in NCDs in the Country .................................42
  4.6.2 Inequalities in NCDs and NCD Risk Factors by Socio-Economic Status ...43
5.0 Influences of Social and Cultural Factors on Health and Health Equity in the Country ..........50
  5.0.1 Implications for Developing Strategies for Addressing Health Inequalities ........53
6.0 Implications for Policy and Programmes: ...........................................53
6.0 CONCLUSIONS AND NEXT STEPS ..................................................54
Appendix 1 .........................................................................................61
Data type and sources...........................................................................61
Health care financing:...........................................................................63
Appendix 2 .........................................................................................64
Appendix 3 .........................................................................................65
Appendix 4 .........................................................................................66
Appendix 5 .........................................................................................67
Appendix 6 .........................................................................................69
Appendix 7 .........................................................................................71
Appendix 8 .........................................................................................72
Appendix 9 .........................................................................................74
Appendix 10 .........................................................................................74
Appendix 11 .........................................................................................75
Appendix 12 .........................................................................................75
Appendix 13 .........................................................................................77
Appendix 14 .........................................................................................79
Appendix 15 .........................................................................................79
Appendix 16 .........................................................................................80
References.............................................................................................81
List of Tables and Figures

Table 1.1: Participation of women in decision making processes ................................................. 6
Table 1.2: Economic Indicators ........................................................................................................... 9
Table 1.3: Common notifiable Diseases ............................................................................................... 11
Table 1.4: HIV aids ............................................................................................................................... 11
Table 1.5: Mid-Year Population by Gender for 2006 - 2010 ................................................................. 14
Table 1.6: Development Indicators ...................................................................................................... 18
Table 1.7: Registered Births and Deaths in Seychelles, 2003 to 2008 .................................................... 27
Table 1.8: Main causes of death by Gender 2008 .................................................................................. 27
Table 1.9: Life Expectancy at Birth (years) ............................................................................................ 28
Table 1.10: Infant and Perinatal Mortality rates 2001 to 2010 ................................................................. 28
Table 1.11: Under 5 Year Mortality Ratio per 1,000 Live Births ............................................................ 29
Table 1.12: Main causes of under 5 death in Seychelles, 2004 (update) ................................................. 29
Table 1.13: Maternal Mortality Ratio (per 100,000 live births) for mothers aged 21 to 35 ..................... 30
Table 1.14: Births Attended by Skilled Health Staff ............................................................................. 30
Table 1.15: Attendances and vital Statistics 2002-2009 ....................................................................... 35
Table 1.16: Annual Health Budget (RS’000) ......................................................................................... 36
Table 1.17: Budget Allocation of Department of Health and HSA 2006 - 2011 ................................. 37
Table 1.18: BMI by Age Group and Gender ......................................................................................... 44

Figure 1.1: Major causes of death ........................................................................................................... 10
Figure 1.2: Life Expectancy .................................................................................................................. 13
Figure 1.3: Population Pyramid ........................................................................................................... 14
Figure 1.4: Fertility Rates, 1995 - 2009 ............................................................................................... 15
Figure 4.1: Incidence of Tuberculosis .................................................................................................... 41
1.0 Introduction: Background and Policy Context

THE COUNTRY PROFILE

The Republic of Seychelles comprises 115 islands situated in the Indian Ocean covering an Exclusive Economic Zone of more than 1.3 million square kilometres. Since it was discovered in the early 16th century, Seychelles has undergone considerable changes in the way it has been governed. Seychelles received its independence from Britain and became a republic in 1976. Seychelles was then governed by a coalition Government until 1977 when a one-party system was established. The one-party system was formally abolished in 1993 following a referendum after which a new Constitution was adopted. This marked a new era in the political history of the Seychelles as it re-established a multi-party system; hence the birth of the third republic. Unlike in many other countries, the political transition in the Seychelles has been very smooth and peaceful. Today the country is enjoying a high level of political stability where national unity, pride and aspirations override ideological and economic differences. This is reflected in the latest ranking of Mo Ibrahim which in 2010 placed Seychelles 2nd for Good Governance among all the African countries. Seychelles is a member of the United Nations, Commonwealth, African Union, La Francophonie, Common Market for Eastern and Southern Africa (COMESA), Southern African Development Corporation (SADC) and the Indian Ocean Commission.

Ever since the present Government seized power after independence in 1976, one of its main objectives was to setup an appropriate welfare system. In its endeavour to achieve this goal, the Government committed itself to providing a high level of education and health system accessible to all, a housing programme for all, a social welfare benefit system, adequate infrastructural development and so on. Seychelles today has one of the best infrastructure systems in Africa, whereby over 90% of its population has access to electricity, safe drinking water, an excellent communication system and a well-developed road network. Nonetheless, as a SIDS Seychelles remain vulnerable to the vicissitudes of the Global Economy.

The constitution is the supreme law of the country. The existing constitution was adopted in 1993 and Seychelles was proclaimed a multi-party democratic republic. The Seychelles Constitution guarantees the Nation its fundamental rights through executive, legislative and judiciary power. It prescribes that presidential and parliamentary elections take place every five years. It ensures equal opportunity and protection for men and women, and it contains as well as several other policies and legislations to promote gender equality and women empowerment. The constitution also makes specific reference to the rights of women, whereby it guarantees amongst others, the right to own property, the right to equal protection by law, the right to education without discrimination and equal opportunity to employment.

Gender parity in decision making levels: As it can be seen from Table 1.1, the participation of women in decision making processes is quite good with women making up a fair proportion of political, administrative and legal senior officials. These figures are quite high in comparison with the rest of the region.
Table 1.1: Participation of women in decision making processes

<table>
<thead>
<tr>
<th>Posts</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabinet of Ministers</td>
<td>2/8 (25%)</td>
<td>2/8 (25%)</td>
<td>2/8 (25%)</td>
</tr>
<tr>
<td>Principal Secretaries</td>
<td>8/19 (42.1%)</td>
<td>8/16 (50%)</td>
<td>8/16 (50%)</td>
</tr>
<tr>
<td>Parliamentarians</td>
<td>8/34 (23.5%)</td>
<td>8/34 (23.5%)</td>
<td>8/34 (23.5%)</td>
</tr>
<tr>
<td>District Administrators</td>
<td>15/25 (60%)</td>
<td>13/25 (52%)</td>
<td>13/25 (52%)</td>
</tr>
<tr>
<td>Ambassadors</td>
<td>1/7 (14.3%)</td>
<td>1/7 (14.3%)</td>
<td>1/7 (14.3%)</td>
</tr>
<tr>
<td>Judges</td>
<td>0/8 (0%)</td>
<td>0/8 (0%)</td>
<td>0/8 (0%)</td>
</tr>
<tr>
<td>Magistrates</td>
<td>2/3 (66.7%)</td>
<td>2/4 (50%)</td>
<td>2/4 (50%)</td>
</tr>
</tbody>
</table>

Source: Gender Secretariat, Ministry of Social Affairs & Culture

1.1 Background to the Report

In recent years, while there has been increasing research interest and evidence on the workings of the social and economic determinants of health, the vast majority of studies are from developed countries. Given this limitation, these studies may not provide adequate information and details on the historical and contemporary realities of the social and economic determinants of health in low- and middle-income countries, particularly those in WHO African Region. These factors vary from one country to another. It is therefore necessary to understand country specific conditions to design appropriate and corrective policy actions that recognize country specific circumstances.

This concept paper relates to the development of country profiles of the health situation in Seychelles with respect to the key dimensions of inequality. Analysis suggests that the impressive gains in health in the Region experienced over recent decades are unevenly distributed, with aggregate indicators, whether global, regional or national, often masking striking variations in health outcomes between rich and poor, or men and women, both across and within countries. Poverty, gender and other dimensions of social exclusion (including ethnicity, age, employment status, urban/rural residence, etc) are major determinants of health risks, disease burden, access to services and health outcomes in the Region. There is growing awareness of the need for governments to respect, protect and fulfil the right to the highest attainable standard of physical and mental health, or the right to health, through policies and plans that will improve access to effective health services.

Despite these trends, however, a key constraint to initiating action is the lack of country-specific information and analysis on the nature of inequalities based on gender, poverty, and other dimensions of social exclusion. Improving the availability of such information could help identify actions to address the growing health inequities.

1.2 Health Inequalities: Concepts and Definitions

It is important that we have an interpretation of Health before we address the issues of Health Equity or Health Inequalities. Historically, health was viewed as the absence of diseases; hence, the alleviation of morbidity meant a healthy person or population. But the absence of diseases still does not imply that an individual or population is healthy, as this is the further extreme of the health continuum. It was this gap in the discourse and the accepted limitation of objective indexes of health that led the World Health Organization (WHO), in the late 1940s, to forward a conceptual definition of health\(^1\).

---

\(^1\) The WHO’s definition of health stipulated that it goes beyond the mere absence of diseases to social, psychological and physical wellbeing. Health was no longer the absence of diseases but different tenets of ‘wellbeing’.
The concept of Health Equity is deeply rooted in the International Human Rights framework, an appropriate conceptual structure within which health equity through action on Social Determinants of Health (SDH) can be advanced.

The WHO Department of Equity, Poverty and Social Determinants of Health defines health equity as ‘the absence of unfair and avoidable or remediable differences in health among population groups defined socially, economically, demographically or geographically’. **Health equity** is the absence of health differences between more and less socially advantaged groups, and between geographic areas (Braveman & Gruskin, 2003). Health equity is a central dimension of overall social equity or justice, as it conditions the capabilities of individuals and groups to participate in and benefit from social and economic development. Significant health inequalities linked to social disadvantages rather than to inherent biological differences are generally considered unfair or inequitable and therefore remediable. Other literature has described it as relating to differences in population health which can be traced to unequal social and economic conditions. In essence, health inequities are health differences which are: socially produced; systematic in their distribution across the population; and unfair. The Committee on Social Determinant of Health (CSDH), an initiative driven by Lee Jong-wook the Director-General of WHO (2003 – 2006), on a platform marked by commitments to health equity, social justice and a reinvigoration of the values of Health For All, stated and quote:

“Primary responsibility for protecting and enhancing health equity rests in the first instance with national governments. …… Sen, Anand (2004) stresses that health is a "special good" whose equitable distribution merits the particular concern of political authorities. …..Inequalities in health are thus recognized as "inequalities in people's capability to function" which profoundly compromise freedom. When such inequalities arise systematically as a consequence of individuals' social position, governance has failed in one of its prime responsibilities, i.e., ensuring fair access to basic goods and opportunities that condition people's freedom to choose among life-plans they have reason to value.

At the 2004 World Health Assembly, Lee Jong-wook positioned the CSDH as a key component of his equity agenda. Lee welcomed rising global investments in health, but affirmed that ‘interventions aimed at reducing disease and saving lives succeed only when they take the social determinants of health adequately into account’. Lee charged the Commission to mobilise emerging knowledge on social determinants in a form that could be turned swiftly into policy action in the low- and middle-income countries where needs are greatest. In consequence, this saw the emergence of the SDH, the continued focus of WHO and countries in their quest to achieve Health Equity or eradicate Health Inequalities.

Ruger (2005) argues similarly for the importance of health equity as a goal of public policy, based on "the importance of health for individual agency ".The causal linkages between health and agency are not uni-directional, however. Health is a prerequisite for full individual agency and freedom; yet at the same time, social conditions that provide people with greater agency and control over their work and lives are associated with better health outcomes. In other words, health enables agency, but greater agency and freedom also yield better health. The mutually reinforcing nature of this relationship has important consequences for policymaking.

The health sector can use the ‘internationally recognized human rights mechanisms for legal accountability’ to push for aggressive social policies to tackle health inequities.
The realisation of the human right to health implies the empowerment of disadvantaged communities to exercise the greatest possible control over the factors that determine their health. Theorising the impact of social power on health suggests that the empowerment of vulnerable and disadvantaged social groups will be vital to reducing health inequities. However, what different groups mean by empowerment depends on their underlying views about power. This again raises the issue of state responsibility in creating spaces and conditions under which the empowerment of disadvantaged communities can become a reality. A model of community or civil society empowerment appropriate for action on health inequities cannot be separated from the responsibility of the state to guarantee a comprehensive set of rights and ensure the fair distribution of essential material and social goods among population groups. This means that action on the social determinants of health inequities is a political process that engages both the agency of disadvantaged communities and the responsibility of the state.

The concept of the ‘welfare state’ is one in which the state plays a key role in the protection and promotion of the economic and social well-being of its citizens. It is based on the principles of equality of opportunity, equitable distribution of wealth, and public responsibility for those who are unable to avail themselves of the minimal provisions for a good life. The general term may cover a variety of forms of economic and social organization. A fundamental feature of the welfare state is social insurance. The welfare state also usually includes public provision of basic education, health services, and housing (in some cases at low cost or without charge). Antipoverty programs and the system of personal taxation may also be regarded as aspects of the welfare state. Personal taxation falls into this category insofar as it is progressively used to achieve greater justice in income distribution (rather than merely to raise revenue) and also insofar as it used to finance social insurance payments and other benefits not completely financed by compulsory contributions.

1.3 An overview of the Socio-Economic condition of Seychelles

Economic and social development

The overall performance of the Seychelles’ economy since independence (in 1976), has been remarkable, especially when analysing the per capita income. Over the thirty five years that followed independence, Seychelles has achieved a nine-fold increase in GDP from some $1,000 per capita in 1976 to $9,046 in 2009, the highest in Sub-Saharan Africa. Since the mid-1990s, the Seychelles has been ranked as an upper-middle-income country by UNDP. Today Seychelles stands among the best in Africa in term of socio-economic development and governance.

After a slowing down in the rate of growth of 0.9% in 2001 and 1.3% in 2002, the economy experienced a massive set back in 2003, when it recorded a negative rate of growth of -6.3%. This persisted in 2004 and 2005 when rates of growth of -2.0% and -1.5% were registered respectively. Consequently this had an adverse effect on the economic development of the country.

Seychelles economy suffered further setback during the 2008/09 financial crisis. This was characterised by severe fiscal and balance-of-payments constraints, an unsustainable debt burden, and a depleted international reserves position. All these had a consequential effect on mostly all sectors including the health and social sector.

2 The Seychelles Constitution guarantees the Nation its fundamental rights through executive, legislative and judiciary power.
Table 1.2: Economic Indicators

<table>
<thead>
<tr>
<th>Percentage/Figure</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GDP US$ million (market price)</td>
<td>1014.7</td>
<td>1016.9</td>
<td>923.1</td>
<td>789.8</td>
<td>-</td>
</tr>
<tr>
<td>2. GDP Per Capita US$ (market price)</td>
<td>11994.4</td>
<td>11959.3</td>
<td>10615.4</td>
<td>9046.6</td>
<td>-</td>
</tr>
<tr>
<td>3. Public expenditure on health as a % of Total Public Expenditure</td>
<td>20.4</td>
<td>20.4</td>
<td>22.1</td>
<td>22.7</td>
<td>-</td>
</tr>
<tr>
<td>5. Total Health expenditure US$ million</td>
<td>35.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Total Govt expenditure in Health as a % of National Health Budget</td>
<td>10.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7. Total Health expenditure as a % of GDP</td>
<td>4.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8. Total Education Expenditure as a % of GDP</td>
<td>4.4%</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9. Inflation rate</td>
<td>-0.4</td>
<td>5.3</td>
<td>37.0</td>
<td>31.8</td>
<td>-</td>
</tr>
</tbody>
</table>

Sources: National Statistical Bureau, Central Bank of Seychelles

3 In spite of the strong commitment by the incumbent government to ensure that the priorities and challenges of economic development do not supersede the social commitment, the threats posed by economic liberalisation are inevitable. With the prevailing economic problems and mounting social pressure, it would be very difficult for the government to continue to sustain the expensive welfare system of Seychelles. It is generally believed that economic development has already taken precedence over social development, a trend which is very difficult to reverse. Even the strongest economies of today cannot escape the problems of poor social development, as manifested in poverty and deprivation. In addition, the ‘acute’ social ills of today, which unfortunately are part and parcel of rapid economic progress that cannot be avoided, have consequences for human security in its widest sense. Rising crime rate, drugs and related substance abuse, prostitution, disaffection and other social deprivation are global concerns, requiring global attention and Seychelles has not been spared.

4 It is commonly reported that crimes against both person and property are on the increase in the Seychelles. The sad part is that youth crime and delinquency constitute a significant proportion of total criminality in Seychelles. Their alarming growth should be a matter of special concern. All these incidences have a direct bearing on the economy which suffers greatly as a consequence through loss of potential productive labour force. The roots of the crime problem as a social development issue in Seychelles need to be examined. Is it the result of the weakening of family and community ties as individualist, materialist and consumerist values penetrate traditional values, the social dislocation and alienation associated with the increasing globalisation of society, the lack of job opportunities commensurate with the training and expectations of many young people? This is an area requiring further investigation.

Another pressing issue facing the Government remains the sustenance of free health care. In spite of all its efforts over the years, the Ministry of Health (MoH) is still facing limitations in the provision of tertiary health care. In its endeavour to continue offering this service, MoH has to revert to overseas care treatment for some tertiary care services, but at colossal costs, which is proving to be a financial stress. A total of 2,386 patients received specialised overseas treatment, approved and organised by

3 Social Development Strategy for Seychelles Beyond 2000
4 Social Development Strategy for Seychelles Beyond 2000
5 No data is available to support this claim
MoH, from the year 1988 to 2007. In order to reverse the situation, there is a need to educate the public, who is of the opinion that overseas treatment at whatever cost, is a constitutional right. This is a common belief even among those who can afford the treatment.

1.3.5 Social Security Provisions

The social security system in Seychelles was setup in 1979 and is comprised of two schemes, the Social Security Fund and the Seychelles Pension Fund (SPF). Both Funds are mandatory. However, SPF consists of a voluntary element that allows for workers who wish to enhance their retirement package in the form of a gratuity (lump sum payment) or additional pension upon retirement. Whilst the SPF is a social insurance scheme to provide a minimum safety net to alleviate poverty, the Government has realised that there is a need for a system which will, not only lead to poverty prevention, but also provide a more comfortable and stable safety net. The emphasis has therefore, been on establishing a retirement pension system to enable retirees to live in basic comfort. The whole population can access these schemes under the Social Security Act (1987), subject to eligibility. The beneficiaries under the Social Security Act 1987 are; sickness benefit, maternity benefit, injury benefit, invalidity benefit, disablement benefit, survivor’s benefit, funeral benefit, retirement pension, dependent’s benefit, orphan’s benefit, abandoned child benefit.

Trends in Income and Poverty

No official data is available on these variables to carry out meaningful analysis

Trends in Population Health in the country

Disease trends:

Figure 1.1: Major causes of death

![Major causes of Death (percentage)]
Table 1.3: Common notifiable diseases

<table>
<thead>
<tr>
<th>Disease</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONJUNCTIVITIS</td>
<td>1578</td>
<td>1951</td>
<td>1857</td>
<td>1525</td>
<td>1367</td>
<td>2022</td>
<td>14736</td>
<td>1704</td>
<td>1704</td>
<td>6426</td>
</tr>
<tr>
<td>DIARRHOEA</td>
<td>5302</td>
<td>4435</td>
<td>4585</td>
<td>4584</td>
<td>4984</td>
<td>6089</td>
<td>4631</td>
<td>3055</td>
<td>3055</td>
<td>2673</td>
</tr>
<tr>
<td>DIABETES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>89</td>
<td>77</td>
<td></td>
<td></td>
<td></td>
<td>66</td>
</tr>
<tr>
<td>GONORRHEA</td>
<td>104</td>
<td>62</td>
<td>48</td>
<td>21</td>
<td>16</td>
<td>13</td>
<td>26</td>
<td>56</td>
<td>56</td>
<td>158</td>
</tr>
<tr>
<td>NON-GONOCOCCAL CERVICITIS*</td>
<td>103</td>
<td>133</td>
<td>119</td>
<td>77</td>
<td>123</td>
<td>161</td>
<td>119</td>
<td>119</td>
<td>153</td>
<td></td>
</tr>
<tr>
<td>HYPERTENSION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>250</td>
<td>193</td>
<td>163</td>
<td></td>
</tr>
<tr>
<td>INFLUENZA-LIKE SYNDROME*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>736</td>
<td>1172</td>
<td>424</td>
<td>1815</td>
<td>1815</td>
<td>1941</td>
</tr>
<tr>
<td>PNEUMONIA*</td>
<td>153</td>
<td>203</td>
<td>123</td>
<td>233</td>
<td>233</td>
<td>236</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEPTOSPIROSIS</td>
<td>70</td>
<td>52</td>
<td>35</td>
<td>35</td>
<td>26</td>
<td>46</td>
<td>58</td>
<td>40</td>
<td>40</td>
<td>42</td>
</tr>
</tbody>
</table>

* Diseases recently being notifiable

Table 1.4: HIV aids

<table>
<thead>
<tr>
<th>Disease</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV</td>
<td>28</td>
<td>16</td>
<td>20</td>
<td>23</td>
<td>45</td>
<td>42</td>
<td>43</td>
<td>45</td>
<td>52</td>
</tr>
<tr>
<td>AIDS</td>
<td>15</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>21</td>
<td>23</td>
<td>21</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td>HEPATITIS C</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>32</td>
<td></td>
</tr>
</tbody>
</table>

Epidemiological transition

While improved sanitation, universal access to safe water, better housing, health services and the reduction of under-nutrition through Social Security support have led to a reduction of infectious diseases, other socioeconomic developments have brought about sedentary lifestyles and behaviours that places ones health at risk. Non Communicable Diseases (NCD), and particularly Cardiovascular Diseases (CVD), are strongly related to some lifestyles and physiological risk factors (Bovet et al, 1989, 2004). Detrimental lifestyles, driving this epidemiological transition, include smoking, unhealthy nutrition (mostly high intake of saturated fats, salt, and low intake of fruit and vegetables) and sedentary habits. Physiological risk factors, which are strongly linked to lifestyles, include overweight, high blood pressure (HBP), blood lipid disorders (e.g. high blood cholesterol) and diabetes. Increase alcohol and drug abuse, increased fat calorie intake are cases in point, and have also been confirmed by the Heart Study, 2004 (Bovet et al, 2004).

These have led to an epidemiological transition in the pattern of disease and death that has changed to declining Communicable Diseases (infectious diseases) and increasing proportion of non-communicable especially chronic diseases (Bovet et al, 2004). Cardiovascular Diseases (CVD) remains the highest cause of death, accounting for 40% of all deaths in Seychelles. Significant policy was developed including comprehensive tobacco legislation and a School Nutrition Policy that bans soft drinks in schools. NCD guidelines were developed and specialized ‘NCD nurses’ were trained to complement doctors in district health centres. Decreasing smoking prevalence is evidence of success, but the raising so-called diabesity epidemic calls for an integrated multi-sector policy to mould an environment conducive to healthy behaviours (Bovet et al, 2010/2011).
As for the CD, increases in sexually transmitted diseases including AIDS and Hepatitis C, emerging diseases such as chikungunya and dengue and potential threats from Human Influenza viruses (WHO, 2010) call for continued robust surveillance using the IDSR and IHR strategies.

The epidemiological transition was readily apparent in the changes in causes of mortality in the Seychelles whereby 80% is related to NCD diseases, the high prevalence of over 50% (Bovet et al, 2004) of the population of Seychelles could be affected by the chronic CVD diseases. As stated, above, Seychelles is also viewed as a country in epidemiological transition where socio-economic behaviours such as unhealthy lifestyles, urbanization, aging population, tobacco and alcohol abuse and rising levels of domestic violence prevail.

