Vietnam Noncommunicable Disease Prevention and Control Programme 2002-2010
Implementation Review

Report prepared by Catherine Harper
Consultant for the World Health Organization

August 2011
Summary

Vietnam as an emerging economy in the Western-Pacific region is facing a double burden of communicable and non-communicable diseases. However the impact of non-communicable diseases (NCDs) is rising rapidly, while for communicable diseases the impact is decreasing. NCDs cause 71% of the total burden of disease in Vietnam, including 60.1% of all deaths. Twenty years ago, NCDs caused 41.8% of deaths.

Mental disorders such as depression and schizophrenia, and cardiovascular diseases such as stroke and heart attack, each cause 18% of the burden of disease. Stroke causes about 110,000 deaths each year, 20% of all deaths. Chronic respiratory diseases, liver cancer and heart attack cause between 23,000 and 29,000 deaths each year, a total of 15% of all deaths. Diabetes prevalence has tripled in two decades, and the number of cancer cases diagnosed each year increased by 50% in less than 10 years.

The major NCDs of cancer, cardiovascular disease and diabetes have four common and modifiable risk factors: smoking, excess alcohol consumption, insufficient physical activity and poor nutrition. Much of the NCD burden is preventable by reducing the prevalence of these four risk factors. Decreasing the prevalence of these risk factors will reduce the incidence and assist in the impact of overweight and obesity, high blood pressure and high blood cholesterol, which are important determinants of NCDs.

Hypertension prevalence has almost doubled in less than 20 years. Nearly one-third of adults have raised blood cholesterol. Overweight and obesity prevalence has increased, with many children now overweight. Smoking rates for males have remained at about 56% for the last ten years. Lung cancer caused 23,589 deaths in males in 2008, 4% of all deaths; for females while the smoking rate was 1.7%, lung cancer caused 7,869 deaths. More than one-quarter of adults are insufficiently active. Only one-fifth (19.4%) of adults ate the recommended five serves of fruit and vegetables per day. The proportion of energy obtained from fats in adult diets has doubled in two decades.

NCDs affect everyone in Vietnam either directly or indirectly. The health impact of NCDs starts for some people before the age of 15 years, and affect females almost as much as males. The rich and the poor are affected, with the poor often affected to a greater extent. There is a substantial and growing impact on people in the middle years, the most economically productive period of life.

Population size, the age distribution of the population, education, income level and distribution in society, cultural norms and the build environment all affect the incidence and prevalence of NCDs and the total health impact of these diseases.

In 2002 the Vietnam Prime Minister decided, ratified with Decision 77/2002/QD-TTg, that for the first time Vietnam would have a National Target Programme for the prevention and control of Non-communicable disease. This Programme, termed the NCD Programme, was established for the period 2002-2010, to focus on the prevention and control of certain NCDs. Four disease specific Plans were funded and implemented within the NCD Programme, based on Decisions 108/2007/QD-TT and 172/2008/QD-TT: Mental disorders, cancer, diabetes, and hypertension. In 2011 chronic respiratory diseases were included in the Programme. In 2010 a Decision was made to establish a Mission for NCD prevention and control with leadership by the Department of Preventive Medicine.

This report describes the implementation of the 2002-2010 NCD Programme, including the disease specific action plans within the Programme. This review was conducted through interviews with key stakeholders and assessment of provided documents.
Achievements of the 2002-2010 NCD Programme

Establishing the first National Target Programme for NCD prevention and control was a significant achievement in itself, providing strong commitment by the government at the highest level and establishing NCD prevention and control as a priority for Vietnam. The NCD Programme was implemented as disease specific separate plans, principally focused on disease management, rather than prevention of disease. Yet each of these diseases share common yet risks. Considerably more could have been achieved through the NCD Programme had integration of activities to address these risk factors been an integral part of the Programme.

As a result of the programme there have been no gains in health status of the nation-wide population due to both the short period of time since the start of funding of the Action Plans and the amount of funding provided. In fact, as described above and in detail in this review, the burden of NCDs is growing and there is clear evidence that the epidemic will increase its impact in Vietnam.

However the disease specific projects covering a small proportion of the population have shown considerable success. The quality and range of treatment provided to some of the people of Vietnam with NCDs has improved. For example the hypertension management project was successful in the less than 2% of the population who received the intervention; similarly for the less than 2% who received the diabetes management program. Less than 10% of women received the successful breast and cervical cancer screening activity.

There have been gains in organisational capacity of the health system to address NCDs. The enhanced capacity of the health system has been built by the purchase and development of infrastructure particularly in cancer control. Some doctors and nurses have been trained in screening, diagnosis and disease control practices, at all levels of the health system from central to commune/village level. However much more needs to be done.

Each of the plans, excluding the mental health project, has secured funds from international donor agencies as a result of the NCD Programme. Securing the international donor funding for the 2009-2010 STEPS nation-wide survey of NCD and risk factor prevalence was a key achievement.

Challenges for NCD prevention and control in the 2002-2010 NCD Programme

There is substantial potential for further achievements to prevent development of NCD risk factors, the progression to disease, and the morbidity and death associated with NCDs. However, if the NCD epidemic is not addressed, because of its sheer size, there will be profound impacts on the health of the Vietnamese and on the economy and development of the nation.

A key challenge is the organization of the health system in Vietnam. Strength of the system is the capacity to effectively address communicable disease, particularly in the acute phases. It is critical to maintain this capacity. Addressing the NCDs burden has very different requirements of the system. This organizational challenge relates to a number of components of the system.

- The management of NCDs through hospital outpatients is a cost inefficient approach for the over-burdened health system, and costly for the patient in terms of time and expense.
- The health system is comprised of disease specific hospitals and institutes at the central level responsible for providing clinical governance and leadership of that disease across the nation. The NCD Programme was delivered as disease specific projects managed by these hospitals. This silo approach provided leadership, focus and expertise in the delivery of activities to manage and control diseases. However it failed to harness the potential to prevent NCDs.
- The Preventive Medicine Department and centres across the country have limited capacity to address NCDs, while addressing communicable diseases. The capacity limitation relates to resources, knowledge and delegated responsibilities.
The major NCDs share common risk factors. International evidence is clear that the most cost effective strategy is to address these risk factors together.

NCD risk factors are the result of whole of government policies and societal influences. Any reduction in prevalence of NCD risk factors will be the result of policies and activities of almost all sectors of government and society. Yet, there was little collaboration by the health sector with these other sectors in the prevention of NCDs.

Recommendations for future NCD prevention and control programmes

1. **Establish two National Target Programmes**

   1. Mental disorders prevention and control programme.
      
      The National Taskforce on Community Mental Health System Development in Vietnam will make recommendations in 2011 for the strategic focus of mental health care in the country: A focus on institutional or community care. This programme will require:
      
      * Stepwise implementation in building the planning framework and prioritising interventions, as described by WHO (Figures 11, 12), building on the existing infrastructure and capacity, and based upon the Taskforce recommendations;\(^\text{20}\)
      * Implementation of the seven strategic action areas described in the Western Pacific Regional Action Plan, and listed in Appendix 5.5;\(^4\)
      * Future directions for mental disorder prevention and control are listed in Section 2.1. This programme will not be discussed further in these recommendations.

   2. NCD prevention and control programme.
      
      The prevention and control of the major NCDs of cardiovascular disease, cancer, diabetes and chronic respiratory diseases requires three strong, interrelated components: Hospital and outpatient services; Primary health care; and Preventive medicine services. This programme:
      
      * Should have a stronger focus on prevention of NCDs than the 2002-2010 Programme, while maintaining focus on the treatment of disease;
      * Will require enhancement of the preventive medicine system across the country;
      * Will require stepwise implementation in building the planning framework and prioritising interventions, as described by WHO (Figures 11, 12), building on the existing infrastructure and capacity;\(^4\)
      * Should be implemented based on the seven strategic action areas described in the Western Pacific Regional Action Plan, and listed in Appendix 5.5;\(^4\)
      * Should set priorities for population-based and targeted interventions, based on trends in risk factors and NCD prevalence from ongoing monitoring. WHO has identified ten best buys for the prevention of NCD, listed in Appendix 5.5.\(^{10}\)

2. **Establish strong national leadership and governance**

   * Vietnam Government explicitly states that addressing the risk factors of NCDs requires an integrated, intersectoral approach. Vietnam Government explicitly state that addressing NCDs is a whole of government priority, requiring intersectoral collaboration to address the epidemic of disease threatening the economy and development of the country.
   * Review and establish the NCD Steering Committee with Vice Chair positions reflecting the enhanced role of preventive medicine. The Committee must be intersectoral, including membership of those Ministries which have a key role in the determinants of NCDs. This may be best implemented through a sub-committee for the prevention of the NCDs.
   * Establish local intersectoral committees chaired by provincial Preventive Medicine Centres and supported by central agencies.
   * Enhance the established disease specific networks to gain nationwide coverage.
• Establish a central budget line for the integrated NCD prevention project, as well as the disease specific projects.
• Review the organisation chart for the NCD Prevention and Control Programme in line with scope and responsibilities for 2001-2015 Programme.

3. Establish clear responsibilities
• Designate responsibility to:
  i. A specific part of MoH for the coordination of the 2011-2015 NCD Programme;
  ii. GDPM for prevention of NCD; and
• Integrate the NIN and VINACOSH into the NCD Programme, defining their respective roles at central and local levels.
• Define the role preventive medicine center staff in NCD prevention and control, and develop role descriptions for the provincial, district and commune health centre staff.

4. Establish a permanent coordinating office
• Establish a permanent office for coordination of the NCD Programme within GDPM;
• Provide recurrent funding to the office, similar to that of the Office for VINACOSH.

5. Enhance the preventive medicine system
• Designate responsibility to the preventive medicine system for prevention and control of NCDs. The system should focus its efforts on population wide approaches for the main NCD risk factors and on the management of people at high risk of NCD.
• Enhance the capacity of the preventive medicine system to be responsible for:
  i. Leading the development and implementation of an intersectoral integrated approach to NCD prevention;
  ii. Support of primary health care in NCD prevention and control, specifically diagnosis of raised blood pressure, non-pathological assessment of patients at risk of diabetes, pharmaceutical management of some NCDs (hypertension and some diabetes management), provision of advice of healthy behaviours to healthy and diseased patients, and referral of patients for cancer screening at hospitals.
• Preventive Medicine Centres and District Health Centres should provide local leadership and coordination in NCD prevention and control. The role of Commune Health Centres and Village health workers should be expanded in line with capacity.
• Provide sufficient staff numbers at central and local level to work exclusively on NCD prevention and control.

Individual based activities
• Regulations should be altered to increase the period local health workers can prescribe medications, matched with the amount of pharmaceuticals which are stored at these facilities.
• Review the prescribing practices for patients with pre-diabetes to ensure cost effective best practice is implemented.
• Develop simple risk charts for primary health care staff to identify people at high risk of NCDs. Where possible, remove the need for blood tests which add greatly to the cost and complexity of the assessment.

Community based activities
• Develop a model for community based prevention and control of NCDs, addressing the risk factors in an integrated manner, and using an intersectoral approach. This model should be implemented nation-wide, with local variation based upon circumstances.
The prevention of NCDs should focus initially on prevention of CVD, due to both the burden of CVD in Vietnam and the cost-effectiveness of internationally established interventions.

Enhance the focus on health promotion within the community based project for integrated prevention of hypertension and diabetes, currently being piloted in Linh Son. Finalise the evaluation of this pilot project. Based on this evaluation determine the suitability of this model for extension to other sites and/or to cover prevention of all the NCDs in the NCD Programme.

**Screening**
- Determine the national model of population based breast and cervical cancer screening for women of target age groups, defining the role of outpatient and preventive medicine centres. Review the health insurance implications of the procedure being undertaken as part of primary health care.
- Establish registries to follow up women who have been screened for breast cancer, to ensure treatment is provided.
- Discontinue the current population based screening for hypertension and diabetes, developing an opportunistic approach. Identification of potential at risk people for hypertension or diabetes should be identified by the village health centre as part of the evolving practice of prevention and control of NCD undertaken by these staff. The people identified as potentially at risk should be referred to the commune health centre for assessment. Diagnosis of hypertension should be undertaken for all at risk patients. Guidelines and criteria should be developed for undertaking diagnostic tests for diabetes.

**Health promotion**
- As a priority, develop policies for health promotion interventions for the prevention of NCDs using an integrated approach to address smoking, poor diet, harmful alcohol consumption and physical inactivity.
- Based on these policies, a model of health promotion focused on NCD prevention, based upon international best practice, should be developed. The model should be implemented in a range of pilot sites, selected based upon the estimated prevalence of risk factors and the capacity of local staff from the relevant multiple sectors. A robust evaluation framework should be developed and funded.
- The intersectoral approach should be led at central level, with implemented at all levels. Central level implementation should focus on the national policy frameworks to address the determinants of risk factors, as well as policies which are implemented at national level, such as legislation and taxation.
- The healthy settings approach should be implemented focusing on high priority groups. Health promoting schools should be the initial focus, with development of a model with the community sector. Healthy workplace models should then be developed when the capacity of the preventive medicine system to undertaken health promotion activity is further developed.
- Tobacco control should be integrated within the NCD Programme, while maintaining VINACOSH and the proposed Tobacco Control and Health Promotion Foundation. This Foundation may be able to be adapted in the future to encompass additional NCD risk factors.
- Designate responsibility to the National Institute of Nutrition in the NCD Programme, specifically in population wide nutrition interventions.
- Department of Preventive Medicine should develop a general protocol for health education for each risk factor. If appropriate, each preventive medicine centre would localised these protocols in collaborate with the relevant other agencies and stakeholders. The protocol would include best practice guidelines, and resources and communication materials to be used nation-wide. VINACOSH should write the tobacco protocol and the National Institute of Nutrition the nutrition protocol.
The current proposal to implement a social marketing campaign for reduced salt reduction in food should be implemented, with a defined evaluation plan. The campaign should be evaluated both to determine the impact and outcomes of the plan, but specifically as a pilot for a nationwide social marketing campaign which could be applied to other NCD risk factors. Implementation of a fruit and vegetable social marketing campaign should be considered.

Primary health care

- Using a primary health care model, there should be an integrated approach to NCD control in community based health care to enable diagnosis and treatment of NCDs.
- Protocols should be developed for each enhanced responsibility of primary health care.
- Patient self-management should be advocated by primary health care staff as part of the standard management of NCDs.

6. Enhance hospital and outpatient services

- The management of people with established NCDs should be the responsibility of hospitals, except where local staff at commune and district level can provide management services, with the support of hospitals.
- The disease specific treatment projects should remain the responsibility of the national hospital or institute.
- Establish a system to exchange information between hospitals, outpatients and local medical centres for continuity of care.
- Develop national clinical guidelines for the treatment of each disease.
- Develop policies and capability for all provincial hospitals to prescribe insulin, according to established guidelines.
- Review the health insurance policies to enable outpatient treatment.

7. Build capacity

- Provide training and re-training for health staff across the country:
  i. In the different role of hospitals and community based health care in the control of NCDs, based upon the designated roles and role descriptions;
  ii. For preventive medicine staff in health promotion principles and implementation of an integrated prevention approach;
  iii. For hospital and preventive medicine centre staff in the determinants of the NCDs;
  iv. For hospital, centre and primary health care staff in disease specific diagnosis, management and palliative care, as appropriate.
- Provide health education for the public, within the health promotion activities, in:
  i. The value of early diagnosis
  ii. Symptoms of the major NCDs, and the need for people with symptoms to consult their local health staff for early diagnosis.
- Provide training for coordination and project management staff in: Project management; and Evaluation.
- The general training for health staff and the education for the public should be coordinated by the Programme coordination office.

8. Undertake research

- Integrate scientific research into the NCD Programme, with the aim of building evidence based prevention and control activities.
- Applied research should be the priority, particularly to develop knowledge of the applicability to Vietnam of evidence based interventions in the literature. Priority should be given to evaluation of the community based interventions models in primary prevention, early detection and secondary prevention, and assessment of cost-effectiveness. This research is interrelated to both the
recommendation for the evaluation of future programmes and should be integrated into the surveillance system.

9. Establish a surveillance system
   - Establish a surveillance system based using the framework for a national NCD surveillance system, revised by WHO in 2009 (Appendix 5.7). Implement the system in accordance with the general principles of the WHO STEPwise approach to surveillance of NCDs (STEPS) methodology, utilising sentinel sites as required.
   - Determine a survey program, inclusive of required disease and risk factor specific surveys.
   - Determine whether Vietnam will continue to develop additional sites for cancer incidence registries or enhance the quality and reporting capabilities of sentinel sites.
   - Enhance the quality and coverage of the data collections for deaths.
   - Establish a separate entity responsible for the integrated surveillance system. In the short term, this should be a separate entity within Department of Preventive Medicine. In the longer term, a separate national institute should be established, of similar standing to the National Institute of Nutrition.