1.3.3  Mortality Trends

The crude death rate (the number of deaths per 1,000 population), which was remarkably low even before the Second World War, has continued to fall, especially in recent years, although with some fluctuations. In 2009, the crude death rate was 7.8 per 1,000 population and maternal mortality rate 65.1 per 100,000 live births. The reduction in the crude death rates is the result of advances in public and medical services, and the rising standard of living in the country, brought about by economic and social progress. The main causes of death in the Seychelles today are diseases of the circulatory system and ‘Neoplasms’ (cancers). These are widely accepted as diseases of development and reflect the epidemiological transition as discussed previously.

Since the adoption of the government’s policy on health, some 35 years ago, the country has made considerable progress towards the improvement of the health status of its citizens. While the emphasis was placed on health promotion and prevention, major investment in infrastructure and Human Resources for Health (HRH) was also given top priority. As a result, the overall life expectancy at birth has improved dramatically and is comparatively high for a developing country. Free primary health care at the point of use is a constitutional right in Seychelles and the entire population has access to basic health care. Yearly immunisation coverage against the most common childhood diseases is almost 100%. In 2009, the child mortality rate was estimated at 2.6 per 1,000 children aged 1-4 years. This represents an increase of 0.3 compared to the previous year.

In 2010, life expectancy at birth was 73.29 (69.09 for male and 77.49 years for females respectively) and the infant mortality rate was 14 per 1,000 births. The graph in Figure 1.2 below shows life expectancy for male and female over the period 2002-2010. One direct consequence of population ageing according to the ‘Elderly Needs Assessment Survey 2010’ has been termed the “Feminisation of ageing.” This refers to the excess of women over men in the older population, and Seychelles is no exception. It can be seen in Figure 1.2 that the disparity in life expectancy between men and women is quite significant. No research has been undertaken to establish the root cause of such disparity; however, a number of factors have been identified as possible causes. One possible factor (beside the biological nature of women) is male marginalisation from health services. According to the Gender Secretariat, the dominance of female health staff was identified as one of the factors inhibiting men to seek medical advice and help, especially for sexually related health problems. Other factors include alcohol and substance abuse.

---

6
1.3.1 Population Structure

By definition Seychelles can be classed as a young country with a comparatively small population. However, over the years there have been major changes to the population structure influenced by a growing number of aging citizens as illustrated in Figure 1.3 below. These changes have been brought about by the gradual improvement in the quality of life and a host of other factors, notably socio-economic factors.

According to a study (2010) conducted by the Population Unit, Ministry of Social Affairs and Culture, the elderly population in Seychelles comprises any person of 63 years and above. It is to be noted that the national retirement age in Seychelles is 63 years. In spite of the growing population of elderly the Government has over the years intensified its efforts to provide the required services, especially housing (home for the elderly), social security, medical and health care to ensure that elderly people live in dignity and comfort. For now the Government remains committed to its engagement of providing basic care for the elderly. Nonetheless, it remains to be seen to what extent the Government could fulfil its commitment as the country is moving away from a welfare state system. It was reported further in the study that, changes in the social structure, notably in the family unit coupled with the November 2008 economic reform programme and the fact that people are now living longer than ever before, necessitate that emerging issues are considered to ensure that the relevant policies and programmes are designed to meet the needs of the country’s growing elderly population.
The mid-year population of Seychelles (Table 1.5) estimated at 89,770 in 2010, was characterised by a slow growth rate, low births (16.8)\(^7\), and low mortality (7.4)\(^8\) and was affected by external migration, typical of Small Island Developing States (SIDS). The Crude death rate continued to remain low with slight fluctuations from 7.8 in 1990 to 6.8 in 2000 and 7.4 in 2010. The population consisted of 43,160 males and 41,872 females or an approximate sex ratio of 1,031 men for every 1,000 women. Over the years Seychelles has predominance of female except in 2010 when this was reversed.

### Table 1.5: Mid-Year Population by Gender for 2006 - 2010

<table>
<thead>
<tr>
<th>Period (mid-year)</th>
<th>Sex</th>
<th>Mid-Year Population</th>
<th>Growth Rate with Migration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Natural Increase</td>
</tr>
<tr>
<td>2006</td>
<td>43159</td>
<td>41874</td>
<td>84,600</td>
</tr>
<tr>
<td>2007</td>
<td>44999</td>
<td>41957</td>
<td>85,033</td>
</tr>
<tr>
<td>2008</td>
<td>45022</td>
<td>42276</td>
<td>86,956</td>
</tr>
<tr>
<td>2009</td>
<td>45907</td>
<td>43872</td>
<td>87,298</td>
</tr>
<tr>
<td>2010</td>
<td>43127</td>
<td>44313</td>
<td>89,770</td>
</tr>
</tbody>
</table>

Source: National Statistics Bureau

\(^7\) Measured per 1000 of mid-year population  
\(^8\) Measured per 1000 of mid-year population
The above table shows that the population growth rate (natural increase) has been stable (around 1.0 on average) over the period in consideration i.e. 2006 – 2010. However, when migration is taken into account, the trend tends to break off.

### 1.3.2 Fertility Trends

The number of births has shown a decline from 1,837 in 1971 to 1,504 by 2010. Due to the changes in the number of births, the crude birth rate (the annual number of births per 1,000 populations) has dropped remarkably since 1970. Table A1.1 in the Appendix can be referred to for details. The Total Fertility Rate (TFR) started declining rapidly after 1966 when it was around 7 children per woman. The decline persisted in the 1970s and 1980s, reaching 2.7 births per woman in 1990. In 1999, it was at 2.04 and in 2001 it reached below replacement level at 1.98. At the end of 2010 it stood at 2.34 as depicted in Figure 1.4 below. By then, the mean age of childbearing was 26.5 years and the mean age at first marriage was 32 years for male and 30 years for female.

One of the main factors contributing to the decline in fertility is changing economic condition and women staying longer in education, which has led to an increase in women participation in the labour force. A combination of other factors has also been stated as responsible for the low fertility rate such as good family planning programmes, social improvement, free education and health, and women empowerment. This as a result has a direct effect on population development.

Even though no direct relation between population growth rate and economic growth rate has been established there does seem to be a strong correlation between the two. At present the fertility rate is just above replacement level. If the trend continues it would imply that eventually the population growth rate will start declining and the country will not be able to provide sufficient manpower to fulfil its growing employment needs, including that of the Ministry of Health.

Figure 1.4: Fertility Rates, 1995 - 2009

Figure 1.4 above shows that fertility has declined from a peak of about 2.4 in 1995 to about 2.0 in 2004 and then start rising to 2.4 in 2009.

---

9Statistics from the Ministry of Employment showed that the average growth rate of employment and labour force over the period 1995-2005 is 2.5%, and 2.12% respectively, while the average growth rate of economically active population (15-63 years) is only 1.71%.
1.3.3 Access to other social services or social determinants of Health

Housing

It was stated by the United Nation that the Seychelles housing policy places strong emphasis in ensuring adequate supply of land, materials and financial resources to provide for a regular supply of housing for its small and growing population.

Despite the looming economic and financial difficulties the Government of Seychelles remained committed with its plan to provide housing for its citizens. Between the years 2006 and April 2011, 1,404 houses were allocated – and this does not include the Ile Perseverance housing project\(^\text{10}\). As for Ile Perseverance, 1,055 units were to be allocated to families over the period 2011 and 2012. During the period 2006 to the end of 2011, a total of 2,459 houses were to have been handed over to ordinary Seychellois family.

Public Transport

In Seychelles the Government is the sole provider of public bus services. Public buses operate on various routes covering the whole of the islands (Mahe and Praslin). The bus fare is reasonably cheap and affordable to the vast majority of citizens. A flat fare system is in existence charging SR5.00 for adults and SR3.00 for students in uniform. As for the night service a fare of SR5.00 per passenger is charged. The pensioners (63 years and above) of Seychelles are provided with free transport without any limitation of the number of trips or routes travelled on the public buses.

1.3.6 Millennium Development Goals

When launching the ‘Social Development Strategy for Seychelles Beyond 2000’, the Minister in charge of the portfolio for Social Development Mr William Herminie stated that, “It is a shared commitment by the Government of Seychelles and its partner to ensure that we respond more effectively to the material and spiritual needs of our people, their families and the communities in which they live”

Given the prevailing economic climate and the new challenges and threats brought about by globalisation, the government has remained strongly committed towards achieving these goals, mainly in poverty alleviation, social integration and wellbeing. Today Seychelles stands proud as one of the few countries in Africa to have met the targets for most of the 8 Millennium Development Goals (MDG) and the International Conference on Population and Development (ICPD) Programme of Action. This has been achieved partly by economic progress and the continuous investment in human capital and infrastructure which, has long been recognised as an essential element for sustainable development. Furthermore, as stated in the Seychelles/UNFPA Country Programme Proposal 2008–2010, the country is committed to the Programme of Action of the International Conference on Population & Development (ICPD), which shifted away from policies of population control and numbers to place the focus on individual lives and respect for human lives which is also adopted by the National Population Policy and Health policies. The country has ensured the provision of universal access to education and health services.

---

\(^{10}\) The Ile Perseverance project will cater for almost 70% of the housing needs of the Seychellois citizen.
1.3.7 Water Supply and Waste Disposal

According to the preliminary results of the 2010 Census, 81.1% of households have access to treated water and 97.1% to electricity, while 96.7% have flush toilets (refer to the Appendix Table A1.2a and A1.2b for details). In spite of the major improvement in sanitation, especially with regards to the use of flush toilet, the major challenge remains the treatment of liquid refuse disposal. At present only a handful of homes (14.3%) are connected to the main sewage system. The majority of household’s liquid refuse disposal (82.4%) is done through individual septic tanks. This is a potential hazard for underground water supplies. The refuse disposal from the hospital, however, receives special treatment hence poses no danger to underground water supplies.

The common method of solid waste disposal (86.3%) is the use of public bins. Special bins are placed by the road side all over the islands and collections are done at regular intervals, mostly daily. The waste is then dumped at special sites where they are treated and then disposed of in a very environmentally friendly manner. The other common methods of solid waste disposal are burying or burning (13.7%). The latter methods could result in health hazards as burying of waste could pollute underground water sources, while burning could result in toxification of the atmosphere.

1.3.8 Key Development Indicators

Seychelles has a comprehensive health structure, which comprises 1 central referral hospital, 3 cottage hospitals, 1 rehabilitative hospital, 1 mental hospital, 1 youth health centre and 16 district health centres, located throughout the country with a decentralised system of providing basic health services in the community. Equity is a fundamental principle behind the financing and organisation of the health care system in Seychelles. The State is the main provider of health services and these are free of charge to every citizen and are complemented by private care services at affordable rates.

Table A1.3 in the Appendix illustrates the national demographic and socio-economic indicators for Seychelles.

Like primary health care, education is a constitutional right in Seychelles as well. Seychelles has attained universal primary education and boys and girls enjoy free compulsory primary education and equal access to education from 3½ years to 16 years of age. Primary and secondary education in government-funded establishment is free to all, and this is complemented by a private education system. The Government attaches great importance to human development and this is shown by the huge investment in education and training.

It has to be noted that in spite of its focus on human development the government has not lost sight of capital investment. Infrastructure development has long been recognised as a key component in economic and social development and has always featured high in the National Development Plan (NDP). Today Seychelles is one country in the African region that enjoys the best of facilities as illustrated in Table 1.6.
2.0 Objectives of the report

This work, in response to the World Health Resolution WHA62.14 on “Reducing health inequalities through action on the social determinants of health” aims to address the following issues:

I. Describe SDH and health equity, as well as a provide a preliminary desk-based landscape of policy opportunities/entry points

II. Define a process for starting to work on SDH, involving other sectors and assessing the role of the health sector, and to develop a plan for follow-up, with appropriate resources identified and outputs presented in terms of milestones

III. Review progress and define further concrete steps for implementation in the future.

2.0.1 General objective

Evaluate and document the situation of health equity and the social and economic determinants of health in the country and potential policy entry points/solutions.

2.0.2 Specific objectives

I. To review available sources/publications of information to describe the social determinants of health with regard to health equity as well as potential policy entry points

II. To obtain raw datasets where needed to complement existing analyses with more in-depth analyses concerning social and economic determinants of health at the national level, and to explain the actual situation of the social and economic determinants of health for health equity

III. To follow-up information on policy entry points with specific stakeholder and experts interviews, thereby also locating grey literature that may exist

IV. To compile and present a report

Table 1.6: Development Indicators

<table>
<thead>
<tr>
<th>Available Facilities</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private cars per 1000 households</td>
<td>410</td>
</tr>
<tr>
<td>Vehicles per km of road</td>
<td>30</td>
</tr>
<tr>
<td>Road surfaced (% length of roads)</td>
<td>96</td>
</tr>
<tr>
<td>Main telephone lines (% household)</td>
<td>49</td>
</tr>
<tr>
<td>Mobile telephone (% household)</td>
<td>90</td>
</tr>
<tr>
<td>Television (% household)</td>
<td>95</td>
</tr>
<tr>
<td>Cable TV connection (% household)</td>
<td>35</td>
</tr>
<tr>
<td>Internet access (% household)</td>
<td>58</td>
</tr>
<tr>
<td>Personal computers (% household)</td>
<td>38</td>
</tr>
</tbody>
</table>
3.0 METHODOLOGY

3.1 Conceptual Framework

The issue of health inequalities and effort to promote greater equity in national and global health gained renewed momentum during Lee’s first announcement at the 2004 World Health Assembly of his intention to create a Commission on Social Determinants of Health, and positioned the CSDH as a key component of his equity agenda. The Commission was mandated by Lee to gather emerging knowledge on social determinants in such a way that could be translated easily into policy action in the low- and middle-income countries where needs are greatest. Their own complexities can universally be understood and addressed when there is consensus on the key determinants. This has paved the way to establishing key health determinants, and ultimately a framework (presented in a paper entitled ‘Commission on Social Determinants of Health; A Conceptual Framework For Action on the Social Determinants of Health, WHO 2007) for analysing key determinants of health, which has been the main instrument used for the situational analyses of national and global health systems. This is an exercise that requires the systematic and continuous collection, analysis, and interpretation of data on health events. In health, it is imperative to direct actions not only to health problems of infectious or chronic origin, but also those caused by external agents. These agents can be closely related to the environment, which has been deteriorating at an increasing pace over the last decades.

The framework is a contribution of the Commission on Social Determinants of Health. The core components of the CSDH framework, includes: (1) socioeconomic and political context; (2) structural determinants of health inequities; and (3) intermediary determinants of health.

3.2 Analytical Approach/Measurement of Inequalities

Seychelles is a welfare state so the Government guarantees the provision of free health care (at primary level) for all its citizens. In other words free primary health care at the point of use is a constitutional right in Seychelles and the entire population has access to basic health care. There is no discrimination on the grounds of social class, economic status, ethnicity, race, religious and so on. The health services in Seychelles are decentralised with various regional health centres at close range and easily accessible to all the citizens. The good road network which connects the majority of households facilitates transportation.

In spite of the above argument inequalities do exist, but at different level and dimension. The assessment of the inequalities of health status of the population in this report has been very much based on the trends of the more prevalent illnesses in relation to age group and gender and other observed figures and distribution related to cases of ill health or death attended to or known of, by the Ministry of Health. However, there is a weakness in the sole use of available health information and statistics to provide opportunities for immediate entry points. Therefore, based on time and scope of the report, the assessment has also incorporated opinions from a few expert, and the views and perceptions of some health recipients. In the Findings Section below we have analysed the type and sources of inequalities as related to the Seychelles context.

Furthermore, even if the Seychelles context was similar to other countries, the lack of data and other information gaps would have limited the analysis. It is against this backdrop that for this study we have
to adopt a more qualitative approach in our analysis. The approach we have used is as follows: expert views; secondary data where available and; views and perceptions of some health recipients

3.2.1 Data type and sources

A research-based approach to collect specific information from the Ministry of Health and other institutions notably the National Bureau of Statistics and the Central Bank was adopted. The information was collected through desk research using published official documents and from interviews with key informants. For this a detailed questionnaire was prepared to facilitate the data collection process. The Appendix can be referred to for the sample questionnaire.

3.2.2 Desk Research

The consultancy worked closely with the WHO representative in Seychelles, Dr Cornelia Atsyor, Head of Information and Statistics, Dr Jastin Bibi, Health Economist, Mr Jean Malbrook, and Health Statistician, Mr Joachim Didon, who facilitated access to statistical information, reports and other publications. The Desk Research was crucial, since a large portion of the analysis and report was based on secondary data and other professional engagement in terms of individual meetings, and Focus Groups were used merely to complement information gaps and/or support the secondary data, given the scope of the consultancy and the time frame.

3.2.3 Expert Opinion Input

The Expert and/or Resource Persons Opinion input formed a major component of this consultancy work and interviews were conducted on a face-to-face basis, and only in exceptional cases, were the information captured electronically. The key issues addressed were linked to health, health system and services, health equity and the situation of socio-economic determinants of health. Stakeholders from the Department of Health, Social Affairs, Education, and Economic sectors were consulted, as/when required, only. Though the focus was not on collecting much of the primary data, the consultants sought some qualitative inputs through a small sample of at most 15 individuals chosen from the above target groups. The target group/population encompassed citizens/national with good know-how of health, the health system, and health equity related issues. These people were selected in a manner that ensures good representation of a cross section of society, those who are believed to be knowledgeable and have experience of the different issues being covered by the consultancy. The manner by which those experts were selected was based on prior knowledge of their experience and position held in their respective organisation.
4.0 FINDINGS

4.1 Overview of Population Health Status:

4.1.1 Overview of the Seychelles Health Status

Primary Health Care is decentralised to district level and the Maternal and Child Health (MCH) Programme offers a range of services. This includes family planning and reproductive health services. Consequently, there has been significant improvement in maternal, child and reproductive health care, resulting in low maternal, infant and under-five mortality. However, there have been identifiable challenges and worrying trends in teenage pregnancy and illegal abortions, alcohol and substance abuse, and social ills with severe consequences on both the individuals and the society. These challenges are unfortunately not effectively addressed through conventional public health thinking and reactive interventions. It has been established by previous reports that there is a need for much more studies on some of those predominant socio-economic determinants so that there is better understanding of the root causes if we are to develop concrete and workable actions [Seychelles MDG Report, 2010].

The communicable diseases (CD) have been adequately contained in the population of Seychelles and this is mainly attributed to the prevention and intervention programmes of the Ministry of Health through its departments including the Communicable Diseases Control Unit (CDCU). In the last five years, there has been occasional and unexpected outbreak of viral and influenza-like syndromes, chikungunya, conjunctivitis, and leptospirosis. Fortunately, these occasional epidemics have been promptly and effectively controlled, though the likes of chikungunya had a major negative impact on the economy, following a drop in tourism activities during the outbreak period in 2006. With Seychelles population density of 191.2 per square kilometre [World Bank Basic Indicators, 2009], there are reasons to be have good surveillance programmes as Seychelles' population density is high enough to potentially fuel rapid spread of any viral disease that is subject to prompt control measures. Provisions for the local population to have access to proper shelter (only 5% of all households were not in a good state of repairs, according to Seychelles in Figures report, 2009 edition, NSB), clean water, proper sanitation, and medical treatment among other socio-economic factors have played critical roles in mitigating any rapid spread of the diseases.

Major challenges in the area of communicable diseases are the prevalence of the HIV/AIDS virus and the alarming number of cases of Hepatitis C virus in 2009 and 2010. The root causes of the latter are not exactly clear though there are anecdotal evidence that the virus is largely transmitted through illicit intravenous drug use. The intervention programmes on HIV/AIDS and Hepatitis C are still being viewed as too conventional in thoughts and actions, and hence, have only had a modicum of success. Though the number of deaths has been relatively low as compared to non-communicable diseases like cancer and cardiovascular related illnesses, it adds significant pressure on the national health budget. These cases are becoming more common in high risk and vulnerable groups like teenagers, people indulged in drug and alcohol abuses, and men who sleep with men [HIV/AIDS National Strategy Plan 2011-2015, June 2011].

The Non Communicable Diseases (NCD), on the other hand, is the most alarming health problem in Seychelles, and is estimated to be affecting more than 50% of the population. Indeed, both the 1989 and 2004 heart studies revealed that chronic diseases, and, more specifically, cardiovascular diseases (CVD), are the leading causes of the morbidity and mortality in Seychelles -they account for almost 40% of all deaths. In those research studies, it has been revealed that NCD are increasingly related to
lifestyles. This includes change in diet with increasing fat intake, the increasing use of motor vehicle, lack of physical exercise, and increased alcohol consumption and smoking, amongst other risk contributing factors [Heart Study, 2004].

Our findings indicate that there are more worrying trends in the prevalence of CVD related risk factors like diabetes and hypertension, and these health problems are affecting all age groups and genders. However, the risk of CDV related diseases tend to affect particularly people in 54+ age group, especially women, whilst the HIV tends to affect mainly those in the 25-45 age groups. mostly men. However, there has been no in-depth research on the real root causes the foregoing situation. Such information would be vital for developing more cross-sectorial approach to improving the health status of the whole population. There are, however, strong views from informal focus group discussions that the high GDP and other income from the black economy are some of the reasons for the changing dietary patterns, and other changing lifestyles. Some of those and social behaviours and are explored later.

In spite that, the average life expectancy (both males and females) stands at 73yrs from birth in 2008, which is a strong indication of a commendable population health status. While there are costly free medical interventions in Seychelles, we are yet to establish through research whether it is the interventions that make people live up to 73 years or whether there are other reasons or a combination of reasons.

4.2. Underlying Social and Economic Determinants of Health in Seychelles

Evidence in Seychelles has shown (see appendices) that being healthy is a status which is not enjoyed by all alike, and there are diverse factors contributing to health inequalities among different population groups or individuals within the country but there is not always enough information or strong evidence to assert that there are significant geographical disparities, if any. On the contrary, the primary health care services and most other awareness and prevention programmes are decentralized and accessible at local district levels, unless one chooses not to access or use the facilities.

The challenge that many fail to understand is the inability for the health care system to achieve health equity and promote good health for all as this is limited by factors that lie outside and beyond the control of the Ministry of Health. Like other countries, differences in socioeconomic factors, such as educational background, occupation, income, living environment, gender, lifestyles and other dimensions of social exclusions (e.g. age) impact on health outcomes in Seychelles, and these key socio-economic determinants of health and health inequalities are being explored in the rest of this analysis. Effectively addressing inequities in health involves not only new sets of interventions, or modifications to the way that public health programmes are organized and operate, but most importantly, the thorough understanding of these socio-economic determinants, though there is limited research in most of these areas.

4.2.1 Poverty and Income Distribution

The poverty profile of Seychelles has changed over years in many aspects. In the Poverty Assessment work on Seychelles in June 1994 commissioned by World Bank, it was estimated that about 6 % of the population was living below absolute poverty line set at SR 500 (US$ 90) while 18 % of the population
was considered to be living below the national poverty line, set then at SR 900 (US$150) per household per month [Seychelles MDG Report, 2003].

In another Household Survey undertaken from August 1999 to August 2000 where the minimum level of expenditure was SR 841, it was established that 16% of households were spending below this level. Results from the more recent 2006 to 2007 Household Expenditure Surveys show that 18% of Seychellois households are not able to meet basic caloric requirements. Though, it has been established on average, that 21% of households’ income is spent on food purchases, the increasing cost of basic foodstuff (leading to lower purchasing power parity) in the last five years is putting pressure on households to meet the food poverty line set at SR 38.90 per day which is above US$ 3, and daily consumptions of desirable caloric intake from fruits, vegetables, nuts, and fish are becoming less affordable for many. This gives rise to the debate as whether the national focus should be on costly health interventions, or policy review to enhance and promote good and healthy living through subsidized, and hence, more affordable food items like fruits, vegetables, nuts and fish.

The 2008 economic reforms (local currency devaluation inclusive) along with the global food and fuel crises would have pushed more local households below the poverty and absolute poverty lines, and the extent of any deterioration will be revealed in the next household survey exercise. This assertion is, regardless, of Seychelles’ minimum salary set at SR19.50 (or US$1.50) per hour for casual work or SR22.50 (or US$1.75) per hour for a full day’s work.

4.2.2 Salary Distribution

In terms of income distribution, there has been no consistent assessment of the situation over the years, and very limited information can therefore be accessed. The income share by the lowest quartile of the population as established by the United Nation (List of MDG Indicators, 2008) as per Appendix 3 was 8% in 2000 and 9% in 2007, respectively, and these are considered as a very small share of the national income wallet. In 2008, the average monthly salary was RS5,958 (NSB, 2010) for all sectors of the economy as compared to the estimated minimum earning of RS3,150, result in a range of RS2,808 between the two salary points, which is a significant difference for a small workforce. From 2000 to 2009, Seychelles had a Gini index (measure of income distribution inequality) of 65.8 (World Bank, 2010), a measure that is considered as a significant income distribution inequality.

4.2.3 Inequality Analysis

The level of households falling under poverty line (18%), the salary distribution inequality, and the significant number of over 3000 people seeking social security assistance (Social Development Department, 2009) are evidence of a significant proportion of the population with disadvantaged living conditions and challenges to access affordable nutritional intake and alternative health care. These impacts on the health outcomes of these vulnerable groups, and are in themselves sources of health inequalities. In terms of poverty, income and salary distributions, gender inequities seem to disproportionately affect women. Though no specific studies have been done in this area to directly support the observation, the new welfare agency set immediately after the 2008 economic reforms for the vulnerable groups which were then not officially established, revealed that 62.4% of persons receiving social welfare assistance were women (Social Development Department, 2009). Though it is not established by specific studies, there is a strong belief amongst the people we engaged with that belongs to the low income groups have limitations on what they can do in terms of dietary intake, shelter, sanitation, and general living conditions and they are more likely to be exposed to disease-
causing agents and susceptible to developing health problems. And once they are exposed they become even more vulnerable and many do not have the same drive to opt for preventive interventions.

It is the case that the low income groups have more tendency to fall victim to poor quality alcohol like ‘baka’ and other cheap brews, drugs, prostitution, or live in neighbourhoods that are likely to promote such behaviours, and these were findings in the study on Prostitution in Seychelles (2011) and Pattern of Alcohol Consumption in Seychelles (1998). In the latest study on the assessment of the status of Prostitution in Seychelles commissioned by the Department of Social Development (January 2011), it was established that the different age groups (18+ and 20+) that almost 80% were involved in prostitutions as a means of secondary income or as a way of earning a living, 20% to finance their drug habits, and they mainly happened in socially unstable and poor neighbourhoods like Les Mamelles and Corgate Estate. The public and respondents perception of causes of prostitution were consistently revolving around drugs and alcohol, economic reasons and lack of values and role models in the country. The study further revealed a high level of health risks through the prostitution activity such as violence and injuries, HIV/AIDs, drugs and alcohol, mainly affecting the lower socio-economic classes, and hence, impacting on health outcomes of these vulnerable groups on many fronts. Similarly, the study on patterns of alcohol consumptions in Seychelles has established that the low income groups have the tendency to consume more alcohol, and in particular, the cheap home brews and this has direct impact on their health outcomes.

It can be also argued that health services can play a major role in the generation of inequities. This is due both to inaction and lack of proactive measures to effectively address the social and health needs of the poor and vulnerable groups such as the unskilled manual workers (labourers). Many resources are spent on expensive treatment interventions of these people while failing to address the social ills that work against those treatments. We have cases of people living in deplorable situation and under the poverty line and they are simultaneously drugs and alcohol addicts, involved in prostitutions, or rejected by family, and medical prescriptions are given with absolutely no consideration for medical or social follow-ups and support when they are back in the community. There is no knowledge of the administration of the prescriptions, if taken at all, by the Ministry and these people go back to their old ways and habits. They will come back for treatment and we may go through repeated prescription to no avail.

There have been ‘interventions’ to address these inequalities at both socioeconomic and health levels. In October 2008, a new Welfare Act was passed by the National Assembly, and a new welfare agency was established. Indeed, the Agency’s data for 2009 and 2010 indicate that there was a peak with 3,194 people seeking requests for assistance in June 2009. In the absence of statistics and analyses on the root causes, expert opinions suggest that the large number of requests for assistance is a consequence of the 2008 macroeconomic reforms, and is disproportionately affecting women. There are, however, questions as to the effectiveness of this programme, and in particular, the use of financial resources given to eligible families.

There have been other opportunities for the Health Services to work with other sectors so as to address the inequality by prioritizing diseases of the vulnerable groups, deploying and improving services that cater for the most vulnerable, removing financial barriers, and monitoring implementation, coverage and impact. This requires the involvement of various programmes and stakeholders, both within and outside the health sector that can help address those social determinants. As established by previous studies done by the World Bank and Sinon (1996), the vulnerable groups include: single women-headed households; the hidden poor; the seasonally employed; and retirees living on limited pensions.

From the analyses, there is a case that the above groups have suffered some form of health inequities in Seychelles, as the single women, the hidden poor and seasonally employed are disproportionately
affected by income, and are quite vulnerable when it comes to prostitution, drugs and alcohol, malnutrition, and the prevalence of communicable and non-communicable diseases as discussed earlier. The fact that 57% of the household are headed by women (Household and Expenditure Survey 2006/2007) in Seychelles is in itself an entry point for intervention to see how we can best support these vulnerable groups of the society in the quest for better living conditions, health equity, and hence, better health outcomes.

4.3 Health Status Inequalities

Over the past four decades, Seychelles has made remarkable progress in health development through a comprehensive healthcare infrastructure (Sham-Laye et al, 2004). Located throughout the country and based on the principles of equity and access, healthcare reaches people in all 16 health administrative districts. One of the key strengths of the Seychelles health system has been the commitment of the government to raise the human development standards of its people to the highest levels through the Primary Health Care Strategies.

It has been found that the health status of population, and particularly maternal and child health, have been quite contained over the last few years, with infant mortality from 16.0 to 12.9, perinatal mortality from 21.1 to 16.7 and under-five mortality from 19 to 16 per 1000 live births from 2003 to 2008. Similarly, the maternal mortality ratio has decreased from 67 per 100,000 live births to 0 in the last five years with the exception of 2008 which recorded 65 per 100,000 live births. The life expectancy for both sexes has increased from 70.92 in 2003 to 72.89 in 2008. This has been largely a result of consistent government investment in the health services, staff commitment and competence with number of births attended by almost 100% of trained staff in the last five years, and contributions from other social sectors. The average life expectancy of 76.58 for females and 68.08 for males in the 2003 to 2008 is considered as a fair and true reflection of a strong health system, though men are still disproportionately disadvantaged. In spite of that, many challenges are still to be surmounted before we can eradicate all health threatening trends, and these challenges are aggravated by the fact that the old health problems such as HIV/AIDS persist and are probably there to stay. One of the most alarming trends is the high prevalence of the non-communicable diseases like the CDV related risk factors, and the Ministry has to incur treatment costs over the lifetime of the recipients.

Notwithstanding the above, the government has devised many strategic initiatives to address the different challenges above and the initiatives and programmes seem to have been more effective in certain areas such as maternal and child care and communicable diseases like malaria. However, there is little documented evidence on the effectiveness of many of the interventions, and this reflects the fact that there are no robust tracking, monitoring and assessment systems, in place. This is a serious gap in the strategic management of the Ministry as it is depriving Management of important information for timely decision-making and/or for corrective measures.

One of the most successful initiatives in the Ministry of Health is the immunisation programme, and it continues to play a critical role in improving the health status of the population, and in particular, the maternal and child health. The immunization programme, so well structured, monitored and tracked, has played a pivotal role (along other social agencies) in the elimination of childhood infections and no serious cases of neonatal tetanus or childhood poliomyelitis, pertussis, or diphtheria have been recorded recently, although isolated cases of measles still occur.
While improved sanitation, universal access to safe water, better housing, and the elimination of undernutrition have also led to a reduction of infectious diseases, other socioeconomic developments have brought about sedentary lifestyles and behaviours that put ones health at risk. Persistent alcohol and drug abuses, increased fat calorie intake through emerging consumption patterns, lack of exercises and lack of awareness of CDV risk factors, failure to screen and/or take medicine consistently have been all confirmed by the national Heart Study of 2004. As it is, the pattern of diseases has changed to declining infectious diseases and increasing proportion of non-communicable disease.

4.3.1 Self-Reported Illness

Though there were no compiled statistics or analytical reports on the prevalence of self-reported illness at the time of this report, though it was confirmed that a project to pull these information from the different clinics had to be abandoned as the project team found it difficult to read the scripts of the Medical Officers. However, interactions with medical practitioners and administrators suggest an apparently high prevalence of self-reported illness, estimated at 48% of all patient visits to the clinics. Cough, fever, headaches and dizziness were believed to be the most commonly reported symptoms.

Based on the same opinions, occurrence of illnesses is believed to be higher in the unskilled manual workers, and there was no reported difference between male and female in this occupational group. With the high reported utilisation of the clinic facilities for self-reported illnesses, it has been difficult to estimate or make any assumption on the percentage of people who are opting for self-treatment. It is generally agreed that many people attend the clinic for self-reported illness as the employers expect proof of medical treatment and medical leave for absences during working hours.

There is an ‘entry point’ for a thorough epidemiological analysis of self-reported illness and the utilisation of clinic and hospital services which is important for planning health services.

4.3.2 Mortality pattern by geographic areas, by social and economic groups, by gender.

The mortality pattern in Seychelles has shown a consistent trend over the years with the number of deaths averaging 649 and birth 1487 per year (Table 4.1 below). The average death and birth ratios to the local population are 0.007% and 0.017%, respectively. With the size of Seychelles in terms of habitable landmass (<453square kilometre) it is difficult and makes little sense (let alone the unavailability of data by geography and social class and other surveys) to use and consider reliable statistical measure such as illness concentration curve by socioeconomic status or other health status inequality index. However, the available statistics from the Ministry of Health show that death was more prevalent in males than in females. In 2008, the Annual Report of the MOH showed that male death was 60% as compared to 40% for women. Besides diseases of circulatory system which constitute the main cause of death in Seychelles, death caused by accidents and suicide were more common in males, and at least 80% of the total number of deaths occur in people above 50 years as a result of natural causes. This trend, and prevalence of death in males, may be explained by the common belief that males are more inclined to indulge in high intake of poor quality alcohol and drugs, have lesser commitment to their health and the use of the health services available to them, be less inclined to opt for early health intervention measures until a problem is at a critical stage, be more ignorant of health awareness problems, and participate in more risky physical activities or ignore treatment and prescriptions given to them, altogether. Indeed, this observation was highlighted in the research of 1998/1999 on patterns of alcohol consumption in the Seychelles Islands. It was found that the level of alcohol consumption was higher in unskilled manual workers (labourers) than skilled non-manual workers (teachers, nurses, higher professionals, executives), at 132.6ml v/s 61.3ml per day. The higher
prevalence rate of death in males are also the result of work related accident and personal injuries, due to the nature of their manual and physical work.

The 1998 and 2004 Heart Studies, two of the few comprehensive research done locally, gave further indications that the social behaviour and lifestyle of the local population, and more so the male population, have high correlation with the main causes of death. This includes Neoplasms, diseases of the Respiratory System, Digestive System and Circulatory System (Table 4.2). Whilst no major studies have been done or more immediate statistics are available to accurately establish mortality by social and economic groups, the high alcohol consumption (55%) in male lower socio-economic groups, and in particular, in the 35-64 age category impact on health outcome of this male group, and it is a critical entry point for interventions.

Table 4.1: Registered Births and Deaths in Seychelles, 2003 to 2008

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Average03-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Births</td>
<td>1498</td>
<td>1436</td>
<td>1536</td>
<td>1467</td>
<td>1499</td>
<td>1546</td>
<td>1487</td>
</tr>
<tr>
<td>Registered Deaths</td>
<td>668</td>
<td>611</td>
<td>673</td>
<td>664</td>
<td>630</td>
<td>662</td>
<td>649</td>
</tr>
<tr>
<td>Natural Increase</td>
<td>830</td>
<td>825</td>
<td>863</td>
<td>803</td>
<td>860</td>
<td>884</td>
<td>838</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, Annual Report 2008

Table 4.2: Main causes of death by Gender 2008

<table>
<thead>
<tr>
<th></th>
<th>Diseases of Circulatory System</th>
<th>Neoplasms</th>
<th>Diseases of Respiratory System</th>
<th>Diseases of the Digestive System</th>
<th>External causes of Mortality</th>
<th>Infectious and Parasitic Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Total</td>
<td>32</td>
<td>20</td>
<td>14</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Female</td>
<td>117</td>
<td>43</td>
<td>35</td>
<td>12</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Male</td>
<td>96</td>
<td>89</td>
<td>59</td>
<td>34</td>
<td>34</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: Epidemiology and Statistics Section, Ministry of Health, Annual Report 2008

However, the Life Expectancy is on the upward trend for men and women (Table 4.3), leading one to believe that the health service and status of the population are good
Much work has been done with a view to reduce Child and Maternal Mortality, which is in line with goals 4 and 5 of the Seychelles Millennium Development Goals. However, there are still some challenges to bring the mortality rate to zero or the absolutely minimum. From statistics from the Ministry of Health (and tables 4.5 and 4.7), it is evident that child and maternal mortality is relatively low for Seychelles, with some years recording no death of mothers. Perinatal mortality (table 4.4) is more cause for concerns in Seychelles and the root causes are yet to be fully studied and understood.

**Infant Mortality**

Though the figure is relatively small as compared to the international standard, it has to be noted that there has been slight increase in infant mortality in the last few years as illustrated in Table 3.4. In 2008, for example, the infant mortality rate was 12.94 per thousand live births compared to 10.7 in 2007, and this trend has been consistent in the last two years. There is a consistently higher level of deaths among the infant males, by a ratio of more than 2:1. There were 20 infant deaths in 2008 (14 males, 6 males) and 16 infant deaths in 2007 (12 males, 4 females). The reason for this trend and pattern is still unclear thus raising the opportunity to have a comprehensive study on infant mortality, and establishing why the main cause of death is due to respiratory distress. It would be useful to carry out further analysis of parent’s socio-economic profile and age, at this stage, but information was not readily available for such undertaking. Meanwhile, expert opinions suggest that the main cause of death is being associated with a range of factors such as lack of proper nutrition, alcohol and drug abuse, the mother’s lifestyle, prenatal care, not attending pre-natal care, vaccination, and unsuccessful abortion attempts. Against the above backdrop, there is a clear need for research interventions, although the low level of infant mortality as indicated may not warrant a priority rating for research study.

**Table 4.3: Life Expectancy at Birth (years)**

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Average03-07</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>66.17</td>
<td>69.01</td>
<td>67.39</td>
<td>68.87</td>
<td>68.87</td>
<td>67.70</td>
<td>68.08</td>
</tr>
<tr>
<td>Female</td>
<td>76.10</td>
<td>76.44</td>
<td>77.13</td>
<td>76.66</td>
<td>77.70</td>
<td>78.93</td>
<td>76.58</td>
</tr>
<tr>
<td>Both Sexes</td>
<td>70.92</td>
<td>72.64</td>
<td>71.93</td>
<td>72.20</td>
<td>73.14</td>
<td>72.89</td>
<td>72.16</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, Annual Report 2008

**Table 4.4: Infant and Perinatal Mortality rates 2001 to 2010**

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Mortality Rate (per 1000 live births)</td>
<td>13.2</td>
<td>17.6</td>
<td>16.0</td>
<td>11.8</td>
<td>9.8</td>
<td>9.5</td>
<td>10.7</td>
<td>12.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perinatal Mortality rate (per 1000 live births)</td>
<td>13.1</td>
<td>16.0</td>
<td>21.1</td>
<td>17.0</td>
<td>13.0</td>
<td>15.0</td>
<td>13.3</td>
<td>16.7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Health, Annual Report 2008
Under-Five Mortality

The under 5 year mortality ratio per 1000 live births is at 15 in 2007 and 13 in 2009 (Table 4.5). This figure is relatively small but there are still considerable challenges to achieve the MDG target of 4.2 in 2015. To achieve such target it requires a better understanding of the emerging socioeconomic factor or other conditions that may be the cause of infant mortality, so as to take corrective measures. However, to properly understand the socioeconomic inequities, and to plan interventions to reduce them, it requires greater understanding of the social determinants that most impact on child health, including information on household economic status, social behaviour and lifestyles of the parents through their maternal life paths, social environment and care services, nutrition profiles, and other potential health risk factors.

Table 4.5: Under 5 Year Mortality Ratio per 1,000 Live Births

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio per 1,000 live births</td>
<td>19</td>
<td>15</td>
<td>11</td>
<td>11</td>
<td>13</td>
<td>15</td>
<td>13</td>
</tr>
</tbody>
</table>

Source: Ministry of Health 2009; WHO, 2008

On record, the main causes of the under-five death in Seychelles (Table 4.6) are Neonatal difficulties, Pneumonia (communicable disease category) and injuries, which account for 53% of all such deaths. This suggests that the immunisation programme for children is effective and any entry point interventions for the under-fives should target the non-communicable diseases factors and their related socioeconomic determinants like malnutrition and income inequalities which are contributors to the health status of the population. As stated earlier, the immunisation programme has been one of the most successful prevention initiatives in Seychelles, and there is an opportunity to translate its concepts, principles and practices in new intervention strategies. It has to be noted that this is a programme that is well structured in terms of its educational awareness, vaccination schedules, tracking and monitoring of its implementation, especially for infant, child and adolescent groups.

Table 4.6: Main causes of under 5 death in Seychelles, since 2004

<table>
<thead>
<tr>
<th>T</th>
<th>Neonatal</th>
<th>Pneumonia</th>
<th>Injuries</th>
<th>Malaria</th>
<th>Diarrhoea</th>
<th>Measles</th>
<th>HIV/AIDS</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of all under-five deaths</td>
<td>53.1 %</td>
<td>14</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>26</td>
</tr>
</tbody>
</table>

Sources: Ministry of Health, 2008

Maternal Mortality

The Seychelles has maintained a low maternal mortality ratio over the years, with very few maternal deaths over the last five years as illustrated in Table 4.7.
Table 4.7: Maternal Mortality Ratio (per 100,000 live births) for mothers aged 21 to 35

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ratio</td>
<td>62</td>
<td>63</td>
<td>67</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Millennium Development Goals Status Report 2010

Since 2006, there has been only one case of maternal death which occurred in 2008, and like most previous cases, it was the result of indirect obstetric causes. Whilst the Ministry of Health attributes the success in maternal care to the pool of competent personnel, one cannot overlook the fact that there are education and prevention programmes that are accessible to all in the local districts. They include:

a) A good network of Health Centres providing free primary health care as a basis for healthy living
b) Family planning clinics for specialized services
c) An antenatal programme that follows mothers and their pregnancies, providing dental care, voluntary counselling and testing for HIV and other blood-borne diseases such as Hepatitis C amongst others

The low maternal motility is also attributed to the fact that a high percentage of births in Seychelles are attended to by trained and skilled health staff as per Table 4.8. However, there are concerns amongst the health professionals, including personnel in the Human Resource Department in the Health Ministry, about the sudden and continuous loss of trained and experienced midwives as a result of the 2008 macroeconomic reform voluntary redundancy scheme.

Table 4.8: Births Attended by Skilled Health Staff

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Total</td>
<td>98</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>100</td>
<td>100</td>
<td>99</td>
</tr>
</tbody>
</table>

Source: Ministry of Health

According to the Ministry, the very few pregnant women who do not succeed in being attended to by a skilled health professional when they are giving birth tend to be related to incidents of delivering in situations when the staff is not presently available, such as during personal transportation to the hospital, adolescents who have hidden their pregnancies until the last minute and recently, heroin-dependent pregnant women who deliver at home. There was no available research or analysis to critically study these groups of people to find out why they are falling outside the normal maternal care set-up and provisions.

**Nutrition Status (Stunting and Wasting, Underweight)**

As discussed earlier, lack of basic caloric intake may have been affecting 18% of households living under the poverty (Household Survey, 1989, as reported in the MDG Report 2003 ad Household Survey 2006-2007) line prior to 2008 economic reforms and though no expense and household survey has been carried out post 2008, the number of households below the poverty level in 2011 is believed to
have far exceeded 18%. This assumption is based on the fact that the devaluation of the Seychelles rupees by 80% in the wake of the fuel crisis and a rise in food prices.

Based on the last nutritional profile on Seychelles (WHO, 2008), the study of nutritional status of the under-five carried out in 1988, found out that 5% of them were stunted while 6% were underweight. This is, therefore, an entry for data collection and research interventions.

Results from the more recent 2006 to 2007 Household Expenditure Surveys also show that, on average, 21% of households’ income is spent on food purchases. With the average individual income of RS5,958, the average single parent household will be spending RS1251 (US$100) on food per month, and those with minimum salary point of RS3,150 will spend RS661 (US$53). Therefore, an average single parent household will barely afford to spend US$3.3 per day on food, which is just above the poverty line set at US$3 per day. With the recent local and international economic shocks, leading to very high commodity prices which outweigh 3% to 10% salary increases in the lower income brackets, this situation will definitely add pressure on the average household to realistically meet the basic caloric requirements.

There is no in-depth analyse or research done to realistically and accurately establish the prevalence of underweight children under 5 years in the Ministry of Health, in the last three years. On the contrary, the more affluent people and households are reverting to the more non-nutritional caloric intake like ‘junk’ and fatty food (Heart Study of 2004), and hence, giving rise to more overweight (obesity) people amongst the population. In a study of overweight and obesity undertaken on 5-17 year olds in 2002 by WHO, it was found that the prevalence of overweight was 12.6% and the prevalence of obesity 3.8%. These proportions are similar to or higher than those reported in some industrialized countries in the past few decades. Therefore, the prevalence of overweight and obesity in children are the results of social factors that impact on the health outcome of young people, and subsequently, the adult population of the Seychelles.

Therefore, the entry points for intervention should not be limited to the nutritional standard of the child but must take into account unfavourable socioeconomic determinants of child health, and, in particular, the mother’s life path profile which includes mother’s socioeconomic profiles, drugs and alcohol habits, and other lifestyle behaviour in terms of maternal care. The outcome of proposed research will give better indications of mother’s impact on the health outcomes of the affected child’s groups.

4.4 Health System Inequalities

Health Systems includes the 6 pillars service delivery; health workforce; information; medical products, vaccines and technologies; financing; and leadership and governance (stewardship).