10. Evaluate the programme
    - Develop a planned approach to the evaluation of 2011-2015 NCD Prevention and Control Programme, integrated with the evaluations of the action plans within the Programme.
    - Develop a programme logic model for the entire Programme as a basis for this evaluation.
    - Evaluation plans should be built into each project. Each of the projects should have defined process, impact and outcomes indicators, including data collection system systems. Each indicator and objective of activities and plans should be Specific, Measurable, Achievable, Realistic and Timely (SMART).
    - Complete the evaluations of the community based models, including the integrated model for NCD prevention in Linh Son.

The development of the 2011-2015 NCD prevention and control programme offers Vietnam a substantial opportunity to establish a visionary programme for the Western Pacific Region. The establishment of this programme under the leadership of the Prime Minister provides a strong foundation for the required whole of government approach to NCD prevention and control.

There is clear international evidence on the preventability of NCD and cost effective interventions that can be implemented in middle incomes countries like Vietnam. WHO has developed global and regional policies which support Vietnam in meeting this challenge.
# Table of Contents

Summary ................................................................................................................................. i

List of Tables .......................................................................................................................... x

List of Figures .......................................................................................................................... x

1. **NCD Programme: Rationale and implementation** .......................................................... 1
   1.1 Burden of NCD in Vietnam ......................................................................................... 2
   1.2 Determinants of NCDs ............................................................................................... 6
   1.3 Policy background ....................................................................................................... 10
   1.4 Goals and objectives ................................................................................................. 12
   1.5 Governance .............................................................................................................. 12
   1.6 Programme implementation ...................................................................................... 14
   1.7 Capacity building ..................................................................................................... 14
   1.8 Monitoring and surveillance ..................................................................................... 15

2. **Health Action Plan implementation** ............................................................................ 16
   2.1 Mental Health ............................................................................................................ 16
   2.2 Cancer ....................................................................................................................... 19
   2.3 Cardiovascular disease: Hypertension ...................................................................... 26
   2.4 Diabetes ..................................................................................................................... 30
   2.5 Key related activities ................................................................................................... 35
   2.5.1 Preventive Medicine ............................................................................................ 35
   2.5.2 VINACOSH ........................................................................................................ 37
   2.5.3 Integrated prevention and control pilot study ......................................................... 37
   2.5.4 National Institute of Nutrition ............................................................................. 38

3. **Discussion** .................................................................................................................... 39

4. **Conclusions and recommendations** ........................................................................... 46
   4.1 Conclusions ............................................................................................................... 46
   4.2 Recommendations ....................................................................................................... 49

4. **References** ................................................................................................................ 54

5. **Appendix** .................................................................................................................... 55
   5.1 Report Development ................................................................................................... 55
   5.2 Abbreviations ............................................................................................................ 56
   5.3 Burden of Disease ..................................................................................................... 57
   5.4 Myths about NCD: reality check in Vietnam ............................................................... 59
   5.5 WHO policies and guidelines for NCD prevention and control ................................ 59
   5.6 Commune level hypertension management pilot ..................................................... 61
   5.7 Components of a national NCD surveillance system ................................................ 62
List of Tables
Table 1: Prevalence of raised fasting blood glucose, adults aged 26-64 years, Vietnam 2009-10……………4
Table 2: Number of cancer cases and ten most common cancers in Vietnam 2010……………………………5
Table 3: Prevalence and case number of mental disorders, Vietnam 2005…………………………………….5
Table 4: Prevalence of raised blood pressure, adults aged 26-64 years, Vietnam 2009-10………………….7
Table 5: Prevalence of raised cholesterol, adults aged 26-64 years, Vietnam 2009-10………………………..8
Table 6: Prevalence of overweight and obesity, adults aged 26-64 years, Vietnam 2009-10………………….8
Table 7: Prevalence of low physical activity, adults aged 26-64 years, Vietnam 2009-10………………….9
Table 8: Prevalence of daily tobacco smoking, adults aged 26-64 years, Vietnam 2009-10………………….9
Table 9: Decisions of the Socialist Republic of Vietnam in relation to NCD prevention and control…………10
Table 10: 2006-2010 National Mental Health Project implementation summary……………………………16
Table 11: 2006-2010 National Cancer Control Plan implementation summary………………………………19
Table 12: Modes of communication of health information for the public………………………………………23
Table 13: Monitoring and surveillance activities conducted as part of the NCCP………………………………25
Table 14: 2006-2010 Hypertension prevention and control project implementation summary………………..26
Table 15: 2006-2010 National Diabetes Project implementation summary……………………………………30
Table 16: Health education activities for the community for type 2 diabetes prevention and control………33
Table 17: Training courses for medical staff conducted in the Diabetes Project…………………………..33
Table 18: Key achievements and challenges of disease specific plans within the NCD Programme………47
Table 19: Leading 10 specific causes of disability adjusted life years (DALYs), premature death (YLL), and years of life lost due to disability (YLD), by sex, Vietnam 2008………………………………………57
Table 20: NCDs in the leading 10 specific causes of disability adjusted life years (DALYs), by age group and sex, Vietnam 2008……………………………………………………………………………………………………………………..57
Table 21: Leading ten causes of death, by sex, Vietnam 2008……………………………………………………58

List of Figures
Figure 1: Proportion of deaths and hospitalisations, by disease category, Vietnam 1976-2007……………….1
Figure 2: Burden of Disease (DALYs) by major disease categories, Vietnam 2008…………………………..3
Figure 3: Diabetes prevalence, 999 to 2009-2010………………………………………………………………..4
Figure 4: Determinants, risk factors and disease groups for non-communicable diseases ……………………6
Figure 5: Stepwise framework for policy and intervention development for NCD prevention and control.11
Figure 6: Strategic approach and action areas for NCD prevention and control……………………………12
Figure 7: Governance structure for the 2002-2010 NCD Programme………………………………………13
Figure 8: Nation-wide Endocrinology network structure………………………………………………………31
Figure 9: Percentage of burden of disease due to NCD risk factors, Vietnam 2008…………………………58
Figure 10: Percentage of deaths due to NCD risk factors, by sex, Vietnam 2008………………………………58
Figure 11: Process for systematically achieving progress in NCD prevention and control…………………60
Figure 12: Overall scheme for the process model for NCD prevention and control…………………………61
Figure 13: Phases of the development, implementation and sustainment of the programme on hypertension management in adults at commune-level……………………………………62
1. NCD Programme: Rationale and implementation

In this Chapter
1.1 Burden of NCD in Vietnam
1.2 Determinants of NCDs
1.3 Policy background
1.4 Goals and objectives
1.5 Governance
1.6 Programme Implementation
1.7 Capacity building
1.8 Monitoring and surveillance
1.9 Key achievements and challenges

In 2002, the Prime Minister of Vietnam established the first National Target Programme to address the growing burden of non-communicable diseases (NCD) in Vietnam. The establishment of the 2002-2010 Noncommunicable Disease Prevention and Control Programme, through Decision 77/2001/QD-TTg, gave clear recognition to the health system, government and the people of the importance of addressing the pressing need to prevent and control NCDs.

Vietnam is at the final stages of the epidemiological transition. NCDs are now the principal cause of premature death and ill-health. Previously infectious diseases, maternal and child illness and death, and disorders due to under-nutrition and deficiency diseases caused most of the health burden.

In 2007 60.1% of all deaths in hospital were due to NCDs (Figure 1). In that same year, 15.4% of deaths were due to communicable diseases and 24.5% due to injury. This contrasts markedly with 20 years ago, when in 1986 52.1% of deaths were due to communicable disease, 41.8% due to NCDs and 6.1% due to injury. Similar to the changes in recent decades for causes of death, in 2007 60.7% of all hospitalizations were due to NCDs (Figure 1). In that same year, 25.7% of hospitalisations were due to communicable diseases and 13.6% due to injury. This again contrasts markedly with 20 years ago, where in 1986, 59.2% of hospitalisations were due to communicable disease, 39.0% due to NCDs and 1.8% due to injury.

The burden of NCDs in Vietnam continues to increase. The estimated economic loss caused by NCDs for Vietnam in 2005 was about US$20 million, or 0.33% of annual national GDP.¹ This is projected to double by 2015 if no intervention is made, with accumulated economic losses in GDP between 2006 and 2015 of as much as US$270 million.² Per capita health expenditure is projected to double between 2005 and 2015 in the Western Pacific Region.³

Figure 1: Proportion of deaths and hospitalisations, by disease category, Vietnam 1976-2007

Source: Statistical Year Book on Health 2007
1.1 Burden of NCD in Vietnam

Vietnam has entered the last stage of the demographic and epidemiological transition, with increasing life expectancy and growing prevalence of NCDs. The speed at which this transition is evolving demonstrates that this is not just an inevitable consequence of genetic predisposition or ageing, but is a direct result of changing lifestyles and economics of the nation. In the Western Pacific Region of WHO, seven out of every ten deaths are currently due to NCDs. Vietnam is one of the countries most affected in the Region. Cardiovascular disease mortality, cancer and diabetes top the league table of mortality in the country, alongside mortality from injury. The burden of the NCD epidemic in Vietnam is accelerating in synchrony with economic development.

The major NCDs kill and main more Vietnamese citizens than any other cause. The epidemic is large, and rising. While infectious diseases such as HIV/AIDS, tuberculosis and avian flu, maternal and child illness and death, and disorders due to under-nutrition and deficiency diseases are not to be ignored, it is clear the NCDs are the major causes of morbidity and mortality in the country. It is also clear from international evidence that much of the impact of NCDs is preventable. There are a number of myths about NCDs identified by WHO: Appendix 5.4 provides a reality check of these myths in Vietnam.

The life expectancy of Vietnamese has increased significantly in recent decades due to this decrease in early deaths due to infectious diseases, and gains made in the health system and economy more broadly. Life expectancy at birth in 2008 in Vietnam was 69.7 years in males and 77.7 years in females. For comparison, using the WHO published life tables for 2009, the life expectancy at birth for males in Vietnam was 69.8 years and 74.5 years for females. In that same year, for the Western Pacific Region, life expectancy at birth for males was 72.4 years and 76.9 years for females, higher than for Vietnam. Considering some other countries in the Region, life expectancy in Lao PDR, Cambodia and Thailand was lower than Vietnam, while that in Malaysia and Australia was higher.

International evidence shows that a few major risk factors (smoking, unhealthy diet, physical inactivity, and alcohol) cause more than three out of four cases of chronic NCDs. Each of these risk factors has a pronounced impact on the risk of developing a number of NCDs.

Burden of Disease

In 2008, for the first time, the total Burden of Disease in Vietnam was estimated using the Disability Adjusted Life Year (DALY). The DALY combines fatal and non-fatal outcomes into a single measure by summing years of healthy life lost to disability (YLD) associated with disease or injury and premature death, or years of life lost (YLL).

In Vietnam in 2008, the majority of total burden was from premature death, with YLL causing 56% of DALYs: 44% was due to non-fatal outcomes (YLD). Fatal and non-fatal outcomes are distributed quite differently in males and females, with a larger proportion of female burden due to non-fatal outcomes (50% of burden) compared to male burden (40% of burden).

The majority of burden was caused by NCDs, which were responsible for 71% of DALYs in 2008. Injuries caused a further 16%, and infectious, neonatal and maternal problems caused 13% of the burden. Neuropsychiatric conditions, cardiovascular diseases, unintentional injuries and cancer were the four leading broad causes of disease and injury burden in 2008 (Figure 2). Together they accounted for about two-thirds (63%) of the total burden. The major effect of cardiovascular diseases and cancers was premature death. The NCDs of diabetes and respiratory diseases caused similar proportions of fatal and non-fatal outcomes. In contrast, neuropsychiatric conditions caused primarily non-fatal outcomes or disability burden, and were the largest cause of non-fatal outcomes in Vietnam in 2008.
NCDs were the cause of a number of the leading specific causes of burden of disease. The leading specific causes of burden differed between the sexes. For males, the largest cause of burden of disease was stroke (10% of total male burden), followed by 8% for road traffic accidents and 5% each for alcohol use disorders and liver cancer (Appendix 5.3 Table 19). For females, depression was the leading specific cause of burden of disease (12%), followed by stroke at 10%. NCDs are major causes of burden in all age groups (Appendix 5.3 Table 20).

Stroke was the leading cause of burden due to premature death for males (14% of YLL) and females (17%). Liver cancer, ischemic heart disease, COPD and lung cancer were the leading causes of YLL for both males and females. Almost one-third (29%) of the non-fatal burden (YLD) for females was caused by depression. Alcohol use disorders were the leading cause of YLD for males. Stroke and diabetes were leading causes of YLD for both males and females.

The number of deaths in Vietnam in 2008 was estimated at 541,228; 54% in males and 46% in females (Appendix 5.3 Table 21). The crude death rate was 6.4 per 1,000. Stroke caused the highest number of deaths, at 20% of all deaths, and was the leading cause of death for both males and females. COPD, liver cancer and ischaemic heart disease each caused 5% of all deaths.

**Diabetes**
Type 2 diabetes is described by WHO as a ‘silent killer’. Diabetes was the fourth largest cause of burden of disease for females in 2008, causing 4% of the burden and 8,858 deaths (Tables 19, 21). For males, diabetes caused 4% of the burden due to premature death. Diabetes prevalence in 2009-2010 was 2.7% for adults aged 25-64 years (Table 1). The prevalence was similar in men and women, and increased nearly three-fold in those aged 55-64 years. That is, there are about 1.13 million people with diabetes in the age group 25-64 years.

The prevalence of diabetes has more than doubled in Vietnam in the last two decades. The exact rate of increase is unclear as data collections in this period have been sporadic and of variable quality and geographic coverage (Figure 3). Diabetes was rarely found in Vietnam before 1990, with the reported prevalence of diabetes about 1% in rural areas and 2.5% in HCMC in 1990. Surveys since that time, covering the whole country, have reported varied, but increasing prevalence of diabetes. The 2009-
2010 survey is the most rigorous nationally representative survey in recent years. The 2008 survey estimated that the prevalence of diabetes was 3.1% and pre-diabetes was 9.0%, a three-fold greater prevalence of pre-diabetes than diabetes. Pre-diabetes was defined as fasting blood glucose venous level of 5.4mmol/l - <6.9mmol/l. According to the International Diabetes Foundation, about 40-50% of people with pre-diabetes will develop type 2 diabetes within ten years.

Table 1: Prevalence of raised fasting blood glucose, adults aged 26-64 years, Vietnam 2009-10

| Age Group | Males | | | Females | | | Persons | | |
|-----------|-------|---|---|-------|---|---|-------|---|
|           | Prop  | 95% CI (±) | Prop  | 95% CI (±) | Prop  | 95% CI (±) |
| 25-34     | 2.0   | 1.7          | 0.7   | 0.5        | 1.3   | 0.8        |
| 35-44     | 1.5   | 0.7          | 1.7   | 0.9        | 1.7   | 0.6        |
| 45-54     | 4.1   | 1.2          | 3.6   | 1.0        | 3.8   | 0.8        |
| 55-64     | 6.0   | 1.9          | 7.9   | 1.7        | 7.0   | 1.3        |
| 25-64     | 2.8   | 0.7          | 2.6   | 0.4        | 2.7   | 0.4        |
|           | 2.8   | 0.7          | 2.6   | 0.4        | 2.7   | 0.4        |

Note: Raised fasting blood glucose defined as fasting blood glucose plasma venous value ≥ 7.0 mmol/l (126 mg/dl) or capillary whole blood value ≥ 6.1 mmol/l (110 mg/dl). Source: Vietnam STEPS survey 2009-2010.

Figure 3: Diabetes prevalence, 1999 to 2009-2010

Cancer
It is estimated that there has been a 50% increase in the number of new cases of cancer diagnosed each year in 2001-2003 and the number in 2010. Because this increase is largely due to the ageing of the population, further increases are predicted for decades to come. Every day in Vietnam about 350 new cases of cancer are identified and 190 deaths. ‘Cancer’ is a condition that incorporates many diseases, with each representing different causes and different means of prevention.

The most common cancers for males were lung, stomach, liver and colorectum; for females they were breast, colorectum, lung and cervix (Table 2). This national data was estimated for 2005-2009 from the 6 cancer registers. Considering the rank order of the most common cancers, since 2001-2004, the only change is that for males, where prostate has displaced laryngeal in the top 10 most common cancers. Between 2000 and 2010 for males there was a significant increase in the age standardised incidence rate for lung, oesophageal, colorectal and prostate cancers. For females, a significant increase was estimated for breast, gastric, colorectal and thyroid gland cancers.