1) Good health services are those which deliver effective, safe, quality personal and non-personal health interventions to those that need them, when and where needed, with minimum waste of resources.

2) A well-performing health workforce is one that works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances (i.e. there are sufficient staff, fairly distributed; they are competent, responsive and productive).
3) A well-functioning **health information** system is one that ensures the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status.

4) A well-functioning health system ensures equitable access to essential **medical products, vaccines and technologies** of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use.

5) A good **health financing** system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them. It provides incentives for providers and users to be efficient.

6) **Leadership and governance** involves ensuring strategic policy frameworks exist and that these are combined with effective oversight, coalition building, regulation, attention to system-design and accountability

### 4.4.1 A Description of Seychelles Health System

Despite several restructuring of the Ministry of Health over the years, the overall planning, organising and financing of the health system remain the responsibility of the government. The Ministry of Health is currently headed by a Minister who, in turn, assisted by 1 Principal Secretary for the Hospital Services, and a Health Commissioner who heads the Public Health Department.

There is now a comprehensive and integrated three-tier health structure, which comprises one central referral hospital, 3 cottage hospitals, 1 rehabilitative hospital, 1 mental hospital, 1 youth health centre and 16 district health centres located in the community. Most of the health centres offer services ranging from care programmes including maternal, child and family planning. In addition, there is the unit for the control of communicable diseases including sexually transmitted infections and HIV/AIDS. As part of the preventive interventions are core programmes of Maternal and Child Health, Expanded Programme of Immunization, Family Planning, Ante Natal and Post Natal Care, Environmental Sanitation, Oral Health, Domiciliary Care, Treatment of Common Ailments, Health Promotion, Communicable Diseases Prevention and Control.

**Human Resources**

Prior to 2008, the Health Department and Hospital Services have been operating with a labour force of 1,752 employees, out of whom 165 employees were from the Health Department and 1,587 employees from the Hospital Services. In 2010, the number of health employees was 1,381, which is about 1.6% of the population of Seychelles or 3% of the total local workforce - both being significant health employment ratios.

In terms of other resources, there are adequate infrastructure provisions to cater for public health in terms physical resources, geographical spread of facilities around the country, staff resources (with exception in some highly specialised areas), and medical supplies like drugs and vaccines. Although Seychelles has been successful in addressing key health issues, the health system still faces a number of challenges. These include improving the quality and delivery of its health care services, setting up an effective monitoring and evaluation system, addressing the high turnover of health professionals, and
tackling rising levels of non-communicable diseases, HIV/AIDS and other emerging diseases. This is a situation that was also confirmed by the WHO in their Country Cooperation Strategy 2008 – 2013.

The brief review of the current situation also indicated that whilst much was achieved, there were still issues that need be addressed, particularly in the areas of health services organization and delivery, human resource development, research and health information and health promotion. For example, besides finance, there was no evidence of future and scenario projections that are critical for forward planning and provisioning. These are, no doubt, critical entry points for interventions for the Ministry, as it may risk failing to foresee and plan for future needs or crises.

There has been significant bilateral support with the provisions for the local health system and health services, in recent years. Amongst the recent support, is a state of the art diagnostic centre donated by the United Arab Emirates (UAE), construction of a new hospital through the Chinese government interventions, and many other support programmes from the government of India and Cuba. The government-funded services are, importantly, complemented by a private service system of clinics and practitioners, pharmaceutical services, and the participation of NGOs and the Civic Society. In 2006, there were 7 private medical clinics, 5 dental clinics and 2 pharmacies. In 2011, the private service system has grown by almost 50%, giving increased access to medical facilities and services. Most private practitioners provide primary treatment, referring patients to government-run secondary and tertiary care services when required.

In terms of collaboration, several ministries actively contribute to the development and maintenance of the health sector in Seychelles. These include the Ministry of Education for health education for children; and the Ministry of Community Development, Youth and Sports for health education among the young people and other specific population groups. Better coordination in health-related activities between all these ministries, in particular, in the area of health promotion and education is, however, necessary.

Civil society's participation in health care is minimal. This may be as a result of the government’s role as the sole health care provider in Seychelles over the last 30 years. The participation of the civil society is mainly in the support of specific causes - for instance, the National Council for Children in promoting the welfare and rights of children; the Cancer Concern Association in assisting cancer patients and their families; the Diabetes Society of Seychelles in prevention and awareness-creation; the Drug and Alcohol Council in spearheading policy development for national drug control; the Red Cross in supporting emergency and humanitarian actions; and HIV/AIDS support organisations in offering STI and HIV/AIDS awareness and support for people living with HIV and AIDS.

### 4.4.2 Access to and Use of Health Care Services

In the absence of any recent formal studies, it is believed that access to health or inequities in access to health care services are not major issues when one compares the observed patterns of utilisation of the health care services with estimates of the distribution of health care needs in prior years for the different range of services the Ministry offers.

Immediately prior to independence in 1976, the population was just over 60,000 and there were 15 doctors and 5 dentists. In 2010, the doctor to population ratio is 1:861, which is relatively high and allow good professional coverage.

Among the priorities adopted by Seychelles were equitable access by all citizens to health care through the decentralisation of services into the community and the abolition of all health fees. Emphasis was
placed on preventive care, family planning and child health. As part of the plan, private medical practice was abolished and government became the sole employer of doctors and dentists. The 15 years following the first post-independence national health plan was characterised by large investment in health infrastructure, with the renovation/expansion of existing health centres and construction of new ones and the modernisation and expansion of the Victoria Hospital. The Primary Health Care approach extended to the community through the network of health centres, schools, work place health service delivery, community centres and organisations. At the same time, specialised services offered by Victoria Hospital, secondary level care, were improved and expanded. Favourable loans and grants from international financing institutions like the African Development Bank (ADB) and a number of developed countries helped to finance the infrastructural developments. These undertakings were crucial infrastructural and service mechanisms to enable and facilitate access to the full range of services by all citizens.

But there are always questions as to whether the health service is reaching everyone equally and which pockets of the population are being left out. There have been endless debates about the effectiveness of the HIV/AIDS programs and interventions and whether they are reaching the vulnerable and exposed groups like the adolescents, the prostitutes and drug users, and the men that are having sex with men. The intervention and preventive programs are not reaching those vulnerable persons who do not always have access due to stigma and discrimination. The same applies to other vulnerable groups like sewage workers and farmers who will not all readily access the health services for similar reasons, and there are no evidence that the programs are brought on-site by the relevant Health Authorities to become an integral part of the organisation’s undertakings. There are similar concerns about mothers who do not reach the hospital in time and may deliver on the way this may call for consideration of provisions to allow and/or facilitate delivery at home, and even at a cost for those who can afford. These are clear indications that there are underlying problems of access to health care.

Another important feature was the establishment of close links with non-health ministries and agencies, acknowledging that access to health is not just statistical measures of how many people are attending the clinics, and the likes, but that health access and addressing health issues needed collaboration with sectors dealing with education, housing, environmental sanitation, water supply, food security and community development.

There is now a good network of health centres serving the local communities and providing a range of comprehensive promotive, preventive, and curative services, including medical consultations, family planning, child health, school health, environmental health and, in the larger centres, dental care and physiotherapy.

Victoria Hospital functioned as the national referral hospital providing specialised in-patient and outpatient services. More specialised care, such as cardiology, oncology and neurology, are provided by consultants from overseas. Patients are sent overseas, and full costs of treatment are met by the government if the treatment is not available in Seychelles.
### Table 4.9: Attendances and Vital Statistics 2002-2009

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLINIC ATTENDANCES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors Normal Hours</td>
<td>222,783</td>
<td>226,040</td>
<td>237,223</td>
<td>256,735</td>
<td>272,354</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors After Normal Hours</td>
<td>66,506</td>
<td>66,994</td>
<td>63,340</td>
<td>56,738</td>
<td>58,885</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seen By Nurse (1)</td>
<td>129,068</td>
<td>138,517</td>
<td>157,500</td>
<td>166,854</td>
<td>173,404</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Dressings</td>
<td>89,404</td>
<td>86,881</td>
<td>81,864</td>
<td>89,638</td>
<td>82,767</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist outpatient</td>
<td>121,000</td>
<td>124,982</td>
<td>125,162</td>
<td>130,633</td>
<td>127,245</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MATERNAL AND CHILD HEALTH</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor</td>
<td>1,201</td>
<td>1,219</td>
<td>1,229</td>
<td>1,374</td>
<td>1,396</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nurse</td>
<td>27,921</td>
<td>27,633</td>
<td>26,488</td>
<td>27,367</td>
<td>26,884</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ante Natal Attendances (3)</td>
<td>20,037</td>
<td>20,660</td>
<td>21,338</td>
<td>22,437</td>
<td>22,208</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post Natal Attendances</td>
<td>1,496</td>
<td>1,435</td>
<td>1,390</td>
<td>1,464</td>
<td>1,409</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Planning : (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pap Smear</td>
<td>5,002</td>
<td>5,068</td>
<td>5,153</td>
<td>4,541</td>
<td>4,397</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Acceptors</td>
<td>570</td>
<td>624</td>
<td>608</td>
<td>605</td>
<td>601</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop Outs</td>
<td>1,932</td>
<td>1,796</td>
<td>1,926</td>
<td>1,874</td>
<td>1,684</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop Outs Returning</td>
<td>1,840</td>
<td>1,808</td>
<td>1,887</td>
<td>1,848</td>
<td>1,696</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Users</td>
<td>30,235</td>
<td>30,780</td>
<td>31,219</td>
<td>28,721</td>
<td>29,138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children examined at school</td>
<td>11,476</td>
<td>13,399</td>
<td>11,974</td>
<td>12,555</td>
<td>12,407</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home Visits</td>
<td>8,190</td>
<td>10,637</td>
<td>12,245</td>
<td>13,457</td>
<td>11,986</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Health statistics unit/health centres monthly returns

(1) From 1988 onwards nurses were asked to screen only minor illnesses
(3) From 1988 onwards ante natal attendances from Victoria Hospital were included
(4) From 1991 onwards Papsmears and Dropouts were included

### 4.4.3 Health Care Financing

The government has a strong commitment to the provision of health services, as evidenced by the provision of the highest government sectoral allocation to the health sector. This allocation amounted to 10.3% and 10.5% of the national budget in 2004 and 2006 respectively, and 12%, 14.5% and 11% in 2007, 2008 and 2009, respectively. In 2009, the health budget was 2.8% of the GDP. Demand for health services has been increasing due to various demographic, social, environmental and technological factors. These include the re-emergence of diseases like chikungunya and dengue; the potential threats of global pandemics of emerging diseases; and rising expectations of the population. The two main challenges to the health system are financial sustainability and the efficient utilization of resources. Sustainability calls for the issue of health financing to be addressed using a two-pronged approach: cost-containment through efficiency-enhancing measures, and broadening health care financing by reducing the public provision and financing for health. However, it is crucial that any introduced measures do not radically depart from the broad principles that have guided health care provision in the country, and that the government continues to play the leading role.

As an indication of the Government’s pursuit of health for all Seychellois, the annual health budget has more than doubled in the last decade, as illustrated in Table 4.10.
Table 4.10: Annual Health Budget (RS’000)

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 (RS'000)</th>
<th>2007 (RS'000)</th>
<th>2008 (RS'000)</th>
<th>2009 (RS'000)</th>
<th>2010 (RS'000)</th>
<th>2011 (RS'000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>161,094</td>
<td>167,367</td>
<td>179,338</td>
<td>183,338</td>
<td>180,983</td>
<td>181,942</td>
</tr>
<tr>
<td>Revised</td>
<td>161,094</td>
<td>167,367</td>
<td>179,338</td>
<td>183,338</td>
<td>180,983</td>
<td>181,942</td>
</tr>
</tbody>
</table>

Source: Ministry of Health

In 2009, it was estimated that 99% of the health funding was domestic and 1% was funding from abroad. It was also estimated that the spending on health was 77% by Government, 7% by households, and others accounted for 16% (Health System Financing Country Profile, Seychelles, 2009). These financing splits show that the government still carries the burden of health financing, even after the 2008 macroeconomic reforms, when the government is obliged to limit its spending on all fronts. This tight budgetary control was necessary and was clearly highlighted by the IMF advocating

“limitation of government role in the economy and the boosting of private sector development by further privatisation, enhanced fiscal governance and a review of the tax regime which has in past offered very lenient package benefits and exemptions.” (December 2008, IMF Country Report No. 08/366).

The continuous request for a supplementary budget (the difference between revised and actual budget in Table 4.10 for each year) is already showing signs of financial stress on the government health ministry, a situation that calls for an urgent review of the health financing policy.

The roles of individuals and private sectors in health financing needs to be reviewed based on the concepts of ‘benefit’ and ‘ability-to-pay’ principles. The Ministry should also endeavour to eradicate all forms of wastage, and non-added value systems, structures, processes and people in the value-chain. This is usually the first step to addressing financial stress and constraints of any institution or organizations, be it a profitable one or not. We are already seeing an increase in private health practitioners, increased private pharmaceutical services, emerging roles of NGOs and Civic Society, and employers supporting the social welfare of their employees. The most important development, however, is people and corporate bodies opting now for Health, Accident and injury insurances. It is yet to be established if these initiatives are reducing health financing on the part of the government.

There are now much talk about the emergence of health and medical insurance as an alternative to health financing, and other possible financing models like ‘cost-sharing’ between government and other stakeholders. Insurance companies locally are offering insurance cover for health, medical and personal injuries, which is an emerging form of alternative health financing in the developing countries. The initial step is for the MOH to study the financing options available and look at the best fit for Seychelles.
### 4.4.4 Resource Allocation and the Burden of Disease

As stated earlier, the allocation of 11% of the public annual budget to health, a 2.8% equivalent of the GDP, and 1,381 employees in 2010, an equivalent of approximately 3% of the public workforce or 1.6% of the national population are consistent resource allocation of the government to the national health sector in the last six years. By any measure, these contributions are significant public resource commitments to health by any Government. However, it is the allocation and utilisation of these financial and other non-financial resources that determine the efficiency of the health system and health services, and its ultimate impact on health outcomes and equity.

a) Distribution of Financial Resources by Function

The budget allocations to the Health Department and Hospital Services over the years are illustrated in Table 4.11.

#### Table 4.11: Budget Allocation of Department of Health and HSA 2006 - 2011

<table>
<thead>
<tr>
<th>Year</th>
<th>2006 (RS’000)</th>
<th>2007 (RS’000)</th>
<th>2008 (RS’000)</th>
<th>2009 (RS’000)</th>
<th>2010 (RS’000)</th>
<th>2011 (RS’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Budget Revised</td>
<td>Budget Revised</td>
<td>Budget Revised</td>
<td>Budget Revised</td>
<td>Budget Revised</td>
<td>Budget Revised</td>
</tr>
<tr>
<td>Personnel Emoluments</td>
<td></td>
<td>92,622</td>
<td>97,005</td>
<td>101,220</td>
<td>101,220</td>
<td>96,730</td>
</tr>
<tr>
<td>Office Running Costs</td>
<td>11,665</td>
<td>12,172</td>
<td>13,372</td>
<td>13,372</td>
<td>12,884</td>
<td>13,494</td>
</tr>
<tr>
<td>Repairs &amp; Maintenance</td>
<td>4,495</td>
<td>4,809</td>
<td>5,319</td>
<td>4,659</td>
<td>3,794</td>
<td>3,853</td>
</tr>
<tr>
<td>Transportation Costs</td>
<td>3,096</td>
<td>3,226</td>
<td>3,458</td>
<td>3,893</td>
<td>3,390</td>
<td>4,380</td>
</tr>
<tr>
<td>Other Costs</td>
<td>1,980</td>
<td>1,989</td>
<td>2,397</td>
<td>2,366</td>
<td>5,153</td>
<td>4,977</td>
</tr>
<tr>
<td>Specific Costs*</td>
<td>45,186</td>
<td>46,881</td>
<td>51,527</td>
<td>55,578</td>
<td>57,342</td>
<td>56,289</td>
</tr>
<tr>
<td>Minor Capital Outlays</td>
<td>2,050</td>
<td>1,284</td>
<td>2,045</td>
<td>2,250</td>
<td>1,689</td>
<td>1,539</td>
</tr>
</tbody>
</table>

Source: Ministry of Health Finance Dept, 2011

*Specific costs caters exclusively for medical supplies, drugs, vaccines, instruments and the likes

The challenges to health financing and health equity almost solely by the government are becoming increasingly difficult following the 2008 macroeconomic reforms. This will be aggravated over the years with the high costs treatment for HIV/AIDS, Dialysis, Chemotherapy, and other overseas treatment. With the prevalence of CDV related risk factors like diabetes and high blood pressure whereby treatment are likely to be over the patient’s lifetime, there will be added stress on the health budget.

In the last five years, the allocation to the specific costs have more than doubled and is now at par with the cost of personal emolument in 2010. This is a worrying trend as the chance of the Ministry to reward their high performing employees and highly specialised skills becomes limited, if not already impossible. The office running costs have, on the other hand, tripled over the last five years, a situation...
that may be justifiable but still calls for entry point intervention. As a result, very little allocation is left for key intervention areas like educational awareness and prevention, research and development, analytics, and training and development, program management monitoring and evaluation.

b) Distribution of Human Resources for Health

The Ministry of Health is employing 1,381 people in 2011 of which 103 are Medical Doctors and Specialist Consultants, and 418 are qualified nurses and midwives, and they are all in full time employment. These medical practitioners have a support team of 670 people who are mainly nursing assistants, medical clerks and auxiliary staff (see Appendix 5).

From the analysis of allocation of human resources based on disease burden and geographic location, there were some disparities in allocation of human resources. The Psychiatric Unit has 1 highly trained local specialist to cater for the increasing number of people with mental health problems. This dependency is fragile and can be disastrous if the Specialist is unavailable at short or no notice. Cancer is also one of the major causes of death in Seychelles and as illustrated later, the number of Seychellois Consultant Surgeons dealing with these cases is limited to three, with high dependency on foreign Consultant Surgeons. While there have been specialist training offered to the local health professionals, it is understood that specialist training has often been left with the trainees for selection and/or preferred choice.

With the prevalence of the CVD risk factors, there are no highly specialised local heart surgeons who are crucial in the primary intervention of CVD exposed patients, and there was no indication of such specialised training from the Human Resource Department.

However, the allocations of General Practitioners, Nurses and Nurses Assistant, and Auxiliary staff to the different health centres and the Seychelles Hospital have been satisfactorily. This situation can be best improved if driven by a well-staffed Human Resource Department, and a new Human Resource Director at the helm of Human Resource Planning and Capacity Building, Deployment and Performance Management, Retention and Succession Planning.

It was quite interesting when the Ministry was challenged about the fact that some of their best trained Medical Officers held Management responsibilities rather than meeting the demands of patients in clinics and other disease burdened areas like HIV/AIDS, and CVD. It was argued that their role as ‘Program Managers’ were critical to the containment of the local health status, as they were preventive and educational in nature, and hence, protecting thousands of people and illnesses/diseases rather than attending to individual patients. This is a line with our quest to win through educational and prevention strategies.

4.5 Inequalities in Communicable Disease Burden and Implications for the Health MDGs

According to WHO CCS 2004-2007 Seychelles has made tremendous progress in the Expanded Programme on Immunisation (EPI) since the provision of routine immunisation services for all citizens was established in the 1950s and 1960s. This programme has been so successful to the extent that even WHO (in the same report) confirmed that vaccine-preventable diseases have disappeared from the islands due to the high vaccination coverage, which is now estimated to be at 99.9%.
As a result Seychelles has been well positioned to achieve most of its Millennium Development Goal (MDG), and this development was confirmed by the MDG report 2010. Both maternal health (including the reproductive health) and other communicable diseases are well contained, with the exception of the HIV/AIDS and Hepatitis, two of the 'old' health problems that seem to persist and often show ignition sparks. In its endeavour to achieve the millennium goal 2015, MOH has been implementing key initiatives, including policy reviews in areas like Reproductive Health in 2009, and a review this year of the HIV/AIDS strategy has led to the new National Strategic Plan 2011-2015.

Reproductive Health

In terms of Reproductive Health, key functions like Family Planning, Gynaecology, Maternity Services and Communicable Disease Control Unit (CDCU) ensure that all women have appropriate health care throughout their reproduction cycle and are attended to by trained personnel. Seychelles has a fertility rate of 2.4 in 2009 and 2010, almost zero maternal death and an infant mortality rate of 12.94 per thousand live births since 2008. The main concern is the level of illegal abortions and teenage pregnancy. The abortion rate in Seychelles is relatively high, and more so, for abortions outside the official Medical System that is estimated to have outnumbered the medical ones by a ratio 3:1 and up to 6:1, in spite, of the possibility of having legal abortions. Indeed, the percentage of abortions for women under the age 20 years was 21.8% in 2000 and 19.2% in 2008, showing a persistent trend in the rate of abortion for the adolescents. In 2008, 15.3% of incomplete abortions involved young women in the age group 15-19 years again showing that this age group is at high risk. Indeed, the research on teenage pregnancy in 1996/1997 reveals that 4 out of 5 teenage pregnancies were unwanted and not planned.

Though no in-depth studies have been done in this area, expert opinions suggest that besides the usual social determinants, there are legal misalignments and some morale/spiritual issues on contraceptives and abortions. These are potential entry points for interventions that could address these emerging problems.

Child and adolescent health

According to the report on Maternal and Child Health in the Seychelles (November 2004), the Child Health Programme was initiated in the early 1950s, when infant and child mortality rates in Seychelles were 67 and 90 per 1000 live births, respectively. In the past ten years the child mortality rate has been between 0.1 and 0.9 per 1000 (one to five child deaths per year). Congenital abnormalities and acute infection with septicaemia have been the most common causes of death. Currently, infant, children and adolescent health care in Seychelles are subject to a number of initiatives including Child Health Care Programme, Comprehensive Immunisation Programme and Monitoring of Children’s Growth and Development, Personal and Social Education in schools, and School Health and Dental Services, which are routinely provided in primary and secondary schools. This success calls for surveillance rather than any major intervention programme.

On the other hand, it has been found that the challenges with child and adolescent health which persists is the prevalence in obesity rate, under-nourished children and adolescents, teenage pregnancy and abortion - all linked with socioeconomic factors like dietary trends, poverty, lifestyles and behaviours.
**HIV/AIDS**

In 2006, the HIV/AIDS' prevalence rate was only 0.5% within the population aged 15 – 49 years, and in 2007, a total of 19 new cases were reported of which 14 were male and 5 female. This brings the overall total cases reported to 333. In 2007, 43 new cases were detected of which 25 were males and 18 females. This brings a cumulative total of 333 cases since 1987 to December 2007, and the country was classified as one with low to moderately high prevalence rate. This trend has persisted and in December 2010, the number of HIV cases has reached 460, that is, a 700% increase in 11 years. The number of new detected cases of HIV in the last six years is illustrated in Appendix 6, and this is an alarming situation for a population of around 88,365 people.

Out of the cumulative detected HIV/AIDS cases, 58% are males and 42% are females. Though HIV in Seychelles has a low prevalence of less than 1% in the general population, the reality is that it occurs as a concentrated epidemic in high-risk groups [WHO (2008) WHO Country Cooperation Strategy 2008-2013 Seychelles, page 9], a situation that makes the MDG, 2015, to halt HIV/AIDS by 2015 and begin to reverse the spread of HIV/AIDS, more challenging. There are, in place, local focus/surveillance groups, namely, the Technical Advisory Committee on HIV/AIDS and STIs (TAC) and the National AIDS Council Steering Committee (NAC). With the increasing number of drug-dependent persons, a number of prevention and rehabilitation measures initiatives like the National Drug Enforcement Agent (NDEA), the Mont Royal Centre, the Centre d’Accueil de La Rosiere are being implemented.

The increase in Hepatitis C may be an indication of trouble ahead for the prevalence of HIV and AIDS, as pointed out by the National AIDS Council Steering Committee. There has been a 333% increase in the number of cases of hepatitis C, with 32 and 55 new cases detected in 2009 and 2010 (Appendix 6), respectively, including 9 cases which were co-morbid ones, with both HIV and HCV (5 males and 4 females). The pandemic is not only having a social impact but also economical ones such as loss of manpower and productivity, and the very expensive costs of antiretroviral drugs and therapy, which is putting stress on the Ministry’s costs and budgets.

**Malaria**

Other CD cases like malaria is not endemic in Seychelles, and there have been occasional imported cases as illustrated in Appendix 6. They usually occur in Nationals who travel to malaria infected zones and countries without vaccination (chemoprophylaxis) and also in expatriate workers from endemic countries. Preventive measures are already in place, The Government is equally providing chemoprophylaxis for travellers to malaria endemic zones, and all incoming aircrafts are disinfected with Permetrin sprays, and ships and boats are inspected and are sprayed as/when necessary. There is strict mosquito surveillance system at all points of entry to country. The control of malaria has been quite successful to the extent that no cases of death have been officially recorded in Seychelles in the last decade.

**Tuberculosis**

The Incidence of tuberculosis (per 100,000 people) in Seychelles was reported at 31.82 in 2008, according to the World Bank. Incidence of tuberculosis is the estimated number of new pulmonary, smear positive, and extra-pulmonary tuberculosis cases. The trend, though on the decrease (Figure 4.1) for this period of time is not viewed as a significant decrease, statistically.
In Seychelles, all patients diagnosed with the TB infection are put on the Dots treatment programme (Directly Observed Treatment, Short-course) and the treatment success rate has been relatively constant over the last few years, with approximately 88% in 2008. The health care plans for detected cases are well organised. Well over 50% of the newly detected cases are placed under DOTS treatment plans as shown in Appendix 7. The major concern here is that in spite of the availability of prevention measures for post detected TB cases, some drug users do not come in for testing - thus further highlighting the need for outreach programmes for hard-to-reach populations to ensure 100% coverage.

4.5.1 Immunisable Diseases and Immunisation Coverage

The immunisation programme in Seychelles is well “institutionalized (Appendix 4) and this good practice was even confirmed through the annual African Vaccination Week in April 2011. The Ministry of Health through its various departments, and, in particular, the CDCU, ensure the strengthening of the immunization programmes in Seychelles by drawing attention to, and increasing awareness of the importance, the need, and the rights of all persons to be protected against vaccine preventable diseases. It must be noted that Seychelles has an excellent vaccination programme protecting 99 percent of children from birth to adolescent from 11 infectious diseases. However there are weaknesses especially regarding the anti-tetanus vaccination in the adult population (Ministry of Health, April 2011), and activities in this area continue to revolve around:

- strengthening community awareness on the importance of vaccination throughout the life span but especially during the first fifteen years of life.
- promoting immunization against tetanus in the general population with particular emphasis on special risk groups such as farmers, cemetery workers, sewage workers, STAR workers and others.
- encouraging expatriate workers and their families to ensure that they have an up-to-date immunization profile upon entering our country.

Vaccination is viewed as a cost effective intervention as it protects from vaccine preventable diseases, saves life, and prevent long term disabilities, amongst other things.
3.5.2 Other Communicable Diseases

Other CD must not be overlooked and can also cause epidemic threats. The most commonly occurring CD diseases in 2007 and 2008 were influenza-like syndrome and conjunctivitis. In 2008, the former accounted for 32% of all disease detected, recorded and treated while the latter accounted for 30%. In the case of influenza-like syndrome, children under 5 years were the most affected, with 12.1%, followed by children aged 6 to 9 years, with 12.1%. More females (1,040) were affected than males (775). There were 1,704 cases of conjunctivitis in 2008 compared to 14,731 in 2007, when it accounted for 82% of all notifiable diseases. In 2008, conjunctivitis represented 30% of all notifiable diseases, with 834 males and 870 females. There are three other major diseases or groups of diseases causing morbidity and mortality in Seychelles. They include leptospirosis, and viral fever like dengue (see Appendix 3).

11In 2007, there were 58 cases of confirmed leptospirosis, of which 49 were male and 9 were female. In 2008, there were 40 cases, with 34 males and 6 females. From 2003, there has been an increase in the number of leptospirosis cases, with the peak in 2007. The leptospirosis disease can be entirely preventable, through avoiding contact with water contaminated with animal urine. When fatalities do occur (in some 5 to 8% of the cases), post-mortem examinations indicate that there were the following: renal failure, massive haemorrhage in the lungs and other organs. Victims tend to be males aged 15 to 49 years working in the fields.

4.6 Inequalities in Non-Communicable Diseases (NCDs) Burden and Health Conditions and NCD Risk Factors

4.6.1 Overview of Trends in NCDs in the Country

The island program against NCD was initiated in the late 1980s, and since, it has often been considered as model for NCD prevention and control programs in other developing countries. The fight against NCD in Seychelles included the development of early population-based risk factor surveillance mechanisms and a variety of programs and policies, which eventually led to the need for a comprehensive and multi-sectoral policy response to NCD. A number of studies on NCD has been conducted since 1988 and the outcomes have been crucial in the strategies employed in the Seychelles to develop the NCD national prevention and control program.

Two major Heart Studies in 1988 and 2004 were undertaken in the Seychelles by the NCD Unit, and major CDV-related risk factors like diabetes, hypertension, obesity, and cholesterol amongst others were examined, and it was clear that a large proportion of the local population is at risk, and many of them who participated in the studies were not aware that they were carrying one or more of the CDV-related risk factors. The results of 2004 compared to those of 1989, show that the levels of the main traditional cardiovascular risk factors (CV-RF) have either decreased, or in some cases, increased. For example it was, found that there is a reduction in both smoking (17% vs. 30%) and slight improvement in the mean blood pressure (127.8/84.8mmHg vs. 130.0/83.4mmHg). However, there was a moderate increase in cholesterol level (3.58 vs. 3.36mmol/l).

Indeed, NCD cancer, and CDV-related diseases like high blood pressure, diabetes, cholesterol and obesity are increasingly common to all age groups, and in particular, the 25-64 age group, as the

11Millennium Development Goal, Status Report, 2010
prevalence of elevated total cardiovascular risk tended to increase. This trend remains, in spite, of proactive, education/awareness and intervention measures. The burden of non-communicable disease is increasing at a worrying rate, and population ageing and changes in the distribution of risk factors have tended to accelerate this epidemic. Cardiovascular diseases (heart disease and stroke) accounted for 37.1% of all registered deaths, followed by 15% for cancers.

In the last few years, non-communicable diseases have been dominating the mortality table. Vital statistics indicate that cardiovascular disease and related risk factors (diabetes, cholesterol, hypertension, obesity, psychological and cancer) account for approximately 40% and 20% of all deaths, respectively. Age-specific rates of stroke and heart attack mortality have tended to decrease during the past two decades but remain high by international standards. An increase in the total burden of NCD is expected in view of the rapid demographic transition established earlier in the report, and increasing cases of obesity and high blood pressure among the children population.

4.6.2 Inequalities in NCDs and NCD Risk Factors by Socio-Economic Status

Cancer
The prevalence of cancer is so high, accounting for 15% of deaths in Seychelles that it has prompted the Cancer Concern Association to actively raise awareness of the issue, with emphasis placed on diet, exercise, self-examinations, where possible, and early detection and treatment. The incidence of cancer over the years is illustrated in Appendix 8. Breast cancer remains the leading cancer among women, and there is a steady increase in the number of women diagnosed in recent years. The disease now accounts for about a quarter of all cases of cancer in Seychelles. Second only to cardiovascular diseases, cancers are the next most common cause of death. Twenty-three women were diagnosed with breast cancer in Seychelles in 2005, compared to 10 in 2004 - this is an increase of over 100%. In 2006, 16 women were diagnosed and in 2008 that figure rose to 26 cases.

Research suggests that a woman’s risk of developing breast cancer over her lifetime is about 1 in 8 (13%), and her chance of dying from the disease is about 1 in 33 (3%), (Seychelles Nation Articles, 02/10/09 to mark Cancer Day), although we are yet to establish the main contributors to the development of the different cancers, locally.

In 2010, a total number of 131 new cancer cases and 93 cancer related deaths were registered. On average around 100 new cancer cases are diagnosed annually. This current trend, according to researchers, is a reflection of our lifestyle, more specifically, what WHO terms as, the adoption of western lifestyles. Tobacco consumption, processed foods, sedentary lifestyles, exposure to infections and cancer causing substances are among risk factors which contribute towards this. There have been many debates as to the type of intervention. While no research has been conducted as to the exact cause of cancer, there is a general belief that cancer could also be attributed to socioeconomic activities like pesticides, toxic waste disposals, food dumping in Seychelles, air pollution. While early detection is thought to be the best preventive measure for the meantime, there is an entry point intervention to comprehensive research on the ‘cause and effect’ situation.

Although the number of breast cancer cases is rising, more women are surviving today because of early detection, better treatment, improved access to treatment and greater awareness of the disease. However, it is to note that besides medical threats, cancer is a serious socio-economic threat both in terms of treatment costs and loss productivity.
**Cholesterol**

Cholesterol is one of the CVD major risk factors though healthy levels of total cholesterol, triglycerides, low-density lipoprotein (LDL) cholesterol and high-density lipoprotein (HDL) cholesterol can help prevent cardiovascular disease. Research has shown that the prevalence of high blood pressure was 45% and the prevalence of high total serum cholesterol was 25% in men and 32% in women. Either condition or both existed in 63% of men and 57% of women.

It was also established that the level of blood cholesterol remain fairly high by international standards, and less than half of the adult population has cholesterol in the favourable level (<5.2 mmol/l). A large number of people with high cholesterol are not aware or have not heard of it, and are not having treatment (see Appendix 8 for detailed results). An age and gender assessment revealed that the mean total cholesterol varied little with age in men but that levels were higher in women aged 45 and above than in women aged 25-44. Mean HDL-cholesterol was almost identical in men and in women and did not relate to age. Serum total cholesterol, the level of which is directly associated with coronary heart disease, was higher than normal (>5.2 mmol/l) in around 50% of men, 50% of women aged 25-44 and 80% of women above 45 years. High total cholesterol (>6.5 mmol/l) was found in around 20% of men aged 25 to 64, 10% of women aged 25-44, and 40% of women aged 45 to 64 years.

High cholesterol can lead to major heart attacks or stroke, and there is no official national intervention measure taking place in a consistent and structured manner to drive awareness and facilitate early testing and detection. There is scope for intervention programmes to bring testing closer to the population.

**Obesity**

Obesity has become a leading public health challenge because overweight is a main determinant of diabetes, hypertension, blood lipid disorders, and cardiovascular disease. The Mean BMI categorised by age and gender in table 4.12 indicate a high prevalence of overweight and obesity, especially among females in the age group 30-69.

**Table 4.12: BMI by Age Group and Gender**

<table>
<thead>
<tr>
<th>Country</th>
<th>Sex</th>
<th>Age in Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>5-14</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>-</td>
</tr>
</tbody>
</table>

The overall prevalence of overweight (BMI >25) and obesity (BMI >30) in Seychelles is high, with more than 29% of men and 56% of women being classified as overweight or obese.

12In 2003, 5,701 children were examined from an eligible total of 6,422 (participation: 89%). The prevalence of excess weight was 16.1% in boys and 16.9% in girls. Prevalence of obesity was 5.5% in both boys and girls. These proportions are very high by international standards. Statistics show that the

---

12Epidemiological Bulletin, March 2004, Ministry of Health
proportion of children with excess weight or obesity tended to be higher among younger than older students, which suggests that the younger cohorts are particularly prone to become overweight.

The problem of obesity has long been a concern among the local population. According to Bovet P, et al, in 1991, 25.3% of Seychelles' adult population was overweight and 12.6% was obese. According to him, this trend has continued and if no effective prevention is conducted, it is likely that Seychelles will also experience a similar increase in the prevalence of childhood obesity [Bovet, et al, 1991]. The Heart Study 2004 (Appendix 9) established an increase in BMI irrespective of sex and age, with women having the higher BMI. Only approximately 50% of men and 30% of women were found to have normal weight. Approximately 1% of men and 5% of women have extreme obesity (BMI ≥40 kg/m2).

The reasons for this high obese to overweight ratio in Seychelles have been occasionally an issue of discussion, and studies suggest that it is related to lack of exercise and proper diet. There are, however, heated debates about the affordability of healthy eating in Seychelles, when one considers the price of vegetables, fruits and nuts. Since obesity and malnutrition are two key socioeconomic determinants of health and health inequalities, then the availability and affordability of essential foods are critical entry point interventions and must be addressed urgently.

**Diet**

Diet patterns in Seychelles have been very consistent in the past with fish and rice as the staple diet for most family. The 1998 study report found that fish intake was very frequent with more than 85% of participants having fish every day, in contrast to red meat consumption which was less than once a week by two thirds of participants. Chicken consumption was intermediary with approximately 90% of participants reporting eating chicken at least once a week. Eggs consumption was quite high with almost half of men and a third of women eating at least 3 eggs a week.

However, the much needed fruit consumption was rather low as 62% of men and 49% of women reported no fruit intake on the previous day. Similarly, vegetable intake was rather low as respectively 32% and 50% said they did not eat vegetables and salad on the previous day. Substantial proportions of men and women ate savoury snacks and sweet snacks on the previous day, around 25% in either case. Tea consumption was common with less than 10% reporting not drinking tea and around 40% having at least 3 cups of tea a day on average.

Carbohydrate soft drinks consumption was also high with around 50% of people drinking at least one 3 dl bottle on the previous day. Substantial intake of alcohol was reported by a high proportion of men but a low proportion of women. Around 11% of men and 6% of women took at least one take-away meal a week while around 5% of people look at least one meal a week in a restaurant.

The low consumption of fruit is a health concern as fruit and vegetables intake is a strong preventive factor for chronic diseases, and also considering that local (tropical) fruits are often broadly available to many inhabitants in Seychelles. While it is recommended that everyone eats several portions of vegetables every day, nearly a third of people of all ages do not eat vegetables on a daily basis. This finding underlies a major area for prevention as consumption of fruit and vegetables is an important preventive factor of cardiovascular disease, cancer and other diseases. But there are again concerns, even amongst health professionals that the costs of living in Seychelles are not making essential diet intakes like fish, fruits, vegetables, and nuts affordable to all, hence, militating against the philosophical drive and campaign to ‘Take Five’ portions.
Physical Activities

Physical Activities amongst children and young adolescents are taking place at schools as part of the curriculum, and for many of them these activities extend to interschool and other national sport competitions. However, in adulthood the proportion of people engaging in various physical activities is reduced significantly. In the heart study of 1998, it was established that men had more occupational or leisure physical activity than women, and the proportions of individuals having occupational or leisure physical activity tended to decrease with age. Regular leisure physical activity, a strong preventive factor for CVD, was reported by only small proportions of men and even less women.

Similarly in the Heart Study in 2004, it was established that around 40% of both men and women get no significant physical activity at work or outside work. These sedentary habits are found to be related strongly with detrimental conditions such as overweight, high blood pressure, blood lipid disorders and the metabolic syndrome as well as heart disease, cancer and other chronic diseases.

These findings call for a national drive to actively promote and offer physical activity to the population, especially to the women and the older individuals as a complement to the current undertaking of national physical activities, namely, ‘Mass Sport’ and other activities for the elderly. The promotion of leisure physical activity may be particularly needed as walking time (which benefits heart health) is likely to decrease in the near future as people increasingly use public and private transports as people are being pressed for time due to their professional and social obligations.

Hypertension

Surprisingly, the substantial prevalence of children with elevated BP emphasizes the need to consider appropriate screening and treatment programs for hypertension as early as in childhood. This situation is worrying and will normally require programs and policies to limit sedentary behaviours and promote physical activity and healthy nutrition among all children. More generally, the association between overweight and elevated BP in children might announce an increased burden of hypertension-related diseases as the obesity epidemic further escalates. Prevention of cardiovascular risk factors as early as in childhood may be an important strategy to prevent non-communicable diseases in a life course perspective, particularly in settings with scarce resources and limited health care capacity.

From an eligible total of 18,119 children seen in 2002–2004, data on weight, height and BP were available for 15,612 (86%) aged 5–16 years. Overall, 13.0% of boys and 18.8% of girls had elevated blood pressure [A.Chiolero et al]. There is therefore a substantial prevalence of children with elevated BP in Seychelles. The prevalence of high blood pressure in adults is no different. With regard to hypertension control (and based on BP measurements obtained on a single occasion), the figure shows that large proportions of individuals with seemingly high BP were untreated (around half of men with high BP) and that BP seemed not to be satisfactorily controlled in large proportions of individuals under medication (more than half of treated hypertensive men and women).

Overall, BP appeared to be better controlled in women than in men as less women than men with high BP were untreated and as higher proportions of treated hypertensive women than men had BP controlled. These data indicate a very high prevalence of individuals, particularly men, with high BP and suggests that a large proportion of treated hypertensive have unsatisfactory BP levels.

In the latest Heart Study in 2004, BP was found to be slightly lower than in 1988, but was still higher in men than in women in younger age and the trend reversed in the 55-64 age group, and they both increased sharply with age. A large proportion of the adult population has HBP (44% of men and 36% of women). A most worrying finding was that as many as 45% of men 25% of women who have HBP
were unaware of having HBP ("aware persons" are persons who had been told by a doctor that they had HBP).

Raised blood pressure amongst the whole population is estimated to cause 4.5% of the global disease burden and is a major risk factor for heart disease, stroke, and renal failure. There is a need to bring greater awareness to the risk it poses and have consistent screening programmes for early detection. There should be continuous emphases on lifestyle behaviours.

**Diabetes**

Diabetes is one of the NCD that is becoming alarming. In a study (1,255 people between age 25 and 64 in 2004) on ‘Prevalence, awareness and control of Diabetes in Seychelles and relationship with excess body weight’, a high prevalence of 11.5% was found and 54% of persons with DM was aware of having DM, meaning 46% of persons with DM was not aware of having DM. It was established than half of the DM cases in the population could be attributed to excess weight. The strong association between DM and over-weight emphasizes the importance of weight control measures to reduce the incidence of DM in the population. Similarly, high rates of diabetic persons not aware of having DM in the population and insufficient cardio-metabolic control among persons treated for DM, stress the need for intensifying health care for diabetes.

It was also established that the prevalence of DM in Seychelles was particularly high in the oldest age group (55-64) in both sexes, and Seychelles as a small developing country has prevalence higher than the predominantly African rural areas like Tanzania, Nigeria, and has reached or exceeded levels typically found in several middle or high income countries.

Many socio-economic factors have been attributed to the growing number of overweight cases, and some of the key ones include the reduction in carbohydrate intake and increase of fat intake, the increase number of private cars and public transport, and the significant increase of carbonated soft drinks amongst other factors. The strong association between DM and excess body weight emphasizes the importance of weight control interventions at a population level as a cornerstone strategy to curb the "diabesity" epidemic. From a clinical perspective, the substantial proportion of persons unaware of having DM calls for improved early detection of diabetic persons. The high proportion of treated diabetic persons with insufficient cardio-metabolic control stresses the need for intensifying clinical care to diabetic patients in order to minimize complications.

Based on two independent surveys of the population aged 25–64 years in 1989 and 2004, the prevalence of diabetes (fasting blood glucose >7 mmol/l or treatment, or both) increased from 6.2% to 9.6% in men and from 6.1% to 9.2% in women. The prevalence reached 11.5% in 2004 when results of the oral glucose tolerance test were also considered. Furthermore, pre-diabetes was found in an additional 22% of the population. Of all cases of diabetes in the population aged 25–64, 54% were aware of the diagnosis with most of them taking glucose-lowering drugs.

A key entry point is to have a comprehensive screening of the disease so as to allow early detection. This has to be complemented by education and awareness of the cause-and-effect of diabetes, and a diabetes food policy and programmes. Diabetes should not be seen as an alarming disease but it is a burden on the social, health and economic systems. A nation-wide survey and inventory of the extent of the diabetes viruses on the local population is a potential entry point for policy makers.
**Cardiovascular Disease**

Cardiovascular Disease (CVD) are the leading causes of the morbidity and mortality burden worldwide and in the Seychelles. CVD accounts for approximately 40% of all deaths in Seychelles. NCD, and particularly CVD, are strongly related to a few lifestyles and physiological risk factors. Detrimental lifestyles include smoking, unhealthy nutrition (mostly high intake of saturated fats, salt, and low intake of fruit and vegetables) and sedentary habits. Physiological risk factors, which are strongly linked to lifestyles, include overweight, high blood pressure (HBP), blood lipid disorders (e.g. high blood cholesterol) and diabetes. It is well established that up to 80% of cases of premature CVD, and a substantial proportion of other chronic diseases (e.g. lung cancer, renal failure) could be prevented or delayed if these few risk factors were kept at favourable levels throughout life in the population, using strategies targeting both the entire population and high risk individuals.

In the Heart Study of 2004, it was established that the CVD risk factors markedly increased in the Seychelles. High prevalence of several major modifiable cardiovascular risk factors, particularly, smoking (men), sedentary habits, low intake of fruit and vegetables, high blood cholesterol, high blood pressure, overweight, and diabetes do aggravate the situation. This suggests the importance of surveillance systems to identify risk factor trends and the need for preventive strategies to promote healthy lifestyles and nutrition. Addressing tobacco use, physical inactivity, and unhealthy diet can prevent 80% of chronic non-communicable diseases among men and women of all ages, and yet physical activity and diet intake, as revealed by the study, are all far from the desired levels in terms of quality and quantity.

CVD risk factors in Seychelles needs to be studied further as such information data are crucial to characterize epidemiological changes at population level in order to provide clues on the driving forces of the epidemic of NCDs and to guide prevention and control strategies. This can be a potential entry point for the national surveillance body and policy makers.

**Mental Health**

Mental Health, namely, depression, anxiety, stress, isolation, and hostility are among the psychological and emotional factors that are common in Seychelles and they can potentially increase risk of cardiovascular disease. The leading diagnosed mental health problems in Seychelles are mental and behaviour disorders due to other substance (drugs) and alcohol uses, and schizophrenia and delusional disorders. In 2008, male discharges were at 71.7% as compared to women at 28.3%. The main causes of male discharges was due to mental and behavioural disorders which accounted for 32.2% whilst the main cause of women discharges was due to schizophrenia and delusional disorders which accounted for 30% of their discharge.