In 2008, 1 in 7 people in Vietnam were estimated to be diagnosed with cancer before the age of 75; 1 in 6 for males and 1 in 8 for females. The risk of dying from cancer before the age of 75 years was 1 in 10 for all people, 1 in 8 for males and 1 in 12 for females. At least 80% of cancer in males and 60% in
females are currently incurable.\footnote{The incidence/ mortality ratio for males in Vietnam was 0.79 and for females 0.68, as assessed by the IARC in 2008,\footnote{which is consistent with the estimates of proportion of cancers that are curable.}} Table 2: Number of cancer cases and ten most common cancers in Vietnam 2010\footnote{Estimated from 6 cancer registries 2005-2009. Source: NCCP Evaluation reports\footnote{8,9}}

<table>
<thead>
<tr>
<th>Rank order</th>
<th>Cancer type</th>
<th>Case number</th>
<th>Age standardised incidence rate (per 100,000)</th>
<th>Rank order</th>
<th>Cancer type</th>
<th>Case number</th>
<th>Age standardised incidence rate (per 100,000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>All cancers</td>
<td>71,940</td>
<td>181.3</td>
<td>1</td>
<td>All cancers</td>
<td>54,367</td>
<td>134.9</td>
</tr>
<tr>
<td>1</td>
<td>Lung</td>
<td>14,652</td>
<td>35.1</td>
<td>1</td>
<td>Breast</td>
<td>12,533</td>
<td>29.9</td>
</tr>
<tr>
<td>2</td>
<td>Stomach</td>
<td>10,384</td>
<td>24.5</td>
<td>2</td>
<td>Colorectum</td>
<td>6,110</td>
<td>14.7</td>
</tr>
<tr>
<td>3</td>
<td>Liver</td>
<td>9,372</td>
<td>233.6</td>
<td>3</td>
<td>Lung</td>
<td>5,709</td>
<td>13.9</td>
</tr>
<tr>
<td>4</td>
<td>Colorectum</td>
<td>7,568</td>
<td>19.0</td>
<td>4</td>
<td>Cervix</td>
<td>5,664</td>
<td>13.6</td>
</tr>
<tr>
<td>5</td>
<td>Esophagus</td>
<td>3,872</td>
<td>9.9</td>
<td>5</td>
<td>Stomach</td>
<td>4,728</td>
<td>12.2</td>
</tr>
<tr>
<td>6</td>
<td>Nasopharynx</td>
<td>2,992</td>
<td>7.5</td>
<td>6</td>
<td>Thyroid</td>
<td>3,211</td>
<td>8.4</td>
</tr>
<tr>
<td>7</td>
<td>Lymphoma</td>
<td>2,552</td>
<td>6.3</td>
<td>7</td>
<td>Liver</td>
<td>2,319</td>
<td>5.6</td>
</tr>
<tr>
<td>8</td>
<td>Leukaemia</td>
<td>2,244</td>
<td>5.5</td>
<td>8</td>
<td>Ovary</td>
<td>2,185</td>
<td>6.3</td>
</tr>
<tr>
<td>9</td>
<td>Prostate</td>
<td>1,716</td>
<td>4.7</td>
<td>9</td>
<td>Lymphoma</td>
<td>1,427</td>
<td>3.7</td>
</tr>
<tr>
<td>10</td>
<td>Bladder</td>
<td>1,276</td>
<td>3.3</td>
<td>10</td>
<td>Leukaemia</td>
<td>1,338</td>
<td>3.3</td>
</tr>
</tbody>
</table>

Mental disorders
Neuropsychiatric conditions caused 18% of the total burden of disease in Vietnam in 2008, and were the largest cause of burden (Figure 2). Depression caused 12% of the total burden and 29% of the disability burden (Table 19). Anxiety disorders caused 7% of the disability burden, and schizophrenia 3% of the disability burden. For males, depression caused 11% of the non-fatal or disability burden, the second largest cause of this type of burden, and 3% of the total burden of disease. For females, depression was the leading cause of total burden of disease and the burden due to disability.

The population prevalence of all mental disorders in Vietnam was estimated to be 14.9% in 2005.\footnote{The number of people in Vietnam with some of the severe mental disorders, and some disorders that are commonly associated with mental disorders are described in Table 3. In 2005, the prevalence of epilepsy was estimated to be 0.33% for adults aged 18-60 years, similar to the 2002 prevalence. In 2005 the prevalence of depression has estimated to be 2.2%.

Table 3: Prevalence and case number of mental disorders, Vietnam 2005\footnote{11}.

<table>
<thead>
<tr>
<th>Mental Disorder</th>
<th>Prevalence</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>0.47%</td>
<td>404,200</td>
</tr>
<tr>
<td>Other severe mental disorders</td>
<td>2.80%</td>
<td>2,408,000</td>
</tr>
</tbody>
</table>

Other disorders with common mental health consequences

<table>
<thead>
<tr>
<th>Disorder</th>
<th>Prevalence</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epilepsy</td>
<td>0.33%</td>
<td>283,800</td>
</tr>
<tr>
<td>Mental deficiency</td>
<td>0.63%</td>
<td>541,800</td>
</tr>
<tr>
<td>Brain injury</td>
<td>0.51%</td>
<td>438,600</td>
</tr>
<tr>
<td>Alcohol abuse</td>
<td>5.30%</td>
<td>4,558,000</td>
</tr>
<tr>
<td>Drug addition</td>
<td>0.30%</td>
<td>258,000</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6,080,200</td>
</tr>
</tbody>
</table>

Cardiovascular diseases
Cardiovascular diseases caused 18% of the total burden of disease in Vietnam in 2008, the second leading cause of burden (Figure 2). For males, stroke was the largest cause of burden of disease, causing 10% of the total burden and 14% of the burden due to premature death (Tables 19, 21). For females, stroke was the second largest cause of burden of disease, causing 10% of the total burden and 17% of the burden due to premature death. Stroke caused 108,988 deaths in Vietnam in 2008. Ischaemic heart disease caused 4% of the burden due to premature death in males and females, and
26,519 deaths in 2008. The impact of hypertension on the burden of disease, and the prevalence of the condition are described in Section 1.2.

COPD and asthma
COPD caused 3% of the total burden of disease in Vietnam in 2008, and was the cause of 29,297 deaths (Tables 19, 21). No information was available on the prevalence of COPD or asthma.

1.2 Determinants of NCDs
The main causes of the NCD epidemic are well known (Figure 4). The most important modifiable factors are:
- Unhealthy diet and excessive energy intake;
- Physical inactivity; and
- Tobacco use
- Alcohol abuse.

These causes are expressed through the intermediate risk factors of raised blood pressure, raised glucose levels, high blood cholesterol, and overweight and obesity. Health behaviours are an important determinant of both current and future health status of the population and changes in health behaviours impact on health in the short and long term. WHO estimates that about 80% of cardiovascular diseases, type 2 diabetes and 40% of cancers can be prevented by healthy lifestyles. In addition to the major NCDs operating through this cluster of common risk factors, there is extensive clustering of the risk factors in populations. A substantial proportion, greater than 70%, of the population has three or more risk factors for NCDs, including age and ethnicity, and about 5% have none.

Figure 4: Determinants, risk factors and disease groups for non-communicable diseases

Source: Adapted by TD Lai (WHO Vietnam) from WHO WPRAP

The underlying determinants of NCDs, the cause of the causes, are the major forces driving social, economic and cultural change. These are globalization, urbanization, population ageing and the
general policy environment. Individuals are embedded within social, political and economic systems that shape behaviours and access to resources necessary to maintain health.

### Burden of disease due to risk factors

Risk factors for NCDs cause substantial burden of disease in Vietnam. The amount of disease burden that would have been reduced if exposure to seven single risk factors in the population had been at the level of a theoretical minimum was also assessed in the VINE Project. Of the seven risk factors, high blood pressure was the largest single contributing risk factor to the burden of disease in Vietnam in 2008, causing 5.39% of DALYs (Appendix 5.3 Figure 9). This proportion was similar for males and females. For males, tobacco smoking had the largest impact on disease burden, followed by high blood pressure, insufficient fruit and vegetable intake, and excess alcohol consumption. For females, high blood pressure had the largest impact on disease burden, followed by tobacco smoking, insufficient fruit and vegetable intake, and excess alcohol consumption.

High blood pressure was the leading cause of deaths due to the seven risk factors assessed causing 11.35% of deaths (Appendix 5.3 Figure 10). High blood pressure was the leading cause for both males and females. For males, tobacco smoking was the second largest cause of death, followed by excess alcohol consumption and insufficient fruit and vegetable intake. For females, insufficient fruit and vegetable intake was the second largest cause of death, followed by tobacco smoking.

### Hypertension

In 2009-2010 the prevalence of hypertension, or raised blood pressure, was estimated to be 19.2% in adults aged 25-64 years (Table 4). The prevalence in males was about 50% higher than in females. The prevalence of hypertension increased markedly with age, with 40.8% prevalence of hypertension in those aged 55-64 years.

#### Table 4: Prevalence of raised blood pressure, adults aged 26-64 years, Vietnam 2009-10

| Age Group | Males | | | | Females | | | | Persons | | |
|-----------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|
| 25-34     | 11.9  | 3.1   | 4.5   | 1.5   | 8.2   | 1.7   |
| 35-44     | 20.9  | 2.3   | 12.9  | 1.9   | 16.9  | 1.5   |
| 45-54     | 33.1  | 3.1   | 22.7  | 2.0   | 27.7  | 1.8   |
| 55-64     | 45.2  | 3.9   | 37.2  | 3.1   | 40.8  | 2.4   |
| 25-64     | 23.1  | 1.55  | 15.5  | 0.98  | 19.2  | 0.91  |

Note: Hypertension (raised blood pressure) defined as: Systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg or taking medication for hypertension. Source: Vietnam STEPS survey 2009-2010

The prevalence of hypertension has increased markedly over the past 50 years in Vietnam, based on a number of surveys covering parts or the entire country. In 1960, 1% of the adult population in the northern provinces were estimated to have hypertension: by 1976 this had increased to 1.9%. The first national survey was conducted in 1992, with hypertension prevalence estimated at 11.7% of adults. In 2002, in 4 northern provinces the prevalence in adults was 16.3%. In rural Vietnam in 2005 the prevalence for adults aged 25-64 years was 18.8% (23.9% for males and 13.7% for females). In 2002-2008, the national hypertension prevalence was estimated to be 25.1% for adults aged 25 years and older, 28.3% for males and 23.12% for females. In this survey, only 48.4% of people with hypertension were aware of their elevated blood pressure and 29.6% had received treatment.

### Raised cholesterol

For raised blood cholesterol, using the cut-off point of at least 5mmol/l, 30.1% of the population were estimated in 2009-2010 to have raised blood cholesterol levels (Table 5). The prevalence in men and women aged 25-64 years was similar. The prevalence rose with increasing age. For women aged 55-64 years, more than half (56.2%) had raised cholesterol levels, 70% higher than men of the same age.
group. Using the alternative cut-off point of at least 6.2 mmol/l, 5.2% of the population in 2009-2010 had raised blood cholesterol levels. Like the lower cut off point, the prevalence in men and women aged 25-64 years was similar, and the prevalence rose with increasing age.

Table 5: Prevalence of raised cholesterol, adults aged 26-64 years, Vietnam 2009-10

<table>
<thead>
<tr>
<th>Age group</th>
<th>Males (±95%CI)</th>
<th>% &gt; 5.0 mmol/l</th>
<th>Females (±95%CI)</th>
<th>% &gt; 6.2 mmol/l</th>
<th>Persons (±95%CI)</th>
<th>% &gt; 6.2 mmol/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>21.0 (4.1)</td>
<td>2.9 (1.9)</td>
<td>20.4 (3.0)</td>
<td>1.4 (0.8)</td>
<td>20.7 (2.5)</td>
<td>2.2 (1.0)</td>
</tr>
<tr>
<td>35-44</td>
<td>29.4 (3.0)</td>
<td>4.7 (1.2)</td>
<td>27.5 (3.0)</td>
<td>3.7 (1.2)</td>
<td>28.5 (2.1)</td>
<td>4.2 (0.8)</td>
</tr>
<tr>
<td>45-54</td>
<td>33.3 (3.4)</td>
<td>6.8 (1.8)</td>
<td>42.5 (2.7)</td>
<td>9.9 (1.6)</td>
<td>38.1 (2.2)</td>
<td>8.4 (1.2)</td>
</tr>
<tr>
<td>55-64</td>
<td>33.8 (2.6)</td>
<td>6.6 (1.6)</td>
<td>56.2 (3.6)</td>
<td>13.2 (2.4)</td>
<td>46.0 (2.3)</td>
<td>10.2 (1.5)</td>
</tr>
<tr>
<td>25-64</td>
<td>27.8 (1.9)</td>
<td>4.7 (0.9)</td>
<td>32.3 (1.6)</td>
<td>5.6 (0.6)</td>
<td>30.1 (1.2)</td>
<td>5.2 (0.5)</td>
</tr>
</tbody>
</table>

Source: Vietnam STEPS survey 2009-2010.6

Overweight and obesity

While Vietnamese are not visibly overweight, the indices of body mass index (BMI) and girth indicate a clear problem. BMI is an indicator which estimates the proportion of body fat, calculated from height and weight. Excess weight is a major risk factor for type 2 diabetes and cardiovascular disease. One in eight (12%) of adults aged 25-64 years were overweight or obese in 2009-2010, using the WHO standard BMI cut off of at least 25 units (Table 6). The prevalence was similar in men and women and across the age groups. About 1% of adults aged 25-64 years were obese in 2009-2010.6

Table 6: Prevalence of overweight and obesity, adults aged 26-64 years, Vietnam 2009-10

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Males</th>
<th>Prop 95% CI (±)</th>
<th>Females</th>
<th>Prop 95% CI (±)</th>
<th>Persons</th>
<th>Prop 95% CI (±)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>12.8</td>
<td>3.0</td>
<td>6.9</td>
<td>1.8</td>
<td>9.8</td>
<td>1.7</td>
</tr>
<tr>
<td>35-44</td>
<td>11.9</td>
<td>2.1</td>
<td>10.0</td>
<td>1.9</td>
<td>10.9</td>
<td>1.4</td>
</tr>
<tr>
<td>45-54</td>
<td>13.3</td>
<td>2.0</td>
<td>16.4</td>
<td>2.5</td>
<td>14.9</td>
<td>1.6</td>
</tr>
<tr>
<td>55-64</td>
<td>11.6</td>
<td>2.4</td>
<td>17.9</td>
<td>2.2</td>
<td>15.0</td>
<td>1.6</td>
</tr>
<tr>
<td>25-64</td>
<td>12.5</td>
<td>1.4</td>
<td>11.4</td>
<td>1.0</td>
<td>12.0</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Note: Overweight defined as BMI≥25 (WHO standard cut off). Source: Vietnam STEPS survey 2009-2010.6

Insufficient data is available to accurately assess trends in the prevalence of overweight and obesity in Vietnamese adults. In 2002, 10.2% of adults were overweight or obese using the WHO standard BMI cut off, 9.5% of males and 10.9% of females; 1.7% of adults were obese. The National Nutrition Survey of 2005, estimated that 16.3% of adults aged 25-64 years were obese using the Asia specific cut off for BMI of at least 23 units, 14.6% for males and 18.1% for females. Of particular importance, the prevalence of overweight and obesity was almost three-fold higher in urban areas than rural areas of the country: 32.5% in urban areas and 13.5% in rural areas.

For children, while it is clear there is a significant proportion overweight or obese, the national prevalence is unclear due to lack of agreement as to the definitions for age/sex groups and national data. Exposure to high levels of corporal fat at such a young age significantly elevates their risk of future diabetes, hypertension, stroke and other NCDs.

Physical inactivity

Physical activity caused 0.7% of the total burden of disease (Figure 9). More than a quarter of the adult population are insufficiently active, with a greater proportion inactive in females than males aged 25-64 years in 2009-2010 (Table 7). Young females, aged 25-34 years, had the highest proportion reporting insufficient physical activity. No data is available to report on changes over time in physical activity.
However, there is clear anecdotal evidence that the prevalence of active transport has decreased in Vietnam in recent time – the motorbike has replaced the bicycle as the principle mode of transport.