The trend in alcohol consumption and substance use are serious sources of medical concerns and a number of initiatives are trying to address them. The Mental Health Unit has been providing in and outpatient services through two institutions, the acute psychiatric ward in Victoria Hospital and Les Canelles Hospital manages those with chronic mental health problems. A community mental health service is also a component of the mental health programme, and its effectiveness is yet to be established. The trends and number of mental health cases are significant enough to warrant more focussed intervention in terms of prevention and treatment. This view was articulated by the Minister of Health in the recent 2010 Mental Day, and quote, “Change is afoot in mental health services, there is a growing move from a medical model of mental illness to a recovery model which values self-determination, peer support and focusing on the person not the illness. There is a push for systems to become more person-driven which includes having new conceptions of people with mental illness; new models of professional practice; new collaborative modes; new roles for service users and professionals; a greater understanding of experiences and
needs; more effective intervention strategies; better training of professionals and more responsive systems of care. Available evidence indicates that addiction problems are as prevalent in Seychelles as elsewhere in the world. Drug use and dependence continue to be serious health and socio economic problems in Seychelles. There is a need to make available comprehensive services for this group of people. Partners need to come together with the Ministry of Health so as to see what needs to be done and how it should be done”.

The mental health cases are believed to be associated with multiple complex socioeconomic determinants which make it difficult to understand and, therefore, address. Urgent entry point interventions are needed, and the importance of proactively identifying and working with the groups at risk is critical.

**Violence and Injuries**

Violence and Injuries cases in Seychelles have fluctuated over the years, and the trend persists. The Gender Secretariat (in 2009) has conducted a nationwide survey on domestic violence, to investigate its extent, causes and consequences in the Seychelles context. Preliminary findings suggest that domestic violence is a significant social problem that affects both men and women. From a random sample of the population aged above 15 years old:

- 42% of women and 36% of men admitted to having experienced emotional abuse by an intimate partner
- 27% of women and 23% of men have experienced moderate physical violence
- 28% of women and 26% of men admitted to being a victim of severe physical violence, and
- 11% of women admitted to having been raped by an intimate partner

Although at the superficial level preliminary findings of the study indicated that an almost equal proportion of men and women reported having been victims of domestic violence, in-depth analysis has later confirmed established theory that the meaning and consequence of violence has a substantial qualitative difference to women than men. For example: 33% of women suffered from aches and pains as a direct consequence of violence incidents compared to only 16% of men. Moreover, the findings also indicate that domestic violence directed at women by male perpetrators may have been functional as, for example, 17% of women reported bruises to the face compared to only 6% of men. This may indicate that perpetrators specifically target the face causing visible injuries as a possible control mechanism, that is, social isolation due to the embarrassment of exposing signs of violence.

Alarmingly, 8 women reported to having contracted HIV/AIDS and 21 women reported to becoming pregnant as a consequence of being raped by an intimate partner. This is a significant number considering the size of the study sample and the small size of the national population. [Gender Seychelles, Gender Secretariat, 2009]

Injuries due to other accidents like road traffic accidents and work related accidents are quite common. The former increased by 11.7% between 2003 and 2006. Statistics from the Police Department showed that in 2009 and 2010, we had a combined total of 2777 accidents and 21 were fatal. Road traffic injuries can be prevented by promoting action and strengthening legislation around the factors with the greatest impact on road traffic injuries, such as drunk-driving, the use of seatbelts and helmets, speed, and road design and infrastructure. On the other hand, workplace injuries are normally better contained within most working environments having a health and safety functions or Officer. It is worth noting that the annual ‘safety at work’ competitions are having significant impact except in a few exceptional cases where engagement is yet to be fully realised.
Other incidences that can potentially lead to fatalities/deaths or serious injuries include incidences like drowning, stabbing through fighting, suicides, armed robberies, poisoning. Such incidents are, more or less, ad hoc or seasonal, and the numbers have yet to raise serious causes for concerns. However, there is strong belief that many of the incidents are not being reported, accordingly. This would need to be monitored.

Development of programs for the prevention of NCD

Emphasis was first given to awareness campaigns targeting the general population through dozens of programs every year aired on the national radio and TV. An NCD-related school curriculum, with components for both teachers and students, has been worked out with the Ministry of Education. A variety of programs have targeted high-risk individuals, including hypertension and diabetes screening in public places and workplaces. Health care given to NCD patients at primary health care level has been strengthened. Hypertension and diabetes are managed in all district health centres in the country. Recently, specialized NCD nurses have been trained, and they now play a prominent role in providing health care to NCD patients in health centres.

Development of a NCD-related policy

At the clinical level, local guidelines for the diagnosis and treatment of hypertension, diabetes, and blood lipid disorders were developed to guide standard care to NCD patients. A Tobacco Control Act was enacted and included, among various provisions, total ban on tobacco advertising and on smoking in enclosed public places and workplaces. Taxes on tobacco are as high as 60%-70% of the retail price of cigarettes packets. A National School Nutrition Policy has been adopted and includes a ban on sugar-sweetened soft drinks in schools and restricts the sale of other foods of low nutritional value.

Need for a comprehensive and multi-sectoral policy framework for the prevention of NCDs:
The different programs and policies implemented in Seychelles have successfully addressed some problems but others may need more comprehensive measures. Tobacco use has markedly decreased over the past 15 years. However, overweight and diabetes have increased and constitute a major health challenge for the future. Policy makers have recognized that control of NCDs must encompass broader policy and structural changes aimed at moulding an environment that is conducive to healthy behaviours. Overall, essential components to successful development and implementation of policies to address NCD in Seychelles have included: good use of surveillance mechanisms; generating broad interest and consensus; mobilizing leadership and commitment at all levels; involving local and international experts; building on existing efforts; and seeking integrated, multidisciplinary, and multi-sector approaches. These should be reinforced.

5.0 Influences of Social and Cultural Factors on Health and Health Equity in the Country

From the earlier analyses, it has been established that social and cultural factors play a central role in preventing illness, maintaining good health, and treating disease, and thus have direct and indirect bearings on health equity. These social and cultural influences along with the social structures and social processes can potentially affect anyone’s health, and more so, the health of those in more vulnerable and high risk groups like teenagers and low income individuals or households. Unless, these factors and influences are taken into account, initiatives and policies developed for combating health inequalities will not have optimal impact and the desired outcomes. It is commonly argued that if health,
social structures and processes are not designed to respond effectively to the needs of the different
groups, we would continue to have equity challenges, and health inequalities will persist where they
already exist, and we risk seeing the emergence of new forms of inequalities.

Many countries, in particular, the African countries, have been grappling with socioeconomic challenges
such as Race and Health, Socio-economic Status and Health, Gender and Health, Culture and Health,
Social Capital and Health, Religion, Spirituality and Health, Neighbourhoods and Health, Socio-cultural
processes and Prevention of Disease, and cultural Culture Change and Health. Seychelles is of no
exception, although it has some noticeable country specific contexts and unusual challenges. There are
anecdotal evidence from earlier discussions that the lower socioeconomic groups are more vulnerable
and at risk as a result of their greater tendencies to drug and alcohol abuses, and are disadvantaged in
terms of access to healthy nutrition intake and living conditions due to their financial affordability unless
there are other unofficial income for the household. Similarly, the women, single mother and lower
income individuals, are also at risk-groups, that are victims of prostitutions and violence as they are
deprived of adequate income to support self and family, of social support and role models, and often
seek resources to support their drug addictions (study on prostitution in Seychelles Islands). The same
study revealed that neighbourhood and peer influence also drive some of the undesirable social
behaviours that impact on health outcomes, and hence, lead to further health inequities.

In the context of Seychelles, the Social and Cultural Factors that are found to be affecting health and
illness revolves mainly around the economic situation of the individual and/or households and thus
putting strain on good and healthy living like proper nutrition and diets. This affect the general well-
being and health care of individuals and the family and perpetuate the socio-cultural changes in
lifestyles and behaviour patterns that lead inevitably to indulgence in unhealthy food and drink intakes
like fatty foods and alcohol, reluctance to take up physical exercise and participation in risky sex
practices, drug abuses and prostitution.

The lack of essential caloric intake, less favourable living conditions, undesired social behaviours
acknowledged in research on CDV expose individuals to greater health risks and many people are
victims of unhealthy food and beverages that are dumped on the local markets. With the abundance of
and easy access to alcohol, and the rising costs of living against less disposable income and
unemployment, the health sector finds it difficult to make effective intervention as many of the
factors are outside their control. This is aggravated by the fact the inter-sectoral links have been weak and
there have been little synergy in the national quest to address these socio-cultural ills. This situation
has serious implications for Health Equity.

The socio-cultural constructs, and in particular, socio-economic classes and gender have proved to
have a level of impact on Health Equity, as the vulnerable is open to health risks (injuries, HIV, CDV
diseases, unwanted pregnancies, mental disorders). Some of the behaviours and undertakings are
driven by their inability to have an adequate standard of living and to support their families both
financially and through alternative healthy living. The access to economic and social resources varies
for different socio-economic classes, with the lowest quintiles and quartiles of salary distribution being
most vulnerable. Unfortunately not enough research has been carried out and information generated to
establish the extent of such impact on the health of the individual and the family. Our analyses of the
communicable and non-communicable diseases indicate that the prevalence of CD and NCD is slightly
higher in certain groups, like the under-privileged, the low income males, household where women are
heads, at risk groups and teenagers. For example, earlier statistics on death rate, HIV/AIDS and mental
health showed that men are most at risk, and most incidences relate to their lifestyle and certain
behaviours. The Heart Study established that men were also most at risk in relation to the CDV-related
diseases. The great disparities in the gender social construct in health have those two dimensions:
Communicable Diseases where the males are most affected and Non-communicable diseases where the males are also most affected.

Although few studies have been done in the area of socio-cultural construct, it is believed that males tend to have more ‘laissez-faire’ attitudes and often have less valuable interactions with major social institutions, including financial, health, and welfare-related to prevention and screening, provider/patients relationships and interactions; and they are less likely to adhere to medical treatment regiments. Understanding these socio-cultural constructs is critical to the development of relevant and effective prevention and control interventions.

In addition, the teenage group poses a particular set of problems. The remarkable rise in the number of female teenage pregnancies, abortions and prostitutions, and the increased number of teenage boys who have fallen prey to alcohol and substance abuse present a serious threat to health outcomes. These problems are believed to be due to fundamental culture change as a result of strong western influences and diminished importance of traditional and spiritual values. The issue of low morale, materialistic attitudes and lack of role models featured strongly in the study of prostitution in Seychelles, and, are indications of wide-ranging social ills in the country. There are no major issues related to race in Seychelles as the different groups/origins have always had equal access to health.

There are also strong social and cultural influences, interpersonal, neighbourhood and community influences on prevention and treatment, and use of health services. Key influences indentified in our analyses include:

a) Trends in diet where the emerging middle class are moving away from the traditional staple diet of rice and fish, and indulging themselves in junk and high fat food intake
b) Spiritual and contraceptive-abortion conflicts
c) Discrepancy in law for contraceptive/teenage pregnancy
d) Alcohol and substance abuse affecting neighbourhoods and schools, respectively
e) People not adhering strictly and consistently to treatment and/or prevention measures that are usually known to them
f) People tending to use the Health service for in depth diagnoses and screening when medical problems have become serious and advanced rather than proactively and regularly having routine examinations.

Although no research have been done on interpersonal, neighbourhood and community influences, there is evidence of the negative influence of the neighbourhood and community on individual behaviour. In many instances, we have a neighbourhood that is inundated with health destructive products such as hard drugs, the local ‘baka’ and other home-brews. Many young people and many adults become victims of these activities and often end up with mental disorders, HIV/AIDS, and other serious CDV-related diseases. This equally affects their ability to be active in the economic and productive sectors. As to the uses of health services, the most at risk groups would often shy away from the available health care and services for reasons that are not always clear.

Health inequality is not necessarily associated with any form of health justice since the fundamental right to access to health in Seychelles is statutory. From the consequential perspective, disclosure of public and environmental health risks to the public are consistently done, with the Health Commissioner addressing the population on viral or influenza-type diseases that can potentially take an epidemic nature, and on expected or possible consequences.

There are no observable ethical issues in public health. The Ministry has a Medical and Dental Board that sets out to safeguard ‘good and ethical practice’ in health, and, recently, they have been
acknowledging and pursuing cases of death that may carry elements of negligence including equipment failures.

5.0.1 Implications for Developing Strategies for Addressing Health Inequalities

The starting point for development of strategies for addressing health inequalities is a thorough understanding of the social and economic factors that impact on the health inequality. As stated earlier, unless, these factors and influences are taken into account, initiatives and policies developed for combating health inequalities will not have optimal impact and the desired outcomes.

A number of key factors affecting the health of the population and health inequality has been established and discussed, and most are of a social, economic and cultural nature. The economic situation of the individual or household, lifestyles and behaviours towards diet, alcohol, drugs and exercise, are ills that cannot be addressed by the Ministry of Health alone. Any intervention or measure to address them requires national efforts and participation of key stakeholders. In the analyses of these socio-economic determinants of health, a number of potential and important entry points have been highlighted and they can be used as a basis to devise intervention measures such as the drawing up of policies. Some policy decisions to address the issues of drugs, alcohol, prostitution, undernourishment, and obesity, would require social support, and their implementation would require the responsibilities and ownership of the population.

With the intervention, there would be emphasis on the promotion of health and the prevention of disease and disability; the collection and use of epidemiological data, population surveillance, and other forms of empirical quantitative assessment. Also the multidimensional nature of the determinants of health must be recognised and focus on the complex interactions with other stakeholders must be maintained. Public health activities also include community collaborations and partnerships for health and the identification of priorities for public health action. In summary, it is evident that an inter-sectoral approach is the recommended strategy towards tackling the socioeconomic factors that are affecting health equity in Seychelles. It is evident that the Ministry of Health is best placed to lead the process and engage other stakeholders.

6.0 Implications for Policy and Programmes:

Key areas of action to move forward and tackle the Social and Economic Determinants of Health

1) The development and implementation of integrated inter-sectoral approaches in order to prevent and reduce disease, disability and premature death from non-communicable conditions, mental disorders, violence and injuries

This requires the strengthening of capacity for the development and implementation of policies, strategies and regulations for chronic non-communicable conditions, mental disorders, violence and injuries, including a clear implementation and monitoring framework. Strengthen inter-sectoral collaboration for prevention treatment, rehabilitation of non-communicable diseases, taxation and distribution of alcohol and nutritional food.

2) Promote healthy lifestyles, healthy environment, multi-sectoral public policies and address the socioeconomic determinants of Health
This requires a more focused occupational and environmental health prevention service delivery and surveillance. Integrate health more into the community development activities and the school’s curriculum to address health determinants, reach and meet the local needs of all age groups and promote community participations. There is a need to strengthen health promotion capacity nationally and integrate across all relevant programmes. It is equally important to strengthen multi-sectoral collaboration in health related activities and advocate for health to be addressed as a key element for country’s development.

3) Enhance Health System Performance, Health Research and Management Information System

This requires the strengthening of human resource management in order to enhance performance, rewards and retention. Strengthen the national health systems research and inter-sectoral research for decision making and other intervention measures. It is absolutely necessary that the Ministry assesses, develops and implements plans to improve health information systems as well as establish a framework for the monitoring and evaluating national/global goals and targets;

4) Reduce the health, social and economic burden of communicable diseases and Public Health Event of International Concern

Recommendations to strengthen national capacity for disease surveillance and response to major epidemic prone diseases and for pandemic-prone diseases are numerous. Continuous leverage on Integrated Disease Surveillance (IDS) strategy and International Health Regulations (IHR) should be applied. It is critical that we continue to strengthen the national capacity for the comprehensive and integrated management of STI, HIV/AIDS, and the increasing number of cases of Hepatitis C.

5) Reduce the health consequence of emergent economic crises and conflicts and minimize their social and economic impact

This requires the re-alignment of financial resources to give required health services to those at risk and to vulnerable groups. The financing of health service needs to be re-defined to allow more stakeholders cost-sharing based on ability to pay concept and the promotion of health insurance

6.0 CONCLUSIONS AND NEXT STEPS

Seychelles has achieved impressive health care indicators and is on track for most of the Millennium Development Goals. As a result of very high coverage rates of above 95%, vaccine-preventable diseases have almost disappeared from the island leading to low under five mortality rate of 13/1000 live births in 2009. Life expectancy in 2010 stood at 73.1 years, 77.5 for females and 69.1 for males (National Bureau of Statistics, Statistical Abstract 2011).

Further progress is needed especially in the control of non-communicable diseases (diabetes, cardiovascular diseases injuries, neoplasm and mental illnesses) which are currently the main burden of diseases due to unhealthy lifestyles, urbanization, aging population, tobacco and alcohol abuse and rising levels of domestic violence. Increases in sexually transmitted diseases including AIDS, emerging diseases such as chikungunya and dengue and potential threats from Human Influenza viruses call for continued robust surveillance using the IDSR and IHR strategies.
To achieve the above, we must continuously seek to have improved data that will ensure that interventions are focused, monitored, and assessed. Far too often, we have come up with great initiatives that have not been implemented, or have been partly implemented or badly implemented without any desirable outcome. Addressing the socioeconomic determinants of health and health inequalities requires full commitment of both internal and external stakeholders, and committed resources.

**However, challenges remain and new challenges emerge**

While we set to reduce health inequalities among the population of Seychelles, we must ensure that we take intervention measures that are achievable, and will not be a source of cost burden to the Ministry and/or the government. The critical steps forward is getting the commitment and buy in of all the stakeholders including people in the vulnerable and at risk groups. A national dissemination of the information is also essential.

**IMPROVED DATA AND MONITORING OF OPTIONS IMPLEMENTED**

In the light of the above analyses, there are some key entry points for collaboration and for addressing health inequalities and inequalities:

**Prevention, Intervention and Risk Management Framework**

The best winning formula in health equity is, no doubt, a prevention strategy in terms of risk management and early intervention in both areas of crisis as well as performed areas of health and the health system. This should be a shared national responsibility and must not be viewed as that of the Ministry of Health. A pro-active and cross-sectoral approach to health would avoid situations like HIV/AIDS. Key strategic initiatives are:

I. Policy and development of strategic directions and plans for reducing health equity. This could be incorporated into the national midterm strategic plans with identification of actions points for all stakeholders both public, private, and for civil society organizations.

II. Planned budget for promotion and implementation of prevention programmes across the whole health system, and through other health promotion and prevention Agencies.

III. To put in place clear strategies and tools for managing current critical health issues/risks, and other potential health crises and epidemics that are not presently affecting us but can potentially hit us We have had successful strategies and tools to manage CD such as malaria, and this can be emulated, elsewhere.

IV. Consider the creation of a National Health Commission chaired by the Health Commissioner that represents all Health Promotion/Prevention Agencies and Legal and Religious representatives.

V. Promote and sensitize people to strategies for affordable means of healthy living and consider tax free and/or subsidy for health shops with clearly articulated items or foodstuff that fall in this category.
Expected Outcome:

I. More structured, committed, focused, and hence, effective health promotion and prevention programmes

II. Clear risk and health prevention framework

III. The Promotional and Prevention Programmes must be far-reaching enough to capture high risks groups, children and schools, and other vulnerable groups

IV. This will bring more coherence, synergies and unity to our health and health equity agendas.

V. We make healthy living more affordable and simultaneously push heavy levies on items that are deemed to be health risks and hazards so as to discourage imports, and hence, their consumptions.

1.0 Recommendation 2:

Research, Information/Statistics and Reporting

To be able to take informed policy decisions, undertake effective planning, establish and focus on health and health inequality interventions, resource planning and deployment, the Ministry requires comprehensive research, accurate and reliable analytics and information, and timely/proper reporting on all aspect of health and the health system. For instance, a motor vehicle battery disposed in the environment pollutes 1m³ of soil with toxic waste for over 100 years and 10,000 used batteries are believed to be disposed of somewhere in Seychelles each year and no study on the impact of the food chain from soil to the sea. Otherwise, we become reactive, and actions have to be based on observations, speculations, and gut feelings. Key strategic initiatives:

I. To set up and institutionalize research with funding, resources and resource centre and very clear mandate. The other option is to ‘outsource’ it.

II. To have a Management Information System that centrally hosts all information and statistical data rather than a mere Statistics unit currently holding only part of the vital data and information pertaining to health and the health system. A stand-alone desk-top computer holding key data and information and accessible by one person is a risk that must be mitigated immediately.

III. Data and information access and retrieval are disjointed, spread around, and not easily accessible and retrievable, and it is advisable that there is one source and point of general information (not the classified/privileged ones)

IV. Analyses leading to future scenarios and projections are important and are great sources for planning and interventions. The recruitment of a well trained and experienced performance analyst will facilitate this process

Expected Outcome:

I. More reliable data and information to work with and for policy decisions and interventions
II. Centralised information database accessible by all authorized personnel for easy retrieval and no discrepancies between different reports and persons

III. More available information required locally and internationally for reporting and with minimum gaps

1.1 Recommendation 3:

Capacity Building

I. It is important that the Ministry has the right people in the right place if it is to achieve the health and policy objectives, and improve performance. This is built on the following strategic initiatives:

II. To conduct a staff skill inventory that will allow the mapping of training needs for both the Ministry and the individual, and in particular, the key areas where recruitment and retention are both challenges

III. Develop organization-wide staff development programmes that integrate health knowledge, technical and management skills to meet the needs of the Ministry. Training must be extended to the health promotion and prevention Agencies

IV. Establish the critical and specialized and expert skills/knowledge gaps internally and opt for recruitment

V. Develop a talent development and retention scheme that integrates rewards in terms of career progression and monetary for top talents

VI. Develop succession plans

Expected Outcome:

I. Ongoing assessment of employee training and development needs of the Ministry and health system

II. Training plan in place that caters for every employee of the Ministry

III. Special schemes that clearly articulate incentives that will be performance-based

IV. Have competent staff in the very specialized and technical areas like research, performance analyst

V. High employee morale and excellent organizational climate
1.2 Recommendation 4:

**Enhanced Governance and Control Systems**

Good governance coupled with effective control systems have been very important tools for successful organizations. In the process of health service delivery, closing any health inequality gaps, and defining its new mandate, the Ministry should ensure that all employees clearly understand their roles and responsibilities and how they fit and align with the broad aims and governance framework (based on accountability, transparency and trust). Furthermore, it should also have mechanisms for monitoring and regularly reviewing the mandate to ensure that it is optimally performing in terms of its objectives, managing its resources and being financially sound. Key strategic initiatives include:

I. Consistent and continuous reviews of all policies, processes and procedures and their implementations to ensure that they are effective, still relevant, reflect the practical reality of the local communities, and have mechanisms in place to ensure compliance.

II. Put in place mechanisms for monitoring and review of all business undertakings to ensure that they are in line with guiding principles and policies, and performance outcomes (both qualitatively and quantitatively), and are satisfactory on all fronts.

III. Create a compliance function or appoint a person who will be mandated to ensure full compliance of the health, health services and other hospital practices.

IV. Set zero tolerance on malpractices, sub-standard services, and remove all unnecessary interference in the Ministry’s undertakings and apply corporate governance at all times.

V. Eradicate duplication, resource wastages, and get rid of weak links in the value chain (non-performers or laggards or redundant roles), and develop a more comprehensive health financial management system that upholds the principles of financial sustainability and accountability.

**Expected Outcome:**

I. Have clearer and updated processes, procedures and criteria for decision-making in place.

II. Minimize unnecessary intervention in the Ministry’s undertaking as it undermines good corporate governance.

III. Dedicated person to ensure compliance of the business … no breach.

1.3 Recommendation 5:

**Enabling Policy Decisions in support of health quality and equity**

Policy decisions that reflect the reality of the society, that address the real issues, that are not conflicting, and are technically and financially implementable are the most effective and guarantee desirable outcomes. Some urgent considerations include:
VI. Review of policy conflicts on teenage contraceptives, pregnancy and abortion, in terms of having sex at 16 years and access to contraceptive only at 18 years. The same applies for the concept of legal abortion against the Medical Board practices, in terms of exceptions.

VII. Reconcile the differences between the church teachings on contraceptive and abortion and the legal/medical position

VIII. Review the taxes on drugs (medicine) and healthy food supplies to extend affordability to all social groups, and hence, encourage healthy eating and living

IX. Reviewing the health and health system financing in the context of socio-economic development locally, and in line with international norms’ ‘best practices’ to ensure future sustainability

X. With the increase of foreign workers to Seychelles, stress on the health system as health delivery, and review policy on their financial contributions

Expected Outcome:

I. Makes contraceptives and abortion accessible to all sexually active, with a view to address multiple issues like teenage pregnancy, abortion, malnutrition for the unaffordable and those not ready for parenting.

II. Bring together all stakeholders on issues of contraceptives, sex, pregnancies, and abortions so as to remove differing/conflicting teachings, messages and practices on the issues.

III. Make healthy eating and living more affordable and pushing all social groups to access them.

IV. The financing of the health system must be repositioned so as to remove over-reliance on tax money and the government. Community, interest groups and individual contributions and responsibilities in terms of meeting costs of consultation or prescriptions, insurance policies (individual, family, groups and/or workplace), private practitioners must be encouraged and adopted.

1.4 Recommendation 6:

Reviewing the Heath and Health System Financing

With the sharp devaluation of the rupee in November 2008, there have been increased challenges to uphold the commitment to ‘health for all’, and simultaneously honouring our ‘MDG on health equity’, and the ‘quality’ that we persistently strive for. As stated earlier, these achievements are dependable on resources, and in particular, financial resources. To ensure financial sustainability for health and our health system, there is a need to review the health system financing, and move towards a new health financing strategy based on the principles of ‘cost sharing’, ‘lean operation’, ‘good governance’ and ‘control systems’. Key strategic initiatives include:

XI. Review health provisions for foreign employees, so that they contribute, without exaggeration, a fair amount to their examinations, treatments and prescriptions
XII. Review the national health financing framework and consider the incorporation of a direct contribution from the local people, be it a fee for medical examination/consultation or prescriptions, and/or other health services. This practice will also deter the many forms of abuse of the health services, acknowledged by many stakeholders. There can be special provisions for the less fortunate, vulnerable or at risk groups established by the government.

XIII. Sensitisation, Promotions, and Encouragement of health/medical insurances which are available at the local Insurance Company.

XIV. Support to and encouragement of private practitioners, clinics, hospitals and pharmacies, that can potentially shift some of the costs to other partners in health

XV. Revisit the provisions for overseas treatment by exploring how health/medical insurance or other more affordable options can be alternatives to the costs that the government is bearing

Expected Outcome:

I. The contribution of the general public (patients) will cover the supplementary budgets that are incurred annually by the health services, including drugs

II. Minimize abuse of the health system and services

III. Have more partners in health services

DISSEMINATION AND FUTURE UPDATES

The findings and recommendations of this report is first presented to key stakeholders in the Ministry of Health and upon sign-off, there will be an inter-sectoral dissemination and the document will be made accessible to the local population.

A review of progress and new developments and updates is advisable every two years and, considering the materiality of the issues, the review should be mandatory.
Appendix 1

Table A.1.1

<table>
<thead>
<tr>
<th>Description</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td></td>
<td>M</td>
</tr>
<tr>
<td>Life expectancy as a percentage of male’s</td>
<td>67.4</td>
</tr>
<tr>
<td>Enrollment of female in Secondary School as a % of Male’s</td>
<td>100%</td>
</tr>
<tr>
<td>Adult literacy rate</td>
<td>90</td>
</tr>
<tr>
<td>University Entrance</td>
<td>52</td>
</tr>
</tbody>
</table>

Source: National Statistical Bureau (Seychelles in Figures 2006/7)

Table A.1.2

<table>
<thead>
<tr>
<th>Indicators (2007)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net primary school enrolment ratio (%), males</td>
<td>100</td>
</tr>
<tr>
<td>Net primary school enrolment ratio (%), females</td>
<td>100</td>
</tr>
<tr>
<td>Pupil/Teacher ratio:</td>
<td></td>
</tr>
<tr>
<td>Pre-Primary</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>13</td>
</tr>
<tr>
<td>Secondary</td>
<td>13</td>
</tr>
<tr>
<td>Post-Secondary</td>
<td>9</td>
</tr>
<tr>
<td>% people going into higher education</td>
<td>4</td>
</tr>
<tr>
<td>Public expenditure on education (% of GDP)</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Source: National Statistical Bureau (Seychelles in Figures 2007)

Data type and sources

The following are the key socio-economic variables which are most likely to fall within the framework of the Health Situational Analysis research. It’s worth noting that some of the variables are subject change depending on local circumstance at the time of the research.

- Country socioeconomic, geographic and demographic profile
- Underlying Social and economic determinants of health
  - Constitution and legal frame policy framework and institutional arrangements or reducing inequities
  - Poverty/income distribution
  - Gini Coefficient analysis for income inequality
  - Redistributive policies if any
• Health systems description including legal framework policy framework institutional arrangements
• Access and use of health services
  o Coverage data on health programs e.g. Immunisation, reproductive health HIV/AIDS etc analysed by gender geographical location
• Health care financing
• Resource allocation (human and financial) in the health sector
• Disease burden analysis for both communicable and non-communicable diseases

Data Analysis

As mentioned above lack of data and unavailability of data over a continuous period have confined us to undertake basic analysis. It is for the very reason that we have to revert to qualitative analysis which is more reliable given the status-quo.

Indicators

Below we listed the indicators used in the analysis

Socio-economic indicator:

- GDP US$ million (market price)
- GDP per Capita US$ (market price)
- Total health expenditure as a % of total public expenditure
- Total HRH expenditure as a % of national health budget
- Total Health expenditure US$ million
- Total Govt expenditure in Health as a % of national health budget
- Total Health expenditure as a % of GDP
- Total Education Expenditure as a % of GDP

Demographic Indicators

- Adult literacy rate (%)
- Age Distribution %
- Child Mortality Rate (per 1,000 children aged 1-4 years)
- Crude Death Rate (per 1,000 population)
- Dependency Ratio
- Human Development Index (rank)
- Infant Mortality Rate (per 1,000 live births)
- Life expectancy at birth (yrs)
- Maternal mortality rate (per 100,000 live births)
- Net enrolment rate in primary education (%)
- Percentage of Population below national poverty line
- Percentage of population relying on traditional fuels for energy use
- Percentage of underweight under-five children
- Population growth rate (%)
- Population size (mid-year)
- Population with access to treated water supply
- Population with access to flush toilets
- Ratio of girls to boys in primary education (%)
- Sex Ratio (per 100 females)
- Total Fertility Rate

**Mortality by gender:**

- Infant mortality
- Under 5 mortality

**Health care financing:**

- Public health budget
- Health financing as percentage of GDP
- Proportion of budget allocated to HIV/AIDS
- Proportion of budget allocated to human resources for health
- Proportion of budget allocated to tertiary health services

**Human resources for health:**

- Health personnel disaggregated by gender and occupation
- Doctor patient ratio

**Communicable diseases:**

- Reproductive health
- Child and adolescent health
- HIV/AIDS
- Malaria
- Tuberculosis
- Immunisation diseases and immunisation coverage
- Other communicable diseases

**Non-communicable diseases:**

- Cancers
- Cholesterol
- Obesity
- Physical activity
- Hypertension
- Diabetes
- Cardiovascular disease
- Mental health
- Violence and injuries
- Other NCDs
Appendix 2

The focus of the Health Policy – enabling policy frameworks

The National Policy makes provision for an Organisational Policy which describes the setting of the Ministry of Health into a three tier system; primary, secondary and tertiary levels of care along with key policy frameworks, highlighted below:

Policies to guide the Life Cycle Framework include:

- Neonatal Health Policy
- Infant Health Policy
- Child Health Policy
- Adolescent Policy
- Geriatric Health Policy
- End of Life Cycle Policy

It focuses on disease burden in line with the following policies:

- Heart Health Policy
- Mental Health Policy
- Policy on Prevention and Control of Communicable Diseases
- Dental Health Policy
- Emergency Care Policy
- Substance Abuse Reduction Policy
- Policy for the Physically Impaired

The National Health Policy has been developed to reflect the priority areas identified in Health. The priority areas identified include:

- Maternal and Child Health
- Expand Programme of immunisation
- Adolescent and Youth Health Programme
- Environmental Health
- Mental Health
- Accident/Emergencies and Casualties
- HIV/AIDS and STI’s
- Non-Communicable Diseases
- Improve management practices
- Quality staffing

The National Policy makes specific reference to the priority areas in its document. Whilst the National Policy document focuses on the priority areas, the strategic planning of the Health Department was outlined in the National Health Strategic Framework 2006-2010.
### Appendix 3

#### Table A.3.1: Indicators for Target 1A

<table>
<thead>
<tr>
<th>Indicators/ Years</th>
<th>1990</th>
<th>2000</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Proportion of population below US$ 1 (PPP) per day</td>
<td>No data</td>
<td>No data</td>
<td>N/A**</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>1.2 Poverty gap ratio</td>
<td>---</td>
<td>0.5***</td>
<td>---</td>
<td>---</td>
<td>0.5***</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.3 Share of the poorest quintile in national consumption</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3.7***</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>1.3 Share of the poorest quartile in national consumption</td>
<td>---</td>
<td>8***</td>
<td>---</td>
<td>---</td>
<td>9***</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

*Source: ***United Nations Statistics Division as presented in the MDG 2010 Report*
### Immunisation Schedule

In Seychelles immunization schedule is as follows:

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Age Administered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCG (against tuberculosis)</td>
<td>At birth, 6 years</td>
</tr>
<tr>
<td>Diphtheria, Pertusis (whooping cough) and tetanus (Combined vaccine)</td>
<td>3, 4, 5, 18 months</td>
</tr>
<tr>
<td>Poliomyelitis</td>
<td>3, 4, 5, 18 months, 6, 15 years</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>3, 4, 9 months</td>
</tr>
<tr>
<td>Diphtheria and tetanus</td>
<td>6 years</td>
</tr>
<tr>
<td>Yellow Fever</td>
<td>1 year</td>
</tr>
<tr>
<td>Mumps, Measles and Rubella (combined vaccine)</td>
<td>6 years</td>
</tr>
<tr>
<td>Tetanus</td>
<td>15 years</td>
</tr>
</tbody>
</table>

[Ministry of Health, Seychelles, Child Health]
Table A.5.1

<table>
<thead>
<tr>
<th>Category</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctors</td>
<td>94</td>
<td>105</td>
<td>103</td>
</tr>
<tr>
<td>Dentists</td>
<td>15</td>
<td>14</td>
<td>16</td>
</tr>
<tr>
<td>Nurses &amp; Midwives</td>
<td>372</td>
<td>424</td>
<td>418</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Radiologists (doctors)</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Radiographers</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Laboratory Technologists</td>
<td>8</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Laboratory Technicians</td>
<td>34</td>
<td>11</td>
<td>29</td>
</tr>
<tr>
<td>Physiotherapists</td>
<td>11</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>Nutritionists</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Psychologists</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Public Health Officers</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bio-Medical Engineers</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Pharmaceutical Dispensers</td>
<td>61</td>
<td>56</td>
<td>58</td>
</tr>
<tr>
<td>Health Promotion Officers</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Statisticians &amp; Assistants</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Others (Nursing Assistants, Medical Clerks &amp; Auxiliary Staff)</td>
<td>852</td>
<td>737</td>
<td>670</td>
</tr>
<tr>
<td>Dental Technicians</td>
<td>7</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Dental Therapist</td>
<td>30</td>
<td>28</td>
<td>29</td>
</tr>
<tr>
<td>Pharmaceutical Production Assistant</td>
<td>9</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Environmental Health Officers</td>
<td>80</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Bio-Medical Technicians</td>
<td>8</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Pharmaceutical Chemist</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Occupational Therapist</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Health Educator</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Audiologist</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Orthopaedist</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Principal Social Worker</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1617</strong></td>
<td><strong>1435</strong></td>
<td><strong>1381</strong></td>
</tr>
</tbody>
</table>

Source: Ministry of Health
Table A.5.2: Expatriates Recruited

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Consultant</td>
<td>2</td>
<td>20</td>
<td>14</td>
<td>9</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Senior Medical Officer</td>
<td>5</td>
<td>4</td>
<td>14</td>
<td>2</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Medical Registrar</td>
<td>4</td>
<td>19</td>
<td>29</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Medical Officer</td>
<td>1</td>
<td>7</td>
<td>9</td>
<td>18</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Specialist Medical Officer</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior Medical Registrar</td>
<td>7</td>
<td>14</td>
<td>18</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior Dental Officer</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Staff Nurse</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Principal Pharmacist</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>8</td>
<td>28</td>
<td>78</td>
<td>65</td>
<td>76</td>
<td>37</td>
</tr>
</tbody>
</table>

Source: Ministry of Health

Table A.5.3: Distribution of Health Workers by Age Categories 2006

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 35</td>
<td>28%</td>
<td>11%</td>
<td>40%</td>
</tr>
<tr>
<td>35 – 49</td>
<td>35%</td>
<td>10%</td>
<td>45%</td>
</tr>
<tr>
<td>50+</td>
<td>12%</td>
<td>4%</td>
<td>15%</td>
</tr>
<tr>
<td>Total</td>
<td>75%</td>
<td>25%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Ministry of Health

Figure A.5.1: Age Distribution of Health Workers 2006
Figure A.5.1 and Table A.5.3 depicts age distribution by sex. The diagrams show that the age of health workers is evenly distributed over the age group 25-44 years for both sexes.

Appendix 6

Table A.6.1: Number of new HIV Cases detected per year in Seychelles 2005-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Cases</td>
<td>45</td>
<td>42</td>
<td>26</td>
<td>44</td>
<td>52</td>
<td>33</td>
</tr>
<tr>
<td>Number of Tests Done</td>
<td>7,806</td>
<td>8,330</td>
<td>8,656</td>
<td>9,826</td>
<td>8,773</td>
<td>5,427</td>
</tr>
<tr>
<td>% of Positive Results</td>
<td>0.58</td>
<td>0.50</td>
<td>0.50</td>
<td>0.46</td>
<td>0.59</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Source: National Aids Steering Committee, Ministry of Health, 2011

Table A.6.2: Number of newly Detected Cases of Hepatitis C in Seychelles 2002-2010

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Cases Detected</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>32</td>
<td>55</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ministry of Health, 2011

Table A.6.3: Malaria Incidence and Deaths (All Imported Cases) in Seychelles 1990-2009

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Reported Cases</td>
<td>7</td>
<td>6</td>
<td>8</td>
<td>3</td>
<td>4</td>
<td>11</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Number of Deaths</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, WHO
### Table A.6.4: Selected Communicable Disease in Seychelles, 2002-2007

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diarrhoea</td>
<td>4435</td>
<td>4585</td>
<td>4584</td>
<td>4984</td>
<td>6089</td>
<td>4631</td>
</tr>
<tr>
<td>Conjunctivitis</td>
<td>1951</td>
<td>1857</td>
<td>1525</td>
<td>1367</td>
<td>2022</td>
<td>14736</td>
</tr>
<tr>
<td>Chikungunya</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>258</td>
<td>8984</td>
<td>1008</td>
</tr>
<tr>
<td>Dengue</td>
<td>0</td>
<td>5</td>
<td>405</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Influenza-like Syndrome</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>736</td>
<td>1172</td>
<td>424</td>
</tr>
<tr>
<td>Meningitis</td>
<td>9</td>
<td>14</td>
<td>5</td>
<td>8</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>HIV new &amp; old cases</td>
<td>160</td>
<td>180</td>
<td>203</td>
<td>248</td>
<td>290</td>
<td>333</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>52</td>
<td>35</td>
<td>35</td>
<td>26</td>
<td>46</td>
<td>58</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>29</td>
<td>10</td>
<td>13</td>
<td>11</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Malaria (imported)</td>
<td>3</td>
<td>10</td>
<td>15</td>
<td>3</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>

Source: Health Statistics and Health Information of Department of Health
Appendix 7

Other indicators of the TB disease

Table A.7.1 Tuberculosis Incidence, Prevalence and Death Rates in Seychelles (per 100,000 population)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of Incidence</td>
<td>43.3</td>
<td>39.8</td>
<td>36.5</td>
<td>13</td>
<td>26</td>
<td>33</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Rate of Prevalence</td>
<td>113</td>
<td>96.4</td>
<td>52.1</td>
<td>57</td>
<td>29.6</td>
<td>16.5</td>
<td>6.9</td>
<td>-</td>
</tr>
<tr>
<td>Death Rate</td>
<td>8.6</td>
<td>4.0</td>
<td>0.0</td>
<td>4.7</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
</tbody>
</table>

**Source:** United Nations Statistics Division, **Ministry of Health and WHO**

Table A.7.2 Proportion of Tuberculosis Cured under DOTS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% of DOTS Cured</td>
<td>-</td>
<td>82</td>
<td>83</td>
<td>100</td>
<td>100</td>
<td>89</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

**Source:** Ministry of Health; WHO

Table A.7.3 Proportion of Tuberculosis Detected under DOTS in Seychelles

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>% of Detected Cases under DOTS</td>
<td>81.6</td>
<td>96.7</td>
<td>67.1</td>
<td>82.5</td>
<td>90.5</td>
<td>68.2</td>
<td>38.1</td>
<td>99.9</td>
<td>62.1</td>
</tr>
</tbody>
</table>

**Source:** United Nations Statistics Division
Appendix 8

Table A.8.1: Incidence of Most Common Cancer by Site, in patient in Seychelles, 2005 - 2008

<table>
<thead>
<tr>
<th>Type of Cancer</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colon/Rectum</td>
<td>16</td>
<td>16</td>
<td>13</td>
<td>17</td>
<td>62</td>
</tr>
<tr>
<td>Breast</td>
<td>23</td>
<td>16</td>
<td>26</td>
<td>15</td>
<td>80</td>
</tr>
<tr>
<td>Skin</td>
<td>11</td>
<td>10</td>
<td>17</td>
<td>7</td>
<td>45</td>
</tr>
<tr>
<td>Cervix</td>
<td>10</td>
<td>13</td>
<td>10</td>
<td>7</td>
<td>40</td>
</tr>
<tr>
<td>Oral Cavity/Oropharynx</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>5</td>
<td>29</td>
</tr>
<tr>
<td>Prostate</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>8</td>
<td>28</td>
</tr>
<tr>
<td>Stomach</td>
<td>8</td>
<td>7</td>
<td>3</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>Lymphomas</td>
<td>6</td>
<td>7</td>
<td>1</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Uterus</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>16</td>
</tr>
</tbody>
</table>

Source: Ministry of Health, MDG Report 2010

The Heart Study of 2004, established the following:

- Mean levels of blood cholesterol are fairly high by international standards.
- This may reflect a fairly high consumption of saturated fats (e.g. palm oil, fatty snacks, fried foods, etc).
- Total cholesterol does not increase with age in men but increases in women (consistent with raised blood cholesterol after menopause).
- Cholesterol was higher in 2004 than 1989 in men while levels did not change substantially in women.
- A larger increase in men than in women in the 15-year interval might partially relate to the larger relative increase in body weight in men or women.

- Less than half of the adult population has total cholesterol in the favorable level (<5.2 mmol/l).
- A substantial proportion of persons (approximately 3% of the total adult population) have very high total cholesterol levels, which may warrant treatment irrespective of other risk factors.
- Approximately 20% of adults have total cholesterol levels in the high range (6.2-7.9 mmol/l), which warrants lifestyle intervention in all instances and treatment with medication in some cases, conditional to a person’s total risk.

- The prevalence of high total cholesterol (>_6.2 mmol/l) increased between 1989 and 2004, particularly in men.
- Secular changes in total cholesterol levels are largely driven, generally, by the consumption of saturated fats (palm oil, meat, butter) and “trans” fatty acids (found in cookies, bakery, etc).
- Persons with high cholesterol levels should be given lifestyle advice in all instances and medication in selected cases (previous CVD, diabetes, high total CVD risk).

- The prevalence of very high total cholesterol generally increased between 1989 and 2004.
- Persons with such high levels (3% of 40’000 adults in Seychelles_ 1200 persons) should generally be treated with medication.
• LDL-cholesterol (the so called the “bad cholesterol”) is a major risk factor of CVD. The highest the level the highest the risk of atherosclerosis, myocardial infarction and other cardiovascular disease.
• LDL-cholesterol (in mmol/l) is calculated with the Friedewald formula (LDL-C=TC-HDL-triglyceride/ 3.3).
• Mean levels in the population of Seychelles are fairly high in 2004.

• Approximately one third of all adults aged 25-64 have high or very high LDL-cholesterol levels.
• These data indicate a high prevalence of a main cause of heart disease, particularly heart attack and subsequent heart failure.
• Interventions to reduce LDL-cholesterol (and total cholesterol) include decreased intake of saturated fats, reduce intake of “trans” fats, increasing intake of fibers (vegetable and fruits) and body weight control and, for selected persons, treatment with specific medications (e.g. statins).

• HDL-cholesterol is also called the “good cholesterol”: the higher the blood levels of HDL-cholesterol the better. A high level of HDL-cholesterol is therefore a preventive factor of cardiovascular disease.
• Mean HDL-cholesterol levels in Seychelles are fairly favorable by international standards.
• HDL-cholesterol is increased by alcohol consumption and physical exercise and it is decreased by overweight and smoking.
• HDL-cholesterol is generally lower in men than in women. The lack of such a contrast in Seychelles may reflect higher consumption of alcohol in men than in women and larger prevalence of overweight in women than men (overweight decreases HDL-cholesterol and alcohol increases HDL-cholesterol – this effect of alcohol on HDL-cholesterol accounts for a large part of the favorable effect of moderate intake of alcohol on health, and particularly on CVD).

• Low HDL-cholesterol levels (women: <1.2; men: <1.0 mmol/l) represent a strong risk factor of CVD, particularly for heart attack.
• Approximately 20% of adults have such low HDL-cholesterol level.

• High serum HDL-cholesterol (>1.4 mmol/l) is an independent preventive factor for CVD.
• Approximately one third of the adult population has HDL-cholesterol in that favorable range.
• Factors that raise HDL-cholesterol include non smoking, low body weight, and alcohol intake.

• HDL-cholesterol is higher in persons with low BMI and high alcohol intake.
• The preventive effect of moderate alcohol intake is largely related to its effect on HDL-cholesterol.

• A large majority of all adults have heard of cholesterol.
• This high level of awareness likely reflects active health education in the mass media during the past 15 years, including programs on nutrition and specific programs on cholesterol.
• The proportion of persons who had their blood cholesterol screened is still low.
• Recommendations (including guidelines for Seychelles) advise that all adults should be screened for high cholesterol, with a frequency that depends of the presence of other risk factors.