Table 7: Prevalence of low physical activity, adults aged 26-64 years, Vietnam 2009-10

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Males Prop 95% CI (±)</th>
<th>Females Prop 95% CI (±)</th>
<th>Persons Prop 95% CI (±)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>27.9 3.2</td>
<td>40.0 3.1</td>
<td>33.9 2.3</td>
</tr>
<tr>
<td>35-44</td>
<td>25.4 3.5</td>
<td>28.8 3.1</td>
<td>27.1 2.3</td>
</tr>
<tr>
<td>45-54</td>
<td>26.3 3.4</td>
<td>21.9 2.3</td>
<td>24.0 2.0</td>
</tr>
<tr>
<td>55-64</td>
<td>24.5 3.1</td>
<td>28.0 2.5</td>
<td>26.4 1.9</td>
</tr>
<tr>
<td>25-64</td>
<td>26.4 1.8</td>
<td>30.8 1.5</td>
<td>28.7 1.2</td>
</tr>
</tbody>
</table>

Note: Low physical activity defined as <600 MET-mins per week. Source: Vietnam STEPS survey 2009-2010.

Poor diet
Vietnam has the double burden of over and under nutrition. Protein energy malnutrition and micronutrient deficiencies among under-five children have fallen significantly in recent decades, although remain of concern. In 2005, it was estimated that 29.5% of children under the age of five years had stunted growth. However a new trend towards overweight and obesity in children in cities and more economically developed areas.

There is also ample evidence of changes in diet in the last two decades. This latter is not due to overt Westernisation of the diet or the presence of multinational food chains, but rather due to changes in the traditional cuisine: more salt and more fat in traditional meals. While the proportion of energy derived from protein has remained similar, there has been a substantial increase in the portion of protein derived from animals rather than plant protein. In addition the proportion of energy obtained from fats has doubled in this period.

In relation to NCDs, a poor diet is characterised by a diet low in fruits and vegetables, and high in salt, fat and sugar. Insufficient fruit and vegetable consumption caused 3.1% of the total burden of disease and about 4% of all deaths (Figures 9, 10). In 2009-2010 four in five adults (80.6%) did not consume the recommended number of five serves of fruit and vegetables, with similar prevalence in males and females aged 25-64 years.

Smoking
Smoking remains a significant problem in Vietnam. Tobacco smoking caused 4.2% of the total burden of disease in Vietnam and 6.6% of all deaths (Figures 9, 10). More than half of adult men smoke daily. In 2009-2010 56.5% of men aged 25-64 years reported smoking daily, compared with 1.7% of females (Table 8). The smoking rate was similar across age groups. Smoking rates have not changed in the last decade in males, based on nation-wide surveys. The daily smoking rate for males in 2001-2002 was similar at 56.1%, as determined by the National Health Survey.

Table 8: Prevalence of daily tobacco smoking, adults aged 26-64 years, Vietnam 2009-10

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Males Prop 95% CI (±)</th>
<th>Females Prop 95% CI (±)</th>
<th>Persons Prop 95% CI (±)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-34</td>
<td>53.0 3.6</td>
<td>0.7 0.4</td>
<td>26.5 1.8</td>
</tr>
<tr>
<td>35-44</td>
<td>61.9 3.0</td>
<td>1.3 0.5</td>
<td>31.4 1.5</td>
</tr>
<tr>
<td>45-54</td>
<td>56.0 3.8</td>
<td>2.3 0.8</td>
<td>27.7 1.8</td>
</tr>
<tr>
<td>55-64</td>
<td>53.3 4.1</td>
<td>4.1 1.0</td>
<td>25.8 1.9</td>
</tr>
<tr>
<td>25-64</td>
<td>56.5 1.8</td>
<td>1.7 0.3</td>
<td>28.2 0.9</td>
</tr>
</tbody>
</table>


While the proportion of women who smoke is low, tobacco related disease cause a substantial burden for the female population in Vietnam. Lung cancer caused 4% of the burden due to premature death in
women in Vietnam in 2008 and 7,869 deaths (Tables 19, 21). No information was available on the prevalence of second hand or environmental smoke for children.

**Alcohol consumption**
Alcohol use disorders were the leading cause of disease burden due to disability, causing 14% of that type of burden and 5% of the total disease burden (Table 19). Harmful alcohol consumption caused 2.2% of the total burden of disease and nearly 3% of all deaths (Figures 9, 10).

In 2009-2010, a total of 40.7% of men aged 25-64 years were drinking alcohol at harmful or hazardous levels. Nearly one in five men (16.6%) aged 25-64 years were consuming 4-5.9 drinks per day, a hazardous level of consumption. Almost one quarter (24.1%) of men aged 25-64 years were consuming at least 6 drinks per day, a harmful level of consumption. The National Health Survey 2001-2002 estimated that 45.7% of males and 1.9% of females aged 15 years and older were drinking at least once per day at least 100 ml of spirits or wine or one can or bottle of beer at each drinking episode. In 2008, it was estimated that 3.91 litres of alcohol was consumed per capita in Vietnam.

1.3 Policy background

**Vietnam policy development**
The Prime Minister of Vietnam established the 2002-2010 Noncommunicable Disease Prevention and Control Programme, through Decision 77/2001/QD-TTg (Table 9). Through this Decision, Vietnam established the first National Target Programme for the prevention and control of NCDs. The NCD Programme, was to focus on the prevention and control of certain NCDs. Through supplementary Decisions the NCD Programme was focused on the prevention and control of cancer, hypertension, diabetes and mental health. For mental health, epilepsy and depression were originally the focus, but with the implementation of the National Mental Health Project 2006-2010, the focus was changed to schizophrenia, as discussed in Section 2.1.

Decision 77/2002/QD-TTg led to the establishment of an ambitious national NCD programme. This initiative made Vietnam a leader among its neighbours, as a national policy of this calibre did not exist in Lao PRD, Cambodia, or even China. This national programme consolidated national resource to address NCDs. Prior to the establishment of the NCD Programme, all other National Programmes related to infectious diseases. In addition, prior to 2002, policies for the treatment of individual NCDs had been endorsed by MoH. For the first time, the NCD Programme established both a policy recognising the collective nature of NCDs, as well as a policy focussing on the prevention and management of the diseases, rather than the treatment.

**Table 9: Decisions of the Socialist Republic of Vietnam in relation to NCD prevention and control**

<table>
<thead>
<tr>
<th>Number</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>108/2007/QD-TT</td>
<td>Approval for the National Target Programme to Prevent Social Disease, Dangerous Epidemics and HIV/AIDS for the period 2006-2010, including mental disorders.</td>
</tr>
<tr>
<td>172/2008/QD-TT</td>
<td>Approval for the National Target Programme to Prevent Social Disease, Dangerous Epidemics and HIV/AIDS for the period 2006-2010, supplementing Decision 108/2007/QD-TT to include hypertension, diabetes and cancer</td>
</tr>
<tr>
<td>5383/QD-BYT</td>
<td>Establishment of Steering Committee on prevention and control of NCDs</td>
</tr>
<tr>
<td>5384/QD-BYT</td>
<td>Establishment of Mission to develop national action plan for prevention and control of NCDs</td>
</tr>
</tbody>
</table>

**Vietnam health system**
For the purposes of reviewing the implementation of the NCD Programme, and providing recommendations for future NCD Programmes it is necessary to document an overview of the Vietnam health system. The health system is a mixed public-private provider system. The private system is
mainly active in outpatient care; almost all inpatient care is provided through the public system. The role of the private system will not be considered further in this review.

The Vietnam health system is separated into hospital facilities and preventive medicine facilities, which include primary health care, preventive medicine and family planning. That is, the treatment system and the preventive medicine systems in the Ministry of Health (MoH) are separated within the health system. This separation occurs at the four levels of service: Central, provincial, district, and commune and village levels. In addition, there are national institutes, such as the National Institute of Nutrition and National Institute of Hygiene and Epidemiology.

There are about 1,000 hospitals in Vietnam, 39 at central level, 331 provincial and 610 district hospitals. There are about 11,000 communes in Vietnam, 99% of which have a Commune Health Station and 66% of these have a medical doctor: 84% of villages have active village health workers.

At the provincial level, the Preventive Medicine Centres are the focal point for disease prevention and control at the community level, and for implementation of models of care throughout the Province. At present these Centres provide programmes in primary prevention, early detection and screening, as well as clinical services. These services are particularly for communicable diseases. In some Districts the hospitals and District Health Centres are separate entities. However in all cases the District Health Centre is responsible for preventive medicine at District level. Hospitals are responsible for inpatient and outpatient services, for acute episodes of care, at all levels.

**World Health Organization policies and guidelines**

WHO has advocated and supported the development and implementation of global, regional and national policies for the prevention of NCDs for some years. Specifically in 2005 WHO released a landmark document titled *Preventing chronic diseases; a vital investment; WHO global report.* This report provided a stepwise framework which the ministries of health could use to create a policy and regulatory environment to address NCDs. The stepwise framework focused on three steps in planning, described in Figure 5. Detailed discussion of each of the components of this stepwise framework are described in Appendix 5.5 and elsewhere.

**Figure 5: Stepwise framework for policy and intervention development for NCD prevention and control**

<table>
<thead>
<tr>
<th>The stepwise framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>Estimating population need and advocate for action</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>Formulate and adopt policy</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>Identify policy implementation steps</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy implementation steps</th>
<th>Population- wide interventions</th>
<th>Interventions for individuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>National level</td>
<td>Sub-national level</td>
<td></td>
</tr>
<tr>
<td>Implementation step 1 CORE</td>
<td>Interventions that are feasible to implement with existing resources in the short term</td>
<td></td>
</tr>
<tr>
<td>Implementation step 2 EXPANDED</td>
<td>Interventions that are possible to implement with a realistically projected increase in or reallocation of resources in the medium term</td>
<td></td>
</tr>
<tr>
<td>Implementation step 3 DESIRABLE</td>
<td>Evidence-based interventions which are beyond the reach of existing resources</td>
<td></td>
</tr>
</tbody>
</table>

Source: *Preventing chronic diseases; a vital investment; WHO global report.*

The WHO 2008-2013 Action Plan for the Global Strategy for the prevention and control of NCDs identified 6 objectives which are described in Appendix 5.5. For the Western Pacific Region an action plan for NCDs was released in 2009. Recognising the determinants of NCDs, the commonality and preventability of the risk factors, and the need for early detection and management of NCDs, WHO
outlined a schema for comprehensive and integrated action to prevent and control NCDs. This schema has been adapted for the Western Pacific Region (Figure 6). Prevention and control of NCDs is a shared responsibility of the government, society and the health sector. The government and society have the major responsibility for maintaining people in a healthy state and preventing disease. In contrast, the health system has the major responsibility for treatment and management of people with disease. Thus, the prevention and control of NCDs requires activities across the continuum of care from population wide interventions to treatment of severe cases.

The role of primary health care is critical to effectively prevent and control NCDs. The World Health Report 2008 – primary health care (now more than ever) provides clear guidance to the development of national policy.\(^3\)

Figure 6: Strategic approach and action areas for NCD prevention and control

1.4 Goals and objectives
The goal of the NCD Prevention and Control Programme (2002-2010) was:

Reduce the morbidity and mortality caused by NCDs including cancer, cardiovascular diseases, diabetes, and mental health disorders (epilepsy and depression).

Specific objectives were described for each disease, and are listed in Tables 10, 11, 14, 15. It was recognised in all consultations, that the objectives included in the NCD Programme were overly ambitious and were developed in the absence of specific knowledge of the activities and capacity of each of the projects to be included Programme. In addition, many of the objectives were not of sufficient specificity to enable assessment of achievement. Due to these factors, this review will not assess the achievement of the objectives of the 2002-2010 NCD Programme, but rather assess the achievement of the objectives of the disease specific action plans.

1.5 Governance
The NCD Programme was established by a Decision of the Prime Minister. The Programme is led the NCD Programme Steering Committee established in 2002. The Steering Committee is chaired by the Deputy Minister of Health and has four subcommittees, chaired by the Director of each of the hospitals.

---

*Vietnam NCD Programme 2002-2010: Implementation review*
responsible for implementing the disease specific programmes (Figure 7). This ambitious, organisationally challenging NCD Programme required strong governance to achieve its goals.

The NCD Office was established in MSA MoH in 2004 to coordinate the Programme and support the Steering Committee. This is a temporary unit, with no permanent staff. It was recognised that while the NCD Office was responsible for supporting and coordinating the NCD Programme, the limited number of staff reduced their capacity to undertake this responsibility. Thus, the potential for coordination of the NCD Programme was not met. It was considered by those consulted that future NCD programmes should be resourced to provide the required level of coordination and integration. It was suggested that the NCD Office needs sustainable funding, similar to that of VINACOSH.

Figure 7: Governance structure for the 2002-2010 NCD Programme

There are four main vertical components of the Programme, representing the major NCDs; cardiovascular diseases, cancer, diabetes and mental health. The disease specific projects were gradually developed and incorporated into the National Target Programme. The mental illness project was established in 2000, the first of the disease specific projects and prior to the establishment of the NCD Programme. In 2006 the cancer prevention and control plan was established, and in 2008 the hypertension and diabetes projects were both established. In early 2011, a project for chronic respiratory diseases (COPD and asthma) was added to the Programme.

When the 2002-2010 NCD Programme was being developed there was no stated requirement for the integration of NCD prevention and control activities across the Programme. In addition, as a result of the step wise independent development and funding of each of the disease specific projects within the Programme, the separate nature of each of the projects was reinforced.

The governance of the NCD Programme was formally revised on 31 December 2010, with Decision 5383/QD-BYT resolving to establish a Steering Committee on prevention and control of Non-Communicable diseases, based upon consideration of the proposal of the Director of Preventive Medicine Department MoH. At the same time Decision 5384/QD-BYT resolved to establish a Mission to develop a national plan for prevention and control of Non-Communicable diseases, also based upon consideration of the proposal of the Director of Preventive Medicine Department MoH.

This revised Committee has a greater focus on prevention of NCDs than the original committee, through appointment of the Director of Preventive Medicine Department as Standing Vice Chairperson. The Committee is to work in pluralism and has a standing unit located in Preventive Medicine Department. This revised Committee has not been convened. Concerns have been raised by MSA regarding the membership of the revised Committee. A paper detailing these concerns has been
submitted to the Minister of Health. As of July 2011, this latter paper remains under consideration by the Minister.

1.6 Programme implementation
The NCD Programme was established and implemented as disease specific projects. Implementation of each project is reported in Chapter 2. These projects were developed and implemented essentially independently of each other.

It is well known by key staff of each of the projects and plans within the NCD Programme, that the NCDs of cancer, cardiovascular disease and diabetes have common risk factors. As a result of the establishment of the NCD Programme, some collaboration in addressing common risk factors has been undertaken. However, as acknowledged by some stakeholders, because of the commonality of NCD risk factors there is significant potential for far greater collaboration and integration of activities for the primary prevention of risk factors and for addressing risk factors in patients with NCDs in the future.

Development and implementation of the NCD Programme has been undertaken by the health sector in Vietnam. There has been limited involvement of other sectors which have responsibility for and substantial impact on the determinants of NCDs, as described in Section 1.2. The development of a multisectorial approach to NCD prevention remains a key challenge.

Insufficient funds were allocated to the NCD Programme to enable implementation of each proposed activity. Each disease specific project was required to prioritise within the proposed plan, to select the suite of activities to be implemented. However, most of the projects secured funds from international agencies to supplement funds provided by MoH.

The single project that was conducted for the NCD Programme, in addition to the disease specific plans, was the 2009-2010 population survey of NCD risk factors and biomarkers. This is discussed in the Monitoring and Surveillance section (Section 1.8).

1.7 Capacity building
To address NCD prevention and control in Vietnam a number of knowledge and skill capabilities and capacities of government decision makers, health professionals and the public were identified. Each of the disease specific projects conducted a number of capacity building activities, including training, provision of infrastructure and research, as described in Chapter 2. In addition, as part of the development and implementation of the Programme, and each project, the knowledge and skills of MoH staff in policy development and project management were enhanced.

The capacity building activities of the NCD Programme began in the development of the case for the Programme. MSA developed a framework for each action plan and supplied this to each hospital or institute. Extensive discussions between the government, WHO, and many national and international experts, occurred in the development and implementation of the NCD Programme. These discussions were facilitated by MSA. Through participation in these discussions there was an increased understanding of the extent of the NCD burden within Vietnam and the potential to reduce this burden by prevention and control activities.

Each of the projects in the Programme required the development and/or implementation of clinical guidelines or pathways. These are discussed within the review of each project. At a broader level, MoH are undertaking a project to develop clinical pathways using a new approach which will incorporate guidelines and check lists within the pathway. The project aims to develop clinical pathways which are more practical, especially for use at the local level.
1.8 Monitoring and surveillance

The identification of the population health needs of a nation is key to effective health action. Vietnam has a generally weak community-based health information system, focusing on hospital databases and research surveys. This population based data of use to policy makers and health managers is scarce. Before the NCD Programme was established in 2002, there was clear, yet general, evidence of the burden of NCDs in Vietnam. WHO has estimated the Burden of Disease in the Western Pacific Region, encompassing Vietnam, in 1990. In the period 2002-2008, a number of the disease specific action plans undertook research surveys for the specific disease and the associated risk factors. Most of these were in defined sub-regions of the country. Information on these surveys is described elsewhere in this report.

A surveillance system is an on-going body of work, incorporating ongoing data collection and regular planned surveys, undertaken using standardised protocols and instruments, and includes a programme of reporting. In relation to NCDs, the system would monitor and periodically report on the progress of implementation toward the national NCD targets as well as the prevalence/incidence of NCDs and their associated risk factors, as recommended by WHO (Appendix 5.7).

The fact that the Vietnamese Government had recognised the importance of addressing the NCD burden by establishing the NCD Programme, provided a foundation for a funding submission to establish a surveillance system for prevalence of NCD risk factors and biomarkers. The 3 year project (2008-2010) was funded by Atlantic Philanthropies and implemented by Menzies Research Australia. Information was derived from the collection of routine data, special nation-wide studies, and studies on sentinel communities. It was planned that the protocols and instruments developed for these data collections could be scaled up to establish a national surveillance system. The population-based survey of risk factors of NCDs (termed STEPS), was designed in accordance with the general principles of the WHO STEPwise approach to surveillance of NCDs (STEPS) methodology.

The NCD Office managed and implemented the STEPS survey. The roles of the NCD Office included development of the protocols and instruments, training of staff to conduct the survey, project management and monitoring implementation of the survey and report development.

Outcomes of the STEPS survey were:

- critical data on the prevalence of NCD risk factors and biomarkers as reported in Section 1.2.
- protocols and instruments for the rigorous collection and analysis of this information
- IT infrastructure and software for analysis and reporting
- competent trained staff and capacity within MoH, although the staff of the NCD Office were temporally allocated to this Office: local staff implementing the survey were generally permanent employees of the health system.

It is important to note that the STEPS surveys did not develop a surveillance system, as defined above, but was a single survey which developed resources which can be utilised for another survey, or more appropriately for development of a surveillance system for Vietnam.
2. Health Action Plan implementation

In this Chapter
- 2.1 Mental Health
- 2.2 Cancer
- 2.3 Cardiovascular disease: Hypertension
- 2.4 Diabetes
- 2.5 Key related activities
  - 2.5.1 Preventive Medicine
  - 2.5.2 VINACOSH
  - 2.5.3 Integrated NCD prevention pilot study
  - 2.5.4 National Institute of Nutrition

The sections in this chapter describe the implementation of each of the disease specific action plans of the NCD Programme, as described by the informants and provided documents using the methodology described in Appendix 5.1. It should be emphasised that greatly different amounts of information was available in English on each of the specific plans. In addition, the information varied in quality. This report compiles and reviews only that information that was made available for the review, and the volume of information does not reflect the achievements of each plan. All health leaders interviewed for this review were familiar with the relevant Prime Ministerial Decisions.

The achievement of the objectives of each action plan was assessed. However, many of the indicators were undefined and did not have targets ie they were not SMART indicators and for some that were SMART the measurement systems were not implemented. SMART indicators are Specific Measurable Achievable Relevant Timely. In addition some of the objectives were measurable for only small parts of the country or population.

Chapter 2 reports information on activities of each plan are related to the core areas of: Governance, including networking; Treatment and management; Prevention; Capacity building; and Monitoring and surveillance. The background of national planning is provided for each plan. These areas of strategic focus are as recommended by the Western Pacific Regional Action Plan. In addition, the key achievements and challenges of each plan are detailed.

2.1 Mental Health

Table 10: 2006-2010 National Mental Health Project implementation summary

<table>
<thead>
<tr>
<th>Specific objectives</th>
<th>All 3 specific objectives of the project are reported to have been achieved. This was determined by site visits of the Steering Committee to the pilot site at 3, 6, 9 and 12 months.</th>
</tr>
</thead>
</table>
| Key activities      | • Undertaking of community level intervention for the provision of pharmaceuticals and treatment for people with schizophrenia. These are pilot projects and undertaken in 1-2 communes in each Province.  
                      • Communication interventions funded for campaigns in television, magazines and other forms of media.  
                      • Conduct survey in 8 communes in each of the 8 Regions of Vietnam. |

Background
The National Programme on community mental health was established in 1999 and the NCD Programme in 2002. From 2000, annual funding has been received for the National Mental Health Project (NMHP), with additional funding from 2005. While it is recognised by Government that the burden of mental health is large, very little funding is available to prevent and treat cases. The health system in Vietnam has been characterised by substantial under-investment in mental health. For mental illness, the NCD Programme listed epilepsy and depression for targeting. However when developing the NMHP, mental health experts in Vietnam considered that the project should focus on schizophrenia, rather than depression, because of the burden of schizophrenia in the country, and the fact that it is a more serious disease. The mental health profession in Vietnam had been advocating since 1998 to include schizophrenia in a National Target Programme.
The NMHP has been evaluated, in collaboration with the Institute for Health Policy and Strategy. The goal and specific objectives of neither the NMHP, nor the evaluation report were available for this review. Information in Table 10 is derived from the consultation.

**Governance**

The MoH network of psychiatric hospitals, at central and provincial level, was established in 1999, and provided support for the project. A Mental Health Network was established, whose role included site visits to each pilot site.

**Key achievements and challenges**

It was considered that funding of the NMHP was a key humanitarian policy of the government, as previously the poor were unable to afford care for schizophrenia.

The key achievement of the project was considered to be a large reduction in the burden of schizophrenia in Vietnam, although this statement could not be verified. Beginning in 2006, the NMHP has provided community treatment for people with schizophrenia and epilepsy, and has been implemented in 1-2 communes in each Province. Treatment for these patients was previously only provided by hospitals. About one half (33 of 63) of the provinces have a mental health hospital, and thus much of the population does not have access to these services. Currently a proposal is in development by the Mental Health Network to locate a mental health hospital in each Province. MoH is currently reviewing this proposal.

The most cost effective activity in the NMHP was considered to be the community treatment of people with schizophrenia. Patients treated in hospital cost the health system 4-5 million VND per month, while treatment in the community costs 50,000 VND per month. In addition to these savings in the health system, there are considerable other savings in social costs, including enhanced perceived security for the population because patients with the disease are now being treated.

Lack of financial resources was the key challenge for the project. Within existing resources, the key challenge is staff numbers. There are limited mental health staff in provincial areas, and it is hard to recruit staff to these positions. The principal challenge was the low income of these staff, relative to other parts of the health system. This low income was considered due to the nature of mental health diseases and that the salary of mental health staff cannot be enhanced to generate a larger income. Medical staff in other disciplines are able to earn additional funds to supplement their salary. No incentives are available to attract staff and compensate for the smaller income of doctors treating mental disorders.

**Treatment and Management**

A community level intervention for the provision of pharmaceuticals and treatment for people with schizophrenia was undertaken for the first time in Vietnam. These are pilot projects have been undertaken in 1-2 communes in each Province. No further information on the treatment activities or project was made available for this review.

**Prevention**

Health education activities have been undertaken using television, magazines and other forms of media. The key messages of these community campaigns were recognition of the symptoms of epilepsy and depression, and the value of early detection. Prior to this project there had been no population health education strategies to raise awareness of mental health. The strategies implemented in NMHP were reported to have increased awareness within the community that mental health problems are medical issues and that they are not caused by ‘spirits’. In addition, prior to these strategies there was no awareness that mental health problems were treatable. This had led to a
substantial number of suicides. Now, the numbers of suicides have reduced, as reported anecdotally during site visits by the Mental Health Network.

Monitoring and Surveillance
In 2005 a survey was conducted in eight communes in each of the eight regions of Vietnam to determine the prevalence of epilepsy and depression, as reported in Section 1.1. The survey was based upon a random sample of the population completing a questionnaire. At-risk individuals were followed up to validate the response and provide services if required. The response rate of this survey and representativeness of the respondents could not be validated by the reviewer.

Future plans of the project
Related, although separate to this project, is the establishment of a National Taskforce on Community Mental Health System Development in Vietnam, following the MoH endorsement in 2007 and 2008 of the WHO recommendation to establish such a taskforce. In 2011, technical assistance for the implementation of the main Taskforce project will be provided by the University of Melbourne, Australia. Funding for this project has been committed by Atlantic Philanthropies. The key strategic and policy issue to be considered by the Taskforce is whether to focus on institutional or community care. That is, whether to focus on upgrading and substantially expanding the network of psychiatric hospitals and social protection centres, or to focus on development of a community-based system of treatment, care and rehabilitation.

Future plans for mental health prevention and control, as described by the informant, include:

- A greater focus on epilepsy and the inclusion of activities to address depression.
- Depression is a comorbid condition of many NCDs, particularly at the end of life. Integration and coordination of depression management with palliative care for NCDs would enhance the quality of life of patients and decrease morbidity. Potential improvements in morbidity would also be achieved by integration of depression treatment with that of other NCDs at the time patients are diagnosed.
- While some work has been done to increase the awareness of government and society of mental illness and the burden in Vietnam, much more needs to be done. There is potential to combine with other disease specific projects in community education strategies.
- Additional training of existing general medical staff in provincial hospitals. The training will specifically focus on coordination and implementation of community treatment services.
- Additional mental health staff are required. Currently negotiations are being conducted with the Ministry of Education and Training to generate special placements for students in medical degrees, who following graduation will work in mental health, particularly at the provincial level. This may be through the funding of additional bursaries or scholarships. It is recognised that this is a long term solution to the work force problem.
- In the medium term, a proposal is that nurses are recruited in Provinces with the expectation that those nurses will be eventually trained to become doctors, and that after graduation they will work in mental health, particularly at the provincial level.

Support is required by MoH to:

- Consider provision of financial incentives for staff to work in mental health, particularly in risky environments;
- Increase the salary of mental health staff, and
- Address the short duration of services of staff in this specialty.
### 2.2 Cancer

#### Table 11: 2006-2010 National Cancer Control Plan implementation summary

**NCD Programme 2002-2010: Goal in relation to cancer.**

1. Reduce the incidence of tobacco-related cancers by 30%, as compared to the year 2000
2. Ensure that 100% of newborns are covered by Hepatitis B vaccination
3. Reduce the mortality rates of breast, cervix (uterus), mouth and rectum cancers
4. Decrease the proportion of cancers diagnosed at advanced stage from 80% to 50% by 2010.

**2006-2010 National Cancer Control Plan (NCCP)**

<table>
<thead>
<tr>
<th>General objectives</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To reduce cancer incidence rate</td>
<td>1. Age standardised cancer incidence rate for males increased 28% between</td>
</tr>
<tr>
<td>2. To reduce cancer mortality rate</td>
<td>2000 and 2010, and 33% for females.</td>
</tr>
<tr>
<td>3. To improve quality of life for patients with cancer.</td>
<td>2. Unable to be assessed.</td>
</tr>
<tr>
<td></td>
<td>3. Unable to be quantitatively assessed.</td>
</tr>
</tbody>
</table>

**Specific objectives**

1. To reduce the incidence rate for tobacco related cancers
2. To vaccinate 100% of newborns against Hepatitis B
3. To reduce the mortality rates for some common cancer types: cancer of the breast, cervix, oral cavity, rectum and skin by screening, early detection and on time treatment.
4. To reduce the rate of advanced stage cancer cases seeking consultation and treatment at specialised health facilities from 80% in 2000 to 50% in 2010.

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Age standardised incidence rates have increased: males by 20% for lung,</td>
</tr>
<tr>
<td>167% for oesophageal; females no significant changes.</td>
</tr>
<tr>
<td>2. More than 90% of children are protected against 6 infectious agents.</td>
</tr>
<tr>
<td>Newborn Hepatitis B vaccination has begun. No information is available of</td>
</tr>
<tr>
<td>percentage vaccinated against Hepatitis B.</td>
</tr>
<tr>
<td>3. No change in mortality rates detected.</td>
</tr>
<tr>
<td>4. Using data from 135 hospitals in 5 major provinces, 22.7% of breast</td>
</tr>
<tr>
<td>cancer cases were able to be sorted into stages at diagnosis: 64.2%</td>
</tr>
<tr>
<td>presented at an advanced stage (stage III). No information available to</td>
</tr>
<tr>
<td>assess change over time.</td>
</tr>
</tbody>
</table>

**Targets**

**Improvement in cancer treatment facilities**

1. To complete and operate the new National Cancer Institute in Tan Trieu.
2. To upgrade the HCMC Oncology Centre
3. To strengthen and improve the present cancer control facilities
4. To develop oncology departments in Hue Central Hospital and develop the provincial general hospitals of Can tho, Haiphong and Thai nguyen into cancer control centres of their regions.
5. To establish and operate some oncology departments in provincial general hospitals

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tan Trieu National Cancer Institute will be completed in 2011, with 1,000</td>
</tr>
<tr>
<td>bed capacity, high standard specialty qualifications and equipment.</td>
</tr>
<tr>
<td>2. HCMC Oncology Centre now has 1,300 beds.</td>
</tr>
<tr>
<td>3. In 2010 there was a total of 3,130 oncology beds in 24 hospitals and</td>
</tr>
<tr>
<td>oncology departments</td>
</tr>
<tr>
<td>4. Oncology departments in the Hue and Can tho hospitals have been</td>
</tr>
<tr>
<td>upgraded to cancer centres and radiotherapy began at Can tho in 2010</td>
</tr>
<tr>
<td>5. In 2008-2010 oncology departments were established in 9 provincial</td>
</tr>
<tr>
<td>general hospitals</td>
</tr>
</tbody>
</table>

**Upskilling of health care professionals**

6. To popularise knowledge on cancer control of doctors of provincial hospitals, including primary prevention, early detection, diagnosis and treatment
7. To popularise doctor’s knowledge of primary prevention, early detection and diagnosis of common cancers at district level
8. To popularise knowledge of primary prevention, early detection and diagnosis of common cancers of health workers at commune level

<table>
<thead>
<tr>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. 2-3 training courses on basic knowledge for physicians per province per</td>
</tr>
<tr>
<td>year: 1-2 courses on palliative care for physicians working in oncology</td>
</tr>
<tr>
<td>departments per year</td>
</tr>
<tr>
<td>7. As described for target 6.</td>
</tr>
<tr>
<td>8. Education conducted on early detection for health workers in communes</td>
</tr>
<tr>
<td>with the cancer screening programmes.</td>
</tr>
</tbody>
</table>
Background
The National Cancer Control Plan (NCCP) is a comprehensive cancer control plan aiming to reduce the burden of cancer through primary prevention, early diagnosis and screening, successful diagnosis and treatment, and palliative care. The plan also aims to build the cancer registries and to support cancer research which will benefit the nation. This is a long term plan with a 20 year horizon, and was designed to be implemented in stages according to the need and availability of resources.

The result of the Prime Minister’s Decision 172/2008/QD-TTg was the provision of significant additional funding from the Vietnamese Government. This funding, of about USD $1.5million per year, enabled the NCCP to begin implementation in 2008. This funding did not enable the entire NCCP to be implemented, and thus only the high priority actions of prevention, early detection and screening, and palliative care were implemented. In addition other important improvements were capacity building actions aimed at increasing the oncology workforce and improving the skills of this workforce, increasing the number and improving existing cancer treatment facilities, and expanding cancer registration.

The 2006-2010 NCCP was evaluated in October 2010 and the 2008-2010 NCCP in 2011. Both these documents were extensively used in this review. The NCCP set 8 targets, 5 of which related to improvements in cancer treatment facilities and three related to building the capacity of health staff engaged in cancer control (Table 11).

Governance
The National Steering Committee for the NCCP was established in 2008, as recommended by the Report of Interagency impact Mission 30 October – 2 November 2006: Planning for Comprehensive Cancer Control in Vietnam. The Steering Committee was chaired by the Director NCCP, with membership from the National Cancer Hospital, MSA, Department of Planning and Finance MoH, Oncology Hospitals in HCMC, Hanoi and CanTho, General Hospitals of HaiPhong and Hue, and Hanoi University (School of Public Health).

In 2008 NCCP was implemented in six major provinces; Hanoi, HCMC, Hai Phong, Thai Nguyen, Hue and Can Tho, with sub-committees for project management established in each provinces. In 2009, a total of 11 province sub-committees were established, increasing to 15 in 2010. The provinces in 2010 were the original six and Bac Can, Bac Ninh, Bac Giang, Nam Dinh, Thanh Hoa, Da Nang, Binh Dinh, Kien Giang and Ca Mau.