• Among persons with high blood cholesterol (>6.5 mmol/l), less than one third has been screened and could therefore possibly know about their condition.
• Only a few percents of persons with high cholesterol receive a lipid-lowering treatment.
• The very low proportion of persons under lipid-lowering treatment may relate to limited focus of doctors with regards to blood lipid disorders and reluctance for prescription in view of high cost of statins.
• High cholesterol is a main risk factor of CVD, particularly heart attack, and interventions to reduce cholesterol in the whole population should be given high priority.
• Such interventions would aim mainly at reducing intake of saturated fats or trans fats.
• Medications are very effective (statins can reduce blood cholesterol by 25-50%) and treatment should be considered for persons at high risk.
Serum HDL-cholesterol, which level is inversely associated with coronary heart disease, was rather high in the population (Figure 6). High level (>1.5 mmol/l), thus a CVD preventive factor, was found in around 50% of men and women. Low levels (<0.9 mmol/l), thus a CVD risk factor, was found in less than 10% of men and women. [See Heart Study 11 for continuation].

Appendix 9

In the Heart Study, 2004, the following was established:

- Mean body mass index (BMI) is higher in women than in men.
- Mean BMI has increased largely between 1989 and 2004, irrespective of sex and age.
- The prevalence of categories of “excess” body weight is larger in women than in men.
- The prevalence of persons with normal weight is decreasing with age, particularly in women.
- Only approximately 50% of men and 30% of women have normal weight.
- Approximately 1% of men and 5% of women have extreme obesity (BMI >40 kg/m2).
- The prevalence of excess weight (overweight or obese: BMI >25 kg/m2) has increased largely between 1989 and 2004, irrespective of sex and age.
- The prevalence of obesity (BMI >30 kg/m2) has increased largely in men and in women at all ages.
- At least one third of persons with overweight (BMI: 25-29 kg/m2) perceive that their weight is “good”.
- This has implications as persons with this belief are unlikely to attempt to lose weight.
- Among persons with obesity (BMI: >30 kg/m2), as many as approximately 20% believe their body weight is “good” and an additional 50% believe their weight is “a bit too high”.
- This has implications as persons with this belief are unlikely to attempt to lose weight.

Appendix 10

Dietary Patterns in Population 25-64

In the Heart Study, 2004, the findings suggest that:

- A large consumption of calories can be attributed to sweetened drinks such as soft drinks, juices in packets and tea (tea is generally taken with large amount of sugar).
- Almost 90% of people consume fish on a daily or almost daily basis.
- However, this does not exclude a substantial fat intake (and calorie intake) as fish is traditionally often prepared by frying it.
- Approximately 90% of people eat rice on a daily basis. The figures do not provide details on volume of rice served daily (which is traditionally large in Seychelles).
- It should be acknowledged that rice available in Seychelles is polished (i.e. low content in vitamins).
- Consumption of milk and cheese are low (hence limited intake of calcium, particularly as the population is ageing and bone problems may subsequently increase).
• As emphasized in previous figures, the intake of vegetables and fruit is far below the recommended intake target of at least 5 portions per day.
• These findings emphasize several areas and targets for interventions.

Appendix 11

In the Heart Study, 2004, the following was established:

• Around 40% of both men and women have no significant physical activity at work.
• The proportion reporting no significant physical activity increases with age, particularly in women.
• This may reflect that many older women have little job qualification and work in physically strenuous jobs.
• More men than women have of moderate or vigorous physical activity at work.
• Approximately 40% of men and women have no significant amount of physical activity at work.

• Approximately 40% of adults report no significant walking (more than 10 min in a raw in a day).
• Around 50% of people report walking for at least 30 minutes per day.

• Almost two thirds of adults report no significant physical activity during their leisure time.
• This proportion increases with age for both men and women.
• A substantial proportion of men report vigorous intensity leisure activity (40% at age 25-34) but this proportion decreases strongly with age.

• Almost two thirds of people do not report significant physical activity during their leisure time.
• This proportion increases with age in both men and women.
• Among those reporting physical activity during leisure time, a large proportion of men and a majority of women report a duration of less than 30 minutes.
• Overall, figures on physical activity show that a substantial proportion of men and women have little physical activity.
• The findings emphasize areas for intervention as sedentary habits are related strongly with detrimental conditions such as overweight, high blood pressure, blood lipid disorders and the metabolic syndrome as well as heart disease, cancer and other chronic diseases.

• The proportions of persons doing some exercise at work (>10 min at a time) or during their leisure time (>10 min at a time) are fairly low but only a few persons do not report any physical activity at all.
• However, these figures only represent the proportions who report some frequency of physical activity (at least for 10 consecutive minutes in at least one day per week).

Appendix 12

The Heart Study of 2004, established the following:

• As in most populations, blood pressure (BP) increases sharply with age.
• Similar to most other populations, BP is higher in men than in women in younger age categories while the reverse trend is observed after age 55-64.
• BP was slightly lower in 2004 than in 1989.
• This favorable secular trend in BP occurred despite larger prevalence of obesity in 2004 than in 1989 but is consistent with largely increased prevalence of persons treated for HBP in 2004 than 1989.

• There was a large increase, in 2004 vs. 1989, in the proportions aware of having HBP, treated for HBP, and with BP controlled to target.
• However, in 2004, as many as 45% of men 25% of women who have HBP were unaware of having HBP (“aware persons” are persons who had ever been told by a doctor that they had HBP).
• In 2004, almost all persons aware of having HBP were treated.
• Only 12% of men and 30% of men treated for HBP have their BP controlled to therapeutic target.
• HBP being the main cause of stroke, and stroke being the leading single cause of death in Seychelles, these results emphasize the need for screening programs to identify persons still unaware of being hypertensive and for strengthening treatment among hypertensive patients to lower BP to target and reduce complications of hypertension.

• The prevalence of high blood pressure (HBP) increases sharply with age in both men and women.
• A large proportion of the adult population has HBP (44% of men and 36% of women).
• As many as 20% of adults aged 45-64 have very high BP (_160/100 mmHg).
• Among persons with HBP, only a small proportion is controlled (treated and BP <140/90).
• HBP is a main risk factor for CVD and other chronic diseases and the leading cause of stroke.
• The high prevalence of HBP in the population of Seychelles is consistent with the very high rates of stroke mortality in the country.
• The prevalence of persons with HBP (BP_140/90 mmHg) has slightly decreased between 1989 and 2004.

• The prevalence of hypertension (defined as BP _140/90 mmHg or current medication for hypertension) was higher in 2004 than in 1989 (except for young persons).
• This illustrates that the decrease in BP between 1989 and 2004 (but no decrease in the prevalence of hypertension in the interval) may partly relate to increased treatment in 2004 than 1989 (increased relative and absolute numbers of treated patients).
• From a population perspective, this illustrates the need to implement two-pronged strategies aimed at reducing BP: i) population strategies (e.g. salt reduction) to reduce BP in the entire population and reduce the number of new cases of HBP) and ii) strengthening health care (more treatment) to further improve BP control in hypertensive persons.

• Prevalence of very BP (_160/100 mmHg, i.e. hypertension stage II) was lower in 2004 than in 1989.
• Most persons with stage II HBP will shift, upon treatment, into the category of persons with stage 1 hypertension (140-159/90-99), which is consistent with increased prevalence of persons with BP _140/90 or treatment in 2004 than 1989.

• At a same age, obese persons have mean systolic BP almost 10 mmHg higher than persons with normal weight.
• The difference for diastolic BP is proportionally similar.
• This emphasizes the importance of body weight control for BP control.
• Over 80% of persons in Seychelles seek health care from doctors in government facilities (national health system) where medical care and all medications are provided without free to all inhabitants of Seychelles.

• Almost half of persons under treatment report that they often see a different doctor in subsequent visits.
• This issue should be considered for action as it is well demonstrated that follow up with same health professionals is an important aspect of long-term compliance to medication by chronic patients.

• Approximately 70-80% of male and female adults under antihypertensive treatment report that it is “fairly important” or “very important” to be followed up by a same doctor for antihypertensive treatment.
• Less than 10% of persons under antihypertensive treatment have sought care from traditional practitioners during the past 12 months.

• Less than half of treated hypertensive persons know their own BP values or values for normal BP.
• This shows an important area of intervention since hypertensive patients would be adhere better to their medication if they could evaluate themselves the gap between their own values and target values.
• More than 80% of persons under antihypertensive medication report having been advised by their doctor about main lifestyle measures to reduce BP.
• The proportions are similar for the four considered lifestyle factors.
• It cannot be excluded that these fairly high rates also reflect information gathered in the mass media as opposed to advice given by doctors or other health professionals.
• However, the data n the Figure do not inform on how patients translate knowledge into practice.

• Almost half of men and a quarter of women admit not taking the prescribed treatment for HBP.
• Non compliance may be underreported as questions were asked through a face-to-face interview with nurses.
• Good compliance with medication increased with age and was larger in women than in men.
• At age 55-64, good compliance reached 60-80% of men and women.
• Better compliance at older age may relate to a sense of increased vulnerability to disease among old vs. young persons.

Only a minority of persons under treatment for HBP perceive a substantial risk of complications related to HBP, such as stroke or heart attack.
• Limited perception of potential severe complications due to HBP may be a factor limiting compliance with treatment (both lifestyle and medication)

• Less than half of persons treated for HBP perceive that HBP does not cause symptoms most often.
• These figures emphasize the need for health education to hypertensive persons on the symptom-free nature of HBP to improve compliance to medication. Medication may indeed be stopped inappropriately by patients who do not feel symptoms and therefore believe that they do not or no longer have HBP.

• Approximately half of persons treated for HBP think that the duration of treatment for HBP would generally last for years.
• This emphasizes the need for more education (in the mass media and at health care level) to inform persons with HBP on the need for life-long treatment for HBP (i.e. that BP can be controlled, not cured) to improve compliance to treatment.

Appendix 13

The Heart Study of 2004, established the following:

• Diagnosis of diabetes in this Figure is based on elevated fasting blood glucose (>7.0 mmol/l) or history of anti-diabetic treatment (and not also on OGTT since OGTT was not performed in 1989).
• The prevalence of diabetes has increased substantially between 1989 and 2004.
• Increasing prevalence of diabetes is consistent with the largely increased prevalence of overweight in the interval in Seychelles (the so called “diabesity” epidemic).

• In this analysis, diabetes is defined as FBG >7.0 mmol/l or being under antidiabetic treatment (not on OGTT). Analysis is restricted to age 35-64.
• Although still far from optimal, the proportion of persons in the population who aware of having diabetes has increased substantially between 1989 and 2004.
• This proportion is higher among women than men, possibly because women tend to be more health conscious than men and/or attend health care more often.
• Since diabetes goes for years without symptoms, most new diabetic persons can be identified only through opportunistic or systematic blood sugar screening.
Pre diabetes is defined as either impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT). These categories have been explicitly defined in the methods section of this report.

At all ages, the prevalence of pre-diabetes is larger than the prevalence of diabetes.

Hence approximately 30% of men and 16% of women have pre-diabetes in the population aged 25-64.

It is unclear why the larger prevalence of pre-diabetes is larger in men than women aged 35-54.

Based on the oral glucose tolerance test, a substantial number of cases of diabetes can be identified in persons with fasting blood glucose <7.0 mmol/l but who have post meal glucose (2hBG) ≥11.1 mmol/l, e.g. 5% of men and 8% of women at age 55-64.

Assessment of pre-diabetes has important significance for at least 2 reasons. IGT is a pre-diabetic stage (a substantial number of persons with pre-diabetes will develop diabetes in subsequent years) and pre-diabetes itself is associated with increased risk of CVD and mortality.

The figure illustrates that body mass index, fasting serum insulin and fasting blood glucose have largely increased between 1989 and 2004 (analyses are adjusted for age).

This observation is consistent with the physiological view that increase in body mass index in the population is followed by an increase in fasting serum insulin levels (i.e. increased insulin resistance) and, finally, an increase in fasting blood sugar (hence pre-diabetes and diabetes).

Adjusted for age, the prevalence of diabetes is more than double in obese persons as compared to non-overweight persons.

This emphasizes the important role of overweight as a major cause of diabetes.

It is known that diabetes type II is causally related to resistance to insulin (hence to fasting serum insulin levels) and insulin resistance is itself is causally related to excess adiposity. Most cases of diabetes type II are related to insulin resistance.

The figure shows that fasting serum insulin is largely increased across both categories of BMI and categories of blood glucose impairment.

This underlies the fact that obese persons, even if they are not yet diabetic, have high insulin resistance and are therefore highly likely to develop diabetes.

The table shows that 49% of all cases of diabetes in the entire adult population are attributable to excess body weight (BMI ≥25 kg/m2).

This underlies that excess body weight is the main driving force of the epidemic of diabetes (hence the term of “diabesity”).

This further stresses that prevention of diabetes relies largely on prevention of overweight in a population.

Approximately 40% of persons in the population report a diabetes history in their family.

Family history of diabetes is a known risk factor for diabetes.

More than one third of diabetic persons who are under anti-diabetic treatment report that they were not advised about healthy lifestyles.

While it cannot be known if these persons were actually not told about lifestyles by their doctors or nurses or if they did not recall such advice, this stresses the need to strengthen effective provision of non-pharmacological treatment to diabetic treatment in order to help control diabetes and reduce

Control of blood sugar (as assessed by HbA1c), blood pressure, and blood lipids is central to the prevention of complications in persons with diabetes complications.
Appendix 14

The Heart Study of 2004, established the following:

**Results:** In 2004 vs. 1989, the levels of the main traditional CV-RF have either decreased, e.g. smoking (17% vs. 30%, p < 0.001), mean blood pressure (127.8/84.8 vs. 130.0/83.4 mmHg, p < 0.05), or only moderately increased, e.g. median LDL-cholesterol (3.58 vs. 3.36 mmol/l, p < 0.01). In contrast, marked detrimental trends were found for obesity (37% vs. 21%, p < 0.001) and several cardiometabolic CVD-RF, e.g. mean HDL-cholesterol (1.36 vs. 1.40 mmol/l, p < 0.05), median triglycerides (0.80 vs. 0.78 mmol/l, p < 0.01), mean blood glucose (5.89 vs. 5.22 mmol/l, p < 0.001), median insulin (11.6 vs. 8.3 μmol/l, p < 0.001), median HOMA-IR (2.9 vs. 1.8, p < 0.001) and diabetes (9.4% vs. 6.2%, p < 0.001). At age 40–64, the prevalence of elevated total cardiovascular risk tended to decrease (e.g. WHO-ISH risk score ≥10; 11% vs. 13%, ns), whereas the prevalence of the metabolic syndrome (which integrates several cardiometabolic CVD-RF) nearly doubled (36% vs. 20%, p < 0.001). Data on physical activity and on intake of alcohol, fruit and vegetables are also provided. Awareness and treatment rates improved substantially for hypertension and diabetes, but control rates improved for the former only. Median levels of the cardiometabolic CVD-RF increased between 1989 and 2004 within all BMI strata, suggesting that the worsening levels of cardiometabolic CVD-RF in the population were not only related to increasing BMI levels in the interval.

Appendix 15

**Summary of CVD survey results:**

- The three considered cut off values are high BP (BP ≥ 140/90 mmHg or treatment), elevated blood total cholesterol (≥ 5.2 mmol/l), and current smoking.
- Only 20% of men and 33% of women aged 25-64 have no risk factor and are at low risk of CVD.
- The proportion of persons with 0 risk factors decreases sharply with age.
- Since most of the population has at least one risk factor for CVD, interventions to reduce risk factors should therefore target the entire population and not only those individuals with “high risk”.

- The figure shows the prevalence of combinations of main risk factors in the population aged 25-65 using definitions of risk factors as for the figure above.
- Men have generally worse risk factor profiles than women: fewer men than women have no risk factor and more men than women have 2 or 3 risk factors.
- A gender difference in risk factors is consistent with higher CVD mortality in men than women in this age range (25-64). This relates partly to a much higher prevalence of smoking in men than women.
- Comparing data between 2004 and 1989, more men are at increased risk in 2004 vs. 1989 while slightly fewer women are within the highest risk categories (2-3 risk factors) in 2004 than 1989.
- The data show that there is a large potential for reducing risk factors in the population.

- The considered major risk factors are: BP ≥ 140/90 mmHg or treatment, cholesterol ≥ 5.2 mmol/l, current smoking, HDL-cholesterol < 1.0 mmol/l (M)/1.2 mmol/l (W), body mass index ≥ 30 kg/m2, and diabetes.
- Very few adults have no risk factors, particularly after age 45.
- More than 50% of persons aged 25-64 have at least 2 risk factors.
- This emphasizes the need for strategies to reduce risk factors targeting the entire population.
• The figure shows the prevalence of combinations in the population aged 25-65 using definitions of risk factors as for figure above.
• More than 50% of men and women aged 25-64 have at least 2 risk factors.
• As many as 7-8% of men and women (hence ~4000 people in the population aged 25-64) had at least 4 risk factors and who are therefore at very high risk of CVD.
• Slightly more men than women had at least 2 risk factors in 2004 than in 1989 while slightly fewer women than men had at least 2 risk factors in 2004 vs. 1989.
• This emphasizes the need for strategies to reduce risk factors targeting the entire population as well as the need for intensified medical treatment in individuals at high risk.

Appendix 16

Table A.16.1: Main discharge diagnoses at the Psychiatric ward in Seychelles 2007-2008

<table>
<thead>
<tr>
<th>Description</th>
<th>Male in 2008</th>
<th>Female in 2008</th>
<th>Total 2008</th>
<th>Total 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental and Behavioural disorders due to other psychoactive substance used</td>
<td>106</td>
<td>27</td>
<td>133</td>
<td>153</td>
</tr>
<tr>
<td>Schizophrenia &amp; delusional disorders</td>
<td>78</td>
<td>39</td>
<td>117</td>
<td>135</td>
</tr>
<tr>
<td>Mental and Behavioural disorders due to use of alcohol</td>
<td>59</td>
<td>8</td>
<td>67</td>
<td>115</td>
</tr>
<tr>
<td>Mood (Affective) disorder</td>
<td>20</td>
<td>22</td>
<td>42</td>
<td>59</td>
</tr>
<tr>
<td>Other mental and behavioural disorders</td>
<td>31</td>
<td>11</td>
<td>42</td>
<td>41</td>
</tr>
<tr>
<td>Neurotic, stress-related &amp; somatoform disorders</td>
<td>5</td>
<td>8</td>
<td>13</td>
<td>25</td>
</tr>
<tr>
<td>Other discharge diagnoses</td>
<td>30</td>
<td>15</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>329</strong></td>
<td><strong>130</strong></td>
<td><strong>459</strong></td>
<td><strong>560</strong></td>
</tr>
</tbody>
</table>

Source: Annual Report 2008. Ministry of Health and Social Development
References


Shamlaye C. et al. Seychelles Medical and Dental Journal (November 2004), entitled Health in Seychelles – an overview,

Monthly Health Statistics Bulletin, A compilation of Statistics from the Epidemiology and Statistics Section of the Public Health Division, Ministry of Health, Republic of Seychelles Vol: 10/10, October 2010


Roger Ndindjock,a Jude Gedeon,bShanthiMendis,c Fred Paccaudb& Pascal Bovetd, Potential impact of single-risk-factor versus total risk management for the prevention of cardiovascular events in Seychelles, Roger Ndindjock, Jude Gedeon,bShanthiMendis, Fred Paccaud& Pascal Bovet, September 2010

Social Determinants of Health in the Islamic Republic of Iran For the Ministry of Health and Medical Education Islamic Republic of Iran Prepared with the technical assistance of World Health Organization April 2007

Pascal Bovet et al., The Seychelles Heart Study 2004: methods and main findings, Ministry of Health and Social Development, 2007

Pascal Bovet et al., Comparison of Smoking, Drinking, and Marijuana Use Between Students Present or Absent on the Day of a School-Based Survey, Journal of School Health d April 2006, Vol. 76, No. 4


P Bovet, A Gabriel, C Shamlaye and F Paccaud, Diabetes in Africa: the situation in the Seychelles, Heart 2009;95;506-507

Pascal Bovet, Sarah Romain, Conrad Shamlaye, Shanti Mendis, Roger Darioli, Walter Riesen, Luc Tappy and Fred Paccaud, Divergent fifteen-year trends in traditional and cardiometabolic risk factors of cardiovascular diseases in the Seychelles, Cardiovascular Diabetology 2009, 8:34

Alwan et al.: Association between weight perception and socioeconomic status among adults in the Seychelles. BMC Public Health 2010, 10:467

Pascal Bovet, BharathiViswanathan, Conrad Shamlaye, Sarah Romain and Jude Gedeon, Addressing non-communicable diseases in the Seychelles: towards a comprehensive plan of action, Global Health Promotion 2010; 17(2):37-40

WHO Regional Office for Africa: A Strategy for addressing the key determinants of health in the African Region, June 2010

Health Statistics 2008, A compilation of Statistics from the Epidemiology and Statistics Section of the Public Health Division, Ministry of Health, Republic of Seychelles.

WHO Regional Office for Africa: WHO Country Cooperation Strategy 2008-2013, Seychelles


WHO Commission on Social Determinants of Health, A conceptual Paper on Actions for Social Determinants of Health, April 2007


Rubén M. Suárez-Berenguel, Health System Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy Implications, 2000

National Health Accounts database, World Health Organization (nhaweb@who.int), HEALTH SYSTEM FINANCING COUNTRY PROFILE: Seychelles, 2009
Claude Yersin, Human leptospirosis in 1994 in Seychelles, MD, Specialist in General Medicine FMH, Department of Internal Medicine, Victoria Hospital, Seychelles

L J BRUCE-CHWATT, Malaria threat to the Seychelles, BRITISH MEDICAL JOURNAL 25 SEPTEMBER 1976

Govinden P et al., Maternal and child health in Seychelles, SMDJ Seychelles Medical and Dental Journal, Special Issue, Vol 7, No 1, November 2004


Seychelles Millennium Development Goals: Status Report 2010, Ministry of Foreign Affairs, August 2010

Rosalie Michel; Zoe Matthews; and Andy Hinde, The Sad Fate of Seychellois Men: Recent Trends in Mortality in the Seychelles, 2000


Rizvi V et al., Reproductive Health and Maternal and Infant Health Care Services – Seychelles Experience, 2011

Conrad Shamlaye, MD; Heather Shamlaye, MD; Rubell Brewer, MD, Health in Seychelles: Placing child development in context, SMDJ Seychelles Medical and Dental Journal, Special Issue, Vol 7, No 1, November 2004

Republic of Seychelles: Progress Report on Declaration of Commitment on HIV and AIDS 2010

Erik Blas and AnandSivasankaraKurup, WHO: Equity, Social Determinants and Public Health Programmes, 2010

Rubén M. Suárez-Berenguela, Health System Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy Implications, 2000

Erik Blas, Johannes Sommerfeld and AnandSivasankaraKurup, Social determinants approaches to public health: from concept to practice, 2011

Ministry of Health and Social Development: Annual Report 2008, Seychelles

National Gender Report for the Elaboration of a sub-regional IOC Gender Strategy commissioned by IOC and EU, September 2008

Prostitution in Seychelles: An Assessment of the Situation commissioned by Department of Social Development, January 2011

Jean Perdrix et al, Patterns of Alcohol Consumption in the Seychelles Islands (Indian Ocean), 1998

Ministry of Health, Seychelles joins African Vaccination Week, 2010