During 2008-2010, a cancer prevention and control network was established by the oncology sector of Vietnam in collaboration with the NCCP. The establishment of the network was crucial in enabling the NCCP to be implemented on a national scale. The roles of this network were to provide advice:

- For the establishment and operation of another five oncology departments in general hospitals in Bac Giang, Phu Tho, Ninh Binh, Bac Can and Binh Dinh.
- On professional practice, development and training, along with that provided by the sub-committees, cancer specialists and the Vietnam cancer prevention and control association.
- On activities for cancer prevention and control in regions and provinces, along with that provided by members of the sub-committees, directors of provincial departments of health, and directors of general hospitals.

Key achievements and challenges
As the plan has only been implemented for three years, no change in the incidence or mortality rates of cancer could be expected to be achieved. However improvements in palliative care, described below, have the potential to improve the quality of life of patients with cancer immediately.
The most cost effective intervention of the NCCP identified through the consultations was screening and early detection, which was described as the most cost effective way to reduce the burden of cancer in Vietnam. This is internationally recognised. In the last three years, 100,000 women have been screened for breast and cervical cancer. Prior to that there was no programme for breast or cervical cancer screening in Vietnam. For the NCD Programme, the key achievement identified was the increased awareness of the government and community of NCDs and cancer in particular. Anecdotal reports indicate that there has been an increase in the number of symptomatic people who present at medical clinics for treatment of cancer, and fewer patients seeking early discharge from hospitals, with patients agreeing to undergo treatment.

As a result of the funding the NCCP programme, and the successes of that programme, additional resources have been secured from international agencies. Specifically:

- The national cancer hospital is in final negotiation with IARC (International Agency for Research on Cancer) to increase the population coverage of these breast cancer screening with proposed funding of US $400,000-$600,000 over 3 years.
- Funding has been secured from the American Cancer Society for additional training of medical staff.

The key challenge in implementation of the NCCP was considered insufficient funding. It was perceived that in Vietnam funding of the health sector is a low proportion of the GDP, compared to other countries. In addition, funding for cancer was considered low relative to the cancer burden.

Within existing resources, the key challenge was the ability to employ enough doctors trained in oncology. In addition, the level of knowledge of staff was a challenge. Specifically the level of knowledge of provincial staff in oncology, and the knowledge of members of the Cancer Prevention Network was limited in some areas. The Network remains inadequate and the connecting points between the central and local levels failed to meet expectations. Participating workers were inexperienced in implementation, especially in collaboration, which adversely affected progress.

NCDs have common risk factors, as recognised by all stakeholders in this review. Being part of the NCD Programme has assisted in some integration of activity to address these risk factors. Specifically this has been with tobacco control at the community level. For example a programme has been undertaken with the Women’s Union and another to reduce smoking in buses, developed by VINACOSH and funded by the NCCP.

In addition to the funds provided by MoH for the NCCP, WHO provided US $50,000 per year. Furthermore WHO and other NGOs funded and organised a number of international experts to each treat patients in Vietnam for one month. The advice and support provided by these experts was extremely useful to the NCCP.

**Treatment and management**

**Screening and early detection**

In the period 2008 – 2010, more than 100,000 women have been screened for breast and cervical cancer. Women aged 30 to 60 years were recruited for screening. Screening was conducted in 10 provinces: Bac Ninh, Bac Giang, Vinh Phuc, Phu Tho, Hanoi, Thai Nguyen, Hai Phong, Thua Thien Hue, HCMC and Can Tho. In addition, in 2011 screening for oral cavity and colorectal cancer is being conducted in Nam Dinh province. While this is a substantial achievement, with more than 10 million women in this age group in Vietnam, less than 10% of women in the target age group were screened.
Results of the screening were:
- 14% of women screened for cervical cancer had an abnormal Pap smear and were referred for further investigation;
- The rate of cervical cancer detected by screening was 19.92/100,000 people, 50% greater than the rate of detection by recognition (13.5/100,000 people);
- Invasive breast cancers were diagnosed in 59 women by clinical breast examination and follow up of those women with abnormalities; and
- The rate of breast cancer detected by screening was 59.2/100,000 people, double the rate of detection by recognition (29.9/100,000 people).

No information was available as to whether effective screening registers had been established to record who had been screened and for what, the results of the screening test and whether women who had screened positive had completed follow up treatment as necessary.

Improvement in treatment effectiveness
A survey was conducted in 2008 in all provinces/cities to determine the capacity and extent of delivery of cancer diagnosis and treatment in provincial general hospitals. This survey is important for planning for cancer control capacity across the country. The survey concluded:
- Nine hospitals did not have amentology departments;
- Ten provincial hospitals did not provide cancer treatment, referring patients to hospitals with oncology departments; and
- Most provincial hospitals provide cancer treatment by a unique method of surgery.

An additional five oncology departments were established in general hospitals in the provinces of Bac Giang, Phu Tho, Ninh Binh, Bac Can and Binh Dinh. There have been substantial increases in radiotherapy capacity. The number of megavoltage radiotherapy machines in Vietnam has increased from 21 teletherapy machines in 2007 to 33 in 2010. The number of high dose brachytherapy machines has increased from eight to nine. In 2011 there are 13 simulators, from six in 2006. However there are still eight oncology departments without a conventional or CT simulator. Cancer diagnostic capacity has also improved with the commissioning of two cyclotrons and three PET scanners.

Palliative care
Palliative care is integral to improving the quality of life of people with cancer, an objective of the 2006-2010 NCCP. The NCCP extended the coverage of palliative care for cancer patients to a number of areas outside Hanoi. Within this programme area, three main activities were undertaken:
- Finalisation and distribution at local levels of new guidelines on opioid management, in accordance with the WHO analgesic ladder. Oral morphine and morphine patches can now be prescribed for all patients for a maximum of 30 days, instead of the original seven days.
- Provision of assistance and advice for the establishment and operation of units for pain relief in existing cancer prevention and control facilities in Hanoi, HCMC, Hai Phong, Hai Duong, Quang Ninh, Thai Nguyen, Thanh Hoa, Hue, Khanh Hoa, Can Tho, Tien Giang, and Kien Giang; and
- Development and implementation of a model of palliative care for cancer patients in the 12 facilities listed above.

Prevention
The four activities of the NCCP in 2006-2010 related to prevention of cancer were the screening programme described above, and for primary prevention activities, health education, development of guidelines for food processing and tobacco control. No activities were undertaken in relation to the role of physical activity and alcohol in the prevention of cancer.
The health education aimed to provide the community with the necessary knowledge on cancer to protect themselves and their family members, as well as awareness of early signs of cancer. The health education included promotion of the proper nutrition regime for cancer prevention and control, as well as the hazards of smoking. The development of these documents was undertaken in collaboration with the National Institute of Nutrition and VINACOSH respectively. In addition, the General Department of Preventive Medicine provided advice. Health education for the population on cancer prevention and control was disseminated through leaflets, television, radio broadcast and magazines (Table 12). The population coverage of the health education activities is unclear, although the majority was undertaken in the limited number of areas where screening was implemented.

To minimize exposure to carcinogens, documents and guidelines were developed to improve control over food processing and preservation in state-owned and private food processing facilities. The 2006-2010 NCCP provided funding to VINACOSH to implement tobacco control programs at the community level. For example a programme has been undertaken with the Women’s Union and another to reduce smoking in buses.

Table 12: Modes of communication of health information for the public

<table>
<thead>
<tr>
<th>Mode of communication</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leaflets</td>
<td>• 15 types of leaflets, with from 10,000 – 20,000 leaflets per year for each type</td>
</tr>
<tr>
<td>Television</td>
<td>• VTV1: broadcast more than 20 times, each 45 minutes long; VTV2: 7-10 broadcasts, each 15 minutes long; VTV3: 15 broadcasts, each 45 minutes long; O2TV: Show “Defeat cancer” broadcast a total of 52 hours per year</td>
</tr>
<tr>
<td></td>
<td>• Broadcasts on television in the major provinces</td>
</tr>
<tr>
<td></td>
<td>• Show “A bright tomorrow” broadcast once per month</td>
</tr>
<tr>
<td></td>
<td>• Question and Answer talks: more than 70 talks per year.</td>
</tr>
<tr>
<td>Radio broadcasting</td>
<td>• Promotion of cancer prevention and control on the Voice of Vietnam and radio broadcasts to 15 provinces/cities.</td>
</tr>
<tr>
<td></td>
<td>• Communication on cancer prevention and control conducted on loudspeaker networks in more than 100 communes/wards where screening was being undertaken.</td>
</tr>
<tr>
<td>Magazines</td>
<td>• Promotion on cancer prevention and control in more than 20 newspapers and magazines, with 100 articles per year, including the Health and Life magazine, the Science and Life magazine, the Capital Youth magazine, the Women magazine, the Family doctor magazine, and the Family and Society magazine.</td>
</tr>
<tr>
<td>Books (for the public and health staff)</td>
<td>• 15 publications including ‘Be cautious about cancer’ and ‘Guidance on cancer diagnosis and treatment practice’</td>
</tr>
<tr>
<td></td>
<td>• Reprinting of publications; Early prevention and detection of cancer; Epidemiology of cancer; Cancer care and symptomatic treatment; Proper nutrition for cancer prevention</td>
</tr>
<tr>
<td>Counseling website</td>
<td>• Provide 100-150 sessions per year of ‘talking’</td>
</tr>
<tr>
<td></td>
<td>• Provide response to queries</td>
</tr>
</tbody>
</table>

**Capacity building**

Until 2010 there were two medical universities that included oncology in the undergraduate curriculum, graduating about 2,000 doctors per year. Beginning in 2010, four more universities have added oncology to their undergraduate curriculum. Together these four universities graduate about 400 doctors per year. These graduate numbers will not meet the projected need for oncology services.

The NCCP has provided and supported training aimed at enhancing cancer prevention and control capacity of staff at different levels. The training included continuous training, re-training, technical assistance, and technology transfer.
A total of 29 training courses were conducted, as below:

- Basic knowledge on cancer for physicians: 2 – 3 training courses per province per year
- Reducing symptoms for physicians currently working in oncology departments: 1 – 2 courses per year. Of these, two courses were delivered by international specialists invited from the Asia-Pacific palliative care association.
- Paediatric cancer: one course for physicians and one course for nurses per year
- Social and psychological skills, and cancer recognition skills.
- Two national workshops were organised in October of 2008 and 2010. The 2008 workshop was attended by more than 500 domestic and international participants, and the 2010 XVth national workshop had an estimated attendance of 800 domestic and international participants.

Extensive training in palliative care was also conducted. Training in Palliative Care Module 1 was conducted in 2009 for 400 physicians at different levels within the health system, and in 2010 training in Module 2 was conducted in the southern area. Staff from a total of 30 hospitals were included in the training. Five train-the-trainer sessions were conducted for palliative care nurses in 2010.

There is a very active cancer applied research programme at the national cancer hospital and many population and clinical research projects have been undertaken in the last three years, and a number have been completed. The research has focused on:

- Risk factors affecting breast, cervical and ovarian cancers;
- Application of high technology in cancer diagnosis and treatment; and
- Combination of modern medicine and traditional medicine in cancer treatment.

Monitoring and Surveillance

To strengthen the cancer surveillance and management system, a survey was conducted to assess the feasibility of establishing new cancer recognition units in Da Nang and Kien Giang. The survey determined that there were convenient and adequate conditions for the establishment of units in these locations. These units, and an additional one at Thanh Hoa have been established. In addition the capacity in the six existing units was strengthened: in Hanoi, HCMC, Thai Nguyen, Hai Phong, Hue, and Can Tho. The strengthening of this system included the development and implementation of a model for recognizing deaths caused by cancer in the community. Two of the cancer registries, Hanoi and HCMC, have both reported in the IARC Cancer Incidence in 5 Continents (2002) and thus have met the standards set for cancer registration set by IARC in the past.

The survey on HPV infections conducted in Hanoi and HCMC is of significant practical and scientific value (Table 13). This is the first time that a large scale survey on HPV infections in the community has been independently conducted by Vietnamese specialists and scientists. However it should be noted that for comprehensive statistics on HPV infection in Vietnam, data from only 2 major cities at the two ends of the country is insufficient. In 2011, a survey will be conducted on a larger scale.

In 2008 two population surveys were conducted (Table 13). A baseline survey was conducted to determine the awareness of community of cancer prevention, early detection and management. A follow up survey will be conducted in late 2010 in a number of pilot sites.

Future plans of the project

The results achieved in the 2006-2010 NCCP will be the basis for future plans, as described by the informants. While the NCCP did not meet the targets established in the plan due to the funding shortfall and short intervention period, the NCCP remains committed to achieving these targets in the future.
Table 13: Monitoring and surveillance activities conducted as part of the NCCP

<table>
<thead>
<tr>
<th>Survey content, and population</th>
<th>Sample</th>
<th>Results</th>
</tr>
</thead>
</table>
| HPV infections in women       | Hanoi and HCMC | • 108 cases with HPV (7.2%), 78 cases were single HPV type infection (72.2%) and 30 cases were multiple HPV type infections. The multiple HPV type infection rate in HCMC was significantly higher than in Hanoi (17.4%).  
• HPV18 and HPV16 were the most common types of infections. In addition to HPV 16 and 18, HPV 58 was commonly found.  
• In HCMC, HPV18 and 11 were more common than HPV16. |
| Knowledge of prevention practices of some common cancer types in the adult population | More than 12,050 people in 12 provinces/cities. | • 35% correctly answered the 10 questions.  
• 67.2% thought that cancer is a fatal disease regardless of early or late detection,  
• 35.8% thought that cancer surgery would result in early metastasis and early death |
| Knowledge, attitudes and practice on smoking hazard prevention at schools | Pilot assessment at 2 schools | • Interventions help to reduce smoking and exposure to passive-smoking through the “Smoke-free school” model and communication campaigns  
• Awareness of school children of the hazards of smoking increased 6%, although the time frame of this increase was unable to be determined. |

With the projected increase in cancer cases, and the university graduate numbers described previously, Vietnam faces an urgent and serious cancer workforce capacity issue, which must impact on the quality and quantity of cancer therapy provided. While the NCCP to date has increased the number of medical students studying oncology, these students will not enter the workforce for years.

It is predicted that there was a need for radiotherapy treatment of up to 85,000 new patients in 2010. There are currently 28 general purpose megavoltage radiotherapy machines in Vietnam. Given that most radiotherapy is palliative, and if an average of about 1,000 new patients each year were treated on each machine, then Vietnam can meet about one-third of its current radiotherapy potential workload. However it is unlikely that 30,000 new patients will receive radiotherapy in 2010 given the critical shortages of staff highlighted above.

A number of recommendations for future directions were provided by the informants, and the previous evaluations of the NCCP. The recommendations focused on strengthening the Cancer Control network; enhancing screening and early detection; and enhancing prevention activities beyond health education; and reviewing the cancer registries. In addition, the informants stated that what was needed was evidence to determine the priority, based on cost effectiveness of activities, for primary prevention, early detection and secondary prevention. Information is required to determine best buys for cancer prevention and control.
## 2.3 Cardiovascular disease: Hypertension

### Table 14: 2006-2010 Hypertension prevention and control project implementation summary

#### NCD Programme 2002-2010: Goal in relation to cardiovascular disease (CVD).
Reduce the morbidity, mortality and complications caused by cardiovascular diseases:
- Reduce by 5-10% the number of patients with rheumatic heart disease
- Reduce by 15-20% the incidence of stroke in patients with hypertension
- Decrease by 5-10% the mortality rate due to heart attack
- Increase by 50% the number of patients that are managed and treated with hypertension
- Increase by 30-40% the number of managed that are managed and treated for heart failure.

#### 2006-2010 Hypertension prevention and control project

<table>
<thead>
<tr>
<th>General objectives</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. To improve the knowledge of hypertension and CVD risk factors of the population</td>
<td>1. Knowledge has improved in project areas – see specific objective 1.</td>
</tr>
<tr>
<td>2. To increase the capacity of health staff in prevention, early detection and management of hypertension, using the MoH protocol</td>
<td>2. Capacity has been improved in project areas – see specific objective 2.</td>
</tr>
</tbody>
</table>

#### Specific objectives

| 1. To increase knowledge of prevention and management of hypertension in the population | 1. 50% of the population in project areas have a good understanding of hypertension and prevention measures. |
| 2. To strengthen the capacity of medical staff for prevention and management of hypertension in their own practice | 2. 80% of medical staff in the project areas have participated in training. |
| 3. To implement and maintain a model for the management of hypertension | 3. Hypertension management programme in communes in 32 provinces/cities in 2010. Model developed in a number of communes, and evaluated and reported. |
| 4. To increase the proportion of patients whose hypertension is managed. | 4. 50% of hypertensive patients diagnosed as part of the project have been treated and managed, following the MoH protocol. |

#### Main activities

| 1. Develop project governance and management systems | 1. Project Management Unit established at each province or city where the project was implemented, to guide the local facilities in organization and implementation of the project. Each Unit collaborated with staff at the hospital, preventive medical unit and local health station. |
| 2. Provision of training for health professionals to increase the capacity of local health staff | 2. Training for specialists in cardiology and hypertension treatment; for screening procedures for people at high risk of cardiovascular disease; and in health promotion for the prevention of hypertension. |
| 3. Health education for health professionals and the community | 3. Health education on the prevention of hypertension provided in medical journals, and on television, local and national radio and in newspapers. |
| 4. Pilot programme for the management and follow up of patients with hypertension | 4. Pilot programme in Ba-Vi District and Hanoi to manage hypertensive people at the commune health station and to deliver health education on CVD risk factors to the entire community. |

### Background
The cardiovascular disease project within the NCD Programme related to hypertension. In 2008 there was no strategy or model for prevention, early detection and management of high blood pressure at
the community level in Vietnam.\textsuperscript{14} Despite high levels of hypertension, there were relatively low levels of awareness, treatment and control. Hypertensive patients received consultations, treatment and some monitoring in general hospitals or private polyclinics. There were few activities for prevention of cardiovascular disease risk factors. It was acknowledged that any national strategy for prevention and control of hypertension would face double barriers: inadequate population-based databases for better understanding of the condition and deficiencies in evidence for developing effective community–based intervention models.\textsuperscript{14}

Funds were received from MoH for implementation of the hypertension prevention and control project in April 2010. Seeding funding were also received from WHO, which was recognised as critical in the initial start-up of the project, particularly for the development of the community based national survey.

**Governance**

A nation-wide cardiac care network was established. Clinical governance of the project was provided by the National Heart Institute. A Project Management Unit was established in each province or city where the hypertension programme was implemented. The Preventive Medicine unit at local level was integral to the coordination of the programme at local levels.

The National Heart Institute worked closely with the NCD Office in the development of project plans for hypertension prevention and control. In addition the NCD Office provided valuable advice in the development and approval processes for the Guidelines for Hypertension. WHO has provided critical resources and support, enabling the initial establishment of community based hypertension management programmes in Vietnam.

**Key achievements and challenges**

Establishment of the NCD Programme created a policy framework to address prevention and control of NCDs for the first time in Vietnam. The focus of National Programmes had previously been communicable diseases. Implementation and expansion of the hypertension management programme was a substantial achievement of the programme (Table 14). However it should be noted that the programme covered 1.2% of the target age group in the country. Additionally, the development of the first national Guidelines for the diagnosis and treatment of hypertension was a key achievement.

A key challenge identified for commune level management of hypertension was the capacity of most local health stations to prescribe medications for more than 5 days, with some now able to prescribe for 15 days. This issue is currently being considered by the MoH Health Insurance Department.

**Treatment and Management**

In 2009 about 300 communes in 16 provinces and cities were part of the hypertension project. In 2010, 32 provinces and cities had hypertension management programmes in some communes and in 2011 a number of communes in all provinces/cities are expected to have a hypertension management programme. Each commune within each province is not included due to the limited resources. The long term goal of the programme is to have hypertension in patients managed at local health stations, with referral to hospitals as required to maintain blood pressure control.

The hypertension management model was based upon the pilot programme of at Phu-Cuang commune, Ba-Vi District,\textsuperscript{22} and the pilot in Hanoi. Detailed information was available for Ba-Vi District commune pilot,\textsuperscript{22} described in Appendix 5.6. Implementation of this pilot programme preceded funding of the NCD Programme. The Hanoi pilot was implemented in 2006-07 and evaluated. Information on this programme has been submitted for publication to a peer-reviewed journal, and was not available for this Implementation Review.
Hypertension management at commune level was an important but challenging step in moving essential cardiac care services into primary health care. This step enabled people to obtain affordable cardiac care services at convenient places in a timely fashion and to reduce the extra costs of treatment (e.g., transportation fees, expenses for relatives, opportunity cost). For NCDs requiring lifelong treatment, available and well-qualified facilities at primary health care level would improve treatment adherence, promote changes of behavioural risk factors and eventually contribute to local primary and secondary prevention activities. But this step challenges the capacity of existing health care systems, especially if those systems become overloaded by emerging demands for treatment. Some of these issues can be overcome by an effective cardiac care network and supportive health care policies.

**Prevention**
Health education for the community was undertaken nation-wide as well as in selected local areas which were part of the broader hypertension management programme. The health education for the population used the communication modes of television, radio, print and public information panels at the health centres. Leaflets on hypertension prevention and control were available at commune health centres and were distributed by paramedical staff in the community. For local based education, the Heart Institute generated a sample of the material. Each primary health care team then modified the material to suit the local context. In addition, local cardiac care specialists wrote articles for the local print media. Articles appeared in newspapers, and leaflets and posters were prepared. The nation-wide health education was generally linked to ‘Hypertension Day’ each year. In 2011, 15 May is Hypertension Day with the theme ‘Know your numbers and target your blood pressure’, which is the 2011 theme of the International Society for Hypertension. The education includes the core primary prevention message to consume less salt in food.

**Capacity Building**
Training was undertaken to increase the capacity of local health staff to prevent and control hypertension. The training included:
- The prevention and control of hypertension and stroke for specialist cardiologists and other health staff;
- Health promotion for central and local health staff; and
- Screening for people at high risk of CVD.

Guidelines for the diagnosis and treatment of hypertension have been developed and disseminated broadly. These are the first national Guidelines for Hypertension, where previously international guidelines have been used. These Guidelines have been very well received by health professionals across Vietnam. In addition, a website has been developed.

**Monitoring and Surveillance**
A cross-sectional survey of 8 provinces and cities was undertaken in 2002-2008 by the National Heart Institute. Multi-stage stratified sampling was used to select 10,569 participants from the general population aged 25 years and older. The response rate was 93%. The overall prevalence of hypertension was 25.1%, 28.3% in men and 23.1% in women. Among hypertensives 48.4% were aware of their high blood pressure and 29.6% had received treatment.

**Future plans for the project**
The stated goal of future activity for hypertension control is to expand the program such that hypertension is treated at local health stations, and patients seek treatment at these stations because they believe that appropriate treatment will be provided at the health station.
Simple, cheap, generic drugs and lifestyle behaviours can control blood pressure cost-effectively, and can reduce the incidence of stroke and delay its onset. The pilot studies have clearly shown that hypertension can be well controlled through the use of cheap and simple pharmaceuticals. It was estimated that for each person with hypertension, taking 3 tablets per day, costing 10 cents (US) per day, would effectively control blood pressure in these patients.

Implementation of these plans require changes in the policies regulating supply of pharmaceuticals to commune health stations, and the length of time pharmaceuticals can be prescribed for an individual by the health station. Most local health stations can only prescribe pharmaceuticals for a maximum of 5 days, although recently a number of stations have been approved to prescribe for up to 15 days. The aim is for all health stations to be approved to prescribe for up to one month, and to have the supply of pharmaceuticals to meet this capability.

A challenge remaining is to educate the population about the quality of care for hypertension by local health stations, such that management of hypertension by the local health station is the preferred option of patients.

Screening for hypertension was undertaken in those communes which were part of the pilot programs for commune level management of hypertension. People aged 25 years and older were invited for blood pressure assessment. The informants recognised that this was unsustainable as there were 45 million people in Vietnam aged 25 years and older, and indicated that in future the screening program would be for the 27 million people aged 40 years and older.

The major risk factors for NCDs are common. It was recognised that now that the temporary NCD Office is established, the next challenge is integration of activities to address NCD risk factors. At present, each disease specific project undertakes separate activities in the prevention of these common risks factors and do not work together. In future it was suggested that the NCD Office generates general protocols for the prevention of each risk factor, and that MoH formally approves these protocols. Each hospital and institute would work off these protocols and work together as appropriate. The NCD Office would be responsible for the coordination of these integrated activities. The protocols would be best practice guidelines and include resources and health education material. The NCD Office would commission agencies to write the protocols if appropriate, for example VINACOSH would write the tobacco protocol and National Institute of Nutrition the nutrition protocol.
### 2.4 Diabetes

#### Table 15: 2006-2010 National Diabetes Project implementation summary

<table>
<thead>
<tr>
<th>NCD Program 2002-2010: Goals in relation to diabetes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Reduce the morbidity and mortality due to complications of diabetes</td>
</tr>
<tr>
<td>2. Reduce the prevalence of diabetes risk factors in the community by 50%</td>
</tr>
<tr>
<td>3. Treat and formulate management plans to guide 100% of patients to self-manage the disease.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2006-2010 National Diabetes Project</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General objective</strong></td>
<td>To reduce the rate of diabetes, diabetes complications and mortality due to diabetes</td>
</tr>
<tr>
<td><strong>Specific objectives</strong></td>
<td>Given the short amount of time since the project was funded, the objectives of the project were unachievable.</td>
</tr>
<tr>
<td>1. To strive to achieve 50% of the population knowing about diabetes and the risks to health caused by diabetes</td>
<td>1. 30% of the population in the pilot communes knew that type 2 diabetes was caused by poor nutrition and insufficient physical activity, the potential complication of the disease, and how the disease could be controlled by treatment.</td>
</tr>
<tr>
<td>2. Reduce prevalence of undiagnosed diabetes to less than 60%</td>
<td>2. 48% undiagnosed diabetes in project communes</td>
</tr>
<tr>
<td>3. Establish, implement and maintain the diabetes management model nation wide</td>
<td>3. Diabetes management model established in 1-2 communes in 30 provinces: less than 1% of communes.</td>
</tr>
<tr>
<td>4. Systematically monitor and treat 50% of diabetic patients who are diagnosed, based on the treatment process regulated by MoH.</td>
<td>4. 48% of patients with diabetes diagnosed through the screening programmes had their blood glucose managed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Key activities</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Establish a nationwide Endocrinology network</td>
<td>1. Network established as described in Figure 14.</td>
</tr>
<tr>
<td>2. Screening of the population for early detection</td>
<td>2. In 2009-10 screening activity was undertaken in 1-2 communes, of 30 provinces, of a total of 242,295 people. That is 0.7% of the targeted population aged 30-69 years.</td>
</tr>
<tr>
<td>3. Management of diabetes to reduce the incidence of complications</td>
<td>3. Consultations for the management of diabetes were conducted for 61,433 patients in 102 communes in 30 provinces. A pilot project implemented a model for the prevention of type 2 diabetes. The pilot was established at Thai Binh, Thanh Hoa and extended to Binh Thuan and Dak Lak.</td>
</tr>
<tr>
<td>4. Training for medical staff</td>
<td>4. A total of 16 courses were conducted, with a total of 718 participants (Table 24).</td>
</tr>
<tr>
<td>5. Health education for the community</td>
<td>5. Health education in the form of television commercials, radio broadcasts, talk shows, and distribution of written material was undertaken (Table 25)</td>
</tr>
<tr>
<td>6. Undertake scientific research</td>
<td>6. Three research studies were initiated</td>
</tr>
</tbody>
</table>

**Background**

The National Hospital of Endocrinology (NHoE) is the only endocrine specific hospital in Vietnam. A separate department of endocrinology exists in some hospitals in the bigger cities and provinces. Most endocrinology patients at the provincial level are hospitalized in the department of internal medicine. At the district level all endocrine patients are hospitalized in the department of internal medicine. Treatment and monitoring for patients with diabetes is undertaken as outpatients to hospitals. Before
the 2006-2010 national diabetes project, there were no national guidelines for monitoring of diabetic patients in outpatients, and these services were inconsistently organized and undertaken throughout the country.

**Governance**

The National Diabetes Project Steering Committee was established by the MoH to provide overall leadership of the project. The Chair is the Director NHoE, the Vice Chair the Director MSA, and members include the Vice Director NHoE, representative of Planning and Finance Department MoH, Director Diabetes Mellitus Control Project Management Department, Representative of Provincial Health Centers. Clinical governance of the project was provided by NHoE. The partners, funders and stakeholders in the project were Government, WHO, World Diabetes Foundation, Hoi An Foundation and the Global Health Research Institute of Japan. As part of the project a nationwide Endocrinology network was established and continuously strengthened through ongoing activities. This diabetes diagnosis and treatment network linked central and local level staff (Figure 7).

**Figure 7: Nation-wide Endocrinology network structure.**

The Diabetes Mellitus Control Project Management Department of NHoE coordinated the implementation of the project. The project was implemented in collaboration with the Department of Preventive Medicine, and the NCD Office, MSA. The screening and surveillance project was tightly coordinated. Each province was required to submit reports on the screening activities every three months. In 2010, 58% of provinces complied. In addition to management and coordination of the project, the NHoE Project unit supplied technical assistance and facilities for the conducting of clinical examinations and medical tests, at both central and local levels. Specifically, the project provided support to 13 units of the Endocrine network, a HBA1C testing machine, and equipment and chemicals for research and the surveillance of diabetes.

**Key achievements and challenges**

Through this project, a diabetes management model has been built from district to central level. A diabetes prevention model has also been applied, detecting through screening individuals found to be at high risk of developing diabetes. A limitation on this achievement is that less than 1% of the target age group in Vietnam were screened in this project. The key achievement of the diabetes project was piloting a local level screening programme for diabetes, and establishing a model for management of patients with diabetes (Table 15). In addition, a substantial number of training activities were undertaken.

Key challenges to implementation of the national diabetes project were:

- **Resources**: In the period 2002-2008 the project budget was insufficient to implement the planned activities. Funds for the Diabetes Project were not allocated until December 2009. The goals and
objectives of the Project were unachievable in the limited amount of time since the project was funded.

- Capacity of staff:
  - Lack of specialised knowledge of doctors and nurses in prevention and control diabetes. In addition few doctors are trained in endocrinology as part of their university medical training. The University of Medicine and Pharmacy – HCMC is the only university in the country providing this training.
  - Staff at the provincial level have insufficient knowledge of the difference between running a screening programme and a survey programme.

**Treatment and Management**

**Screening**

In 2009-2010 population screening for early detection was undertaken in 1-2 communes in 30 provinces, for a total of 242,295 people. These include the provinces of Phu Tho, Yen Bai, Lao Cai, Cao Bang, Bac Can, Lang Son, Nam Dinh, Ha Nam, Thai Binh and Thanh Hoa. That is, less than 1% of the target age group in Vietnam were screened. These communes were selected based upon anecdotal information that the commune may contain an elevated prevalence of people at risk of developing diabetes. The steps of the program were:

A. The Health Network in the local province sent a letter and questionnaire to all adults aged 30-69 years, asking people to self-identify risk factors for diabetes and return the completed questionnaire to the Network.

B. People were identified by the Network as at-risk for diabetes, based upon this questionnaire. These people were requested to attend the health centre, where blood glucose levels were checked for at-risk patients for the diagnosis of diabetes or pre-diabetes.

C. A single health consultation was conducted with each patient diagnosed with diabetes or pre-diabetes. Patients with diabetes were provided therapy. All patients were provided with information on the prevention and control of diabetes through good nutrition and physical activity.

**Management**

On-going consultations for the management of diabetes were undertaken in the communes where the screening programme was implemented. A total of 61,433 individuals participated in the consultations in 2009-2010. Consultation rooms were established in local areas. People with diabetes and pre-diabetes were recalled for consultation every 1-2 months. At each consultation, fasting blood glucose, blood pressure, and weight and height were measured. Pharmaceuticals were provided at these consultations for patients diagnosed with pre-diabetes (ie with fasting venous blood glucose in the range 5.4-6.9 mmol/l) or diabetes. The consultations included discussion on diet (including salt intake), physical activity, smoking and alcohol consumption. These consultations are provided free of charge to the patients. The local health centre was paid 5,000 VND for each consultation, which did not cover the costs of the consultation. There is not a routine procedure for follow up of patients who do not attend consultations. No information was available on the sustainability of this activity if patients were required to pay for the service.

Screening was implemented in 1 or 2 communes of each province in 2009-2010. In 2011, it is planned to increase this to 2-4 communes per province. The goal of the project is to implement the model in 30% of communes nationwide, providing opportunistic screening rather than the current total population approach within a target age group.
**Prevention**
This project has established general principles for collaboration of the relevant Ministries, branches, provinces and members (such as Education, Labour-War Invalids – Social Affairs, Sports, Culture and Information) in type 2 diabetes prevention in the community. No information was available on the application of these principles. In addition, at Provincial and District levels, the project has collaborated with schools to provide health education to teachers about the positive health effects of healthy nutrition and physical activity. No health education was provided for children in schools.

Health education for the community was provided in all provinces to promote prevention and control of type 2 diabetes. This included television, radio and printed media (Table 16). The health education brochures, leaflets and communication book were developed in consultation with the National Institute of Nutrition and the National Health Communication and Education Centre.

<table>
<thead>
<tr>
<th>Health education activity</th>
<th>Number</th>
<th>Total duration (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television commercial</td>
<td>477</td>
<td>4,980</td>
</tr>
<tr>
<td>Radio broadcast</td>
<td>9,758</td>
<td>12,680</td>
</tr>
<tr>
<td>Talk shows</td>
<td>7,568</td>
<td>73,590</td>
</tr>
<tr>
<td>Distribution of brochures, leaflets and communication handbook</td>
<td>860,274</td>
<td></td>
</tr>
<tr>
<td>Posters</td>
<td>12,337</td>
<td></td>
</tr>
<tr>
<td>Slogans, messages etc</td>
<td>3,591</td>
<td></td>
</tr>
</tbody>
</table>

**Capacity Building**
Through the Endocrinology network, training, re-training and advanced level training was provided for staff at central and provincial levels (Table 17). Training was provided to staff of provincial health centres to increase their capacity to screen patients for diabetes and pre-diabetes, and to provide health education. Some of the training was linked to university training such as Degree 1 specialist, Degree II specialist, Master’s degree or PhD. The NHoE, Hanoi University and other medical universities collaborated in the development and implementation of the training. At least two doctors in each province have undertaken training within this programme. In addition, some nurses in local centres have been trained in the prevention and treatment of diabetes.

<table>
<thead>
<tr>
<th>Training course content</th>
<th>Duration</th>
<th>Number of courses</th>
<th>Number of participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project management in Thai Binh</td>
<td>3 days</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Data entry and analysis, in Thainguten, Hanam, HCMC</td>
<td>5 days</td>
<td>4</td>
<td>126</td>
</tr>
<tr>
<td>Diabetes screening</td>
<td>5 days</td>
<td>4</td>
<td>190</td>
</tr>
<tr>
<td>Treatment of diabetes</td>
<td>5 days</td>
<td>1</td>
<td>77</td>
</tr>
<tr>
<td>Capacity building of health staff in Phu Tho</td>
<td>3 days</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Diabetes treatment for Physicians in Yenbai and Binh Thuan</td>
<td>10 days</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>Provincial nurses in Yenbai</td>
<td>5 days</td>
<td>n/a</td>
<td>55</td>
</tr>
<tr>
<td>Epidemiology to conduct the diabetes survey</td>
<td>5 days</td>
<td>3</td>
<td>170</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>16</td>
<td>718</td>
</tr>
</tbody>
</table>

In addition to training, the following capacity building activities in the translation and dissemination of documents for diabetes prevention were undertaken:
- Compilation of a document for data management and analysis for the screening activity. This document was sent to the provincial offices;
- Preparation of a book on diabetes prevention and treatment, specifically on health education and caring for the diabetes patient;
- Translation of diabetes screening documentation, at the request of WHO; and
- Translation of guidelines for diabetes management, at the request of International Diabetes Foundation. The translation is complete and the printing is yet to be undertaken.
Resources were also developed for staff:

- Brochure for patients and health staff describing the potential complications of type 2 diabetes, appropriate levels of biomarkers, and guidelines for the amount of physical activity required and healthy eating using the food pyramid;
- In 2010, the release of a book for health staff describing healthy foods, including detailed information on serve sizes and energy content; and
- A website for the prevention of diabetes has been developed.

**Monitoring and Surveillance**
An epidemiological study of diabetes was conducted in 23 provinces in 2008. A total of 126,538 people participated in the survey. Information from this survey is included in Section 1.1. The response rate, representativeness and other quality criteria for the survey were not available.

The capacity of Vietnam to implement evidence based practice was enhanced through collaborate with functional units to promote scientific research for the development of a model of diabetes prevention and control applicable to Vietnam. Three research studies were initiated:

- Cost effectiveness of the diabetes prevention;
- Epidemiology of diabetes in Haihau Namdinh; and
- Evaluation of the communication campaign for diabetes prevention in Daklak and Binhthuan.

**Future plans for the project**
The future goal is to implement the diabetes community model in 30% of communes nationwide, providing opportunistic screening rather than the current total population approach. Significant planning has occurred for the 2011-2015 National Diabetes Project. The proposed general targets for this project are:

- Detect and manage 80% of cases at high risk of developing diabetes
- 60% of the population aged 30-69 years have correct knowledge of the risk factors of diabetes and knowledge of the disease.

The Project will include activities in the following areas:

- Community based health education to raise awareness of prevention of diabetes through risk factor modification, and early detection;
- Training of clinical staff, including sending a group overseas to study and share experiences;
- Strengthen the Nation-wide Endocrinology;
- Further development of the website;
- Undertake an epidemiological survey and scientific research;
- Supervision and monitoring of project implementation and reporting by the Diabetes Mellitus; Control Project Management Department, NHoE, MoH; and
- Seek additional funds from international agencies.

As of 2011 a number of challenges remain in the capacity of staff to prevention and control diabetes:

- Lack of specialised knowledge of doctors and nurses in how to prevent and control diabetes;
- Lack of knowledge of survey methods and the difference between a survey and a screening programme. It was proposed that as a result of this training, and clarification of the difference between screening and a survey, the number of patients screened could be reduced and screening become opportunistic; and
- Training of volunteers to conduct the prevention activities, especially health education, at the commune level may be an option.
In addition to the proposed funds provided by MoH for future diabetes projects, additional support is needed in:

- Funding to provide additional training in prevention and control of NCDs.
- Assistance in the development and implementation of models for the prevention of NCDs.
- Training for hospital staff and staff in some provinces.
- Project management training, where the best option would be to provide training by a consultant in Vietnam so that larger numbers of staff can attend.
- Development and implementation of pilot sites (one District in each of the northern, central and southern areas of Vietnam) for a community based program, for the prevention of NCDs. The pilots should be evaluated well and the findings communicate broadly. Consideration should be given to implementing the program nationwide if it is successful. If the program requires modification, it should be revised, implemented and re-evaluated. At present, a pilot site is undertaking a project on integrated prevention of hypertension and diabetes. This could be extended to cover prevention of all the NCDs in the NCD Program.
- There is a need to increase the capacity of districts to measure blood triglycerides, cholesterol and other lipids. At present only about 60% of districts have the capacity to undertake these tests. At present NHoE and Health Insurance Department MoH are collaborating on a project to assess how MoH could fund payments for the assessment of lipids in pre-diabetic patients.
- At present there are insufficient funds to provide electrocardiograms (ECGs) for diabetic patients.

2.5 Key related activities
2.5.1 Preventive Medicine

Of relevance to NCD prevention, two key changes have occurred recently in relation to preventive medicine:

1. Decision 5384/QD-BYT resolved to establish a Mission to develop a national plan for prevention and control of Non-Communicable diseases. The Chief of the Mission was the Vice Minister of Health, with the standing Vice Chief of the Mission the Vice Director GDPM and the Vice Chief the Director MSA.
2. Division of NCD Control and School Health established in 2010, with a specific focus on NCD prevention. This Division will be important in future directions for NCD prevention and control. To date no funding for the prevention of NCDs has been allocated to this Division.

Current status of NCD prevention

Treatment and management of NCDs are the focus of the NCD Programme. However WHO provides clear guidance that NCD prevention and control must cover the continuum of care from primary prevention to hospital based treatment of disease. The Moscow Declaration in 2011 identified the importance of a change in focus from prevention and treatment of NCD in individuals, to prevention based on community and population interventions, including structural interventions. The Prime Ministerial Decision in 2010 to have an additional permanent Vice Chair of the NCD Prevention and Control Steering Committee acknowledges this important issue.

GDPM and Preventive Medicine Centres are responsible for leading planning and implementation of activities for the prevention of disease. About 80% of current activity at the primary health care level is prevention, principally for communicable disease. At present, the provincial and districts centres detect people with NCD biomarkers for disease and provide prevention and control services. Early detection of disease through these activities prevents the escalation of the disease, which would require significant hospital resources. There are a number of effective models for community based prevention and control of NCDs. These models are currently implemented in a number of communities in Vietnam, but do not have cover the total population due to lack of resources.
GDPM uses a settings approach for the prevention of disease, principally communicable diseases, in schools. For NCDs a schools based settings approach is used for limited NCD prevention, including:

- Provision of guidelines for nutrition, activity and smoking in schools have been developed and disseminated. The aim is to create smoke free schools.
- Due to the budget constraints, only 256 schools in 26 provinces have these activities.
- These healthy school activities are currently being evaluated in pilot schools. In particular an evaluation system is in development which will enable reporting in the future.

The Health Promotion Programme is a newly established entity within GDPM. The programme is a very small, with limited capacity and principally funded by WHO with support from MoH. The role of the programme is to provide support to Preventive Medicine Centres in the prevention of disease. The programme has very recently begun to move from a focus on communicable disease to a limited focus on NCD prevention. At present the Projects of the NCD Programme collaborate very little with the Health Promotion Programme. However with additional capacity in the Health Promotion Programme there is an opportunity for collaborative work on risk factor prevention.

**Future plans for preventive medicine**

As NCDs have many common and shared risk factors, the most cost-effective strategy for Vietnam for the future is to integrate prevention of the risk factors, and treatment of biomarkers if appropriate. Such strategies have been internationally proven to be cost effective and to save substantial treatment costs. While treatment of individuals with NCD is clearly necessary, where resources are limited, such as in Vietnam and other low and middle income countries of the world, an integrated approach to population prevention of risk factors has been shown to be the most cost effective strategy. At the UN High Level Meeting on NCD prevention and control on 19-20 September 2011, there will be a commitment for Member States to develop a policy for integrated risk factor prevention.

To prevent NCDs Vietnam should develop and implement a policy, based upon the integration of prevention of the common risk factors, and the combining of population health prevention and community health prevention and control activities at local levels. These levels of integration are as recommended by WHO. The role of the Steering Committee and the decisions of the Chair are very important in assigning the level of priority given to each of the Projects within the Programme, and also to the relative investment in prevention and treatment. A designated unit with MoH is required for the coordination of the Programme. The placement and resourcing of the unit should be based upon the required functions of the office. The current NCD Office in MSA is temporary and inadequately resourced.

There are a number of effective models for community based prevention and control of NCDs, using an integrated approach to risk factor reduction. These models are currently only implemented in a number of communities in Vietnam. The 2011-2015 Preventive Medicine Plan aims to extend the geographic and thus population reach of these services. In addition, NCD prevention should be integrated into the community based health system, similar to that of communicable diseases.

Development of a surveillance system is immediately needed for NCD prevention and control in Vietnam. The development of this system was seen as the most important intervention that could be implemented in Vietnam for NCD prevention and control. The surveillance system would monitor and evaluate the activities of the NCD programme, and NCDs in Vietnam. A surveillance system is necessary to provide evidence for the development of policy. Because Vietnam does not have a surveillance system, development and evaluation of policies lacks critical evidence.
The 2011-2015 Preventive Medicine Plan is in draft form at present. The Plan has been developed in consultations with partners such as VINACOSH, National Institute of Nutrition, Diabetes Programme and NCCP. The Plan will be implemented at a local level by preventive medicine staff. There are clear goals and objectives of the Plan. However a surveillance system is required to measure these. The objectives relate to the 4 major risk factors of NCD and biomarkers of pre-disease. GDPM will collaborate with others (eg VINACOSH) to obtain data to report on these goals and objectives. The main activities of the Plan will be:

- Development and maintenance of the Preventive Medicine Network;
- Development of an intersectoral policy for NCD prevention;
- Development of policies for nutrition, physical activity, smoking and alcohol, based upon WHO Guidelines;
- Strengthen the capacity of the health staff working in prevention to increase their knowledge and skills in risk factor prevention and control at the patient level;
- Establish a surveillance system, based upon the Preventive Medicine Network; and
- Develop policies for health promoting settings – School, Workplace, Family, Community.

2.5.2 VINACOSH

VINACOSH was established in 2001 as a broad multisectorial group, chaired by the MoH, with Vice-Chairman from the Ministry of Culture and Information, and membership from multiple ministries including Ministry of Education and Training, Ministry of Transportation and Ministry of Agriculture and Development. Vietnam has signed and ratified the WHO Framework Convention on Tobacco Control (FCTC). The Vietnam Tobacco Control Programme has the overall objective of ‘To reduce the demand for tobacco products so as to control and gradually reduce the supply of tobacco products in order to reduce the morbidity and mortality due to tobacco-related diseases’.

In 2011 the National Assembly will review a proposal to establish a Tobacco Control and Health Promotion Foundation. It is expected that a decision by the National Assembly will be made in 2012. The current scope of responsibility and activity for this new Foundation is tobacco control only. This Foundation will work intersectorally to reduce the prevalence of tobacco smoking.

2.5.3 Integrated prevention and control pilot study

In recognition of the need to shift away from the vertical specific projects within the NCD Programme, WHO Vietnam funded a community based model using an integrated approach for the prevention and control of NCDs. The intervention site of the pilot was Linh Son commune, Dong Hy district, Thai Nguyen province, and the control site Hoa Thuong commune in the same district. The project began in early 2008. The aims of the project were to:

- Establish surveillance starting with a baseline cross sectional surveys of the prevalence of major risk factors in the two communes;
- Build capacity through training courses for health care workers and other health personnel;
- Test community based approaches to disease prevention through health promotion activities;
- Identify hypertensive individuals and offer treatment and/or counselling as appropriate; and
- Establish a coordinating mechanism for interaction between the national, provincial, district and commune level.

This pilot project has been evaluated twice: November 2008 by an international consultant funded by WHO, and a mid-term evaluation in May-June 2009, 18 months after the project started, by Research and Training Centre for Community Development, an independent research unit.
In summary the mid-term evaluation found that at the intervention site:

- More than twice as many patients accessed the commune health station than hospitals;
- The personal cost of care was 16% lower;
- The intervention focused on hypertension and diabetes: obesity, cancer and mental disorders were poorly addressed;
- No change in community knowledge of the causes of NCDs, or diseases caused by NCD risk factors, or risk factor prevalence;
- No change in disease prevalence were recorded or expected given the short duration of the intervention; and
- Of importance to future integrated NCD prevention programs, the intervention focused strongly on screening patients for disease and management of diagnosed disease: prevention activities were not adequately implemented, including poor focus on the whole population rather than those with disease.

A number of recommendations were made, including greater focus on the total population and development of guidelines for primary prevention, screening and treatment, capacity building and a stronger coordinating mechanism for staff support and supervision. These recommendations, and the final evaluation, must be considered before any broader roll out of the intervention.

2.5.4 National Institute of Nutrition

The National Institute of Nutrition (NIN) is the leading institution in Vietnam for nutritional research and surveillance of food quality and food safety. One of the mandates of the institute is to develop standards for food safety and food processing, as well as to propose solutions to improve population nutritional status and food safety. NIN also conducts programmes to improve the community’s nutritional knowledge and practices and to reduce malnutrition in mothers and children as well as micronutrient deficiency.

As part of the 2002-2010 NCD Programme, NIH has provided technical advice and collaborated with the disease specific projects. The governance and approach of the NCD Programme did not allow for NIN to build capacity in NCD prevention.

To date NIH has had little role in the provision of advice on activities to improve the nutrition of the population in order to reduce NCD risk factors. It was considered that Vietnam must have a NCD risk factor programme, and that the Department of Preventive Medicine was the logical unit to lead this programme. Specifically, population health nutrition approaches are required to reduce the prevalence of overweight and obesity. To date, there has been little activity in Vietnam in addressing the increasing prevalence of overweight and obesity in children and adults. Nor has there been a budget allocated to this task. NIH, WHO and GDPM are currently developing an action plan to improve the diet of the population to prevent NCDs.

The work of NIH currently principally relates to malnutrition. The existing network of nutrition expertise and staff could be harnessed to increase the focus on over-nutrition and NCD risk, while maintaining the necessary role of activities in under-nutrition. To increase the scope of work in over-nutrition, capacity would need to be built within the work force.
3. Discussion

In this Chapter
- Governance
- Management and treatment
- Prevention
- Monitoring and Surveillance

The development and funding of a National Target Plan for NCD prevention and control was a significant step for Vietnam. The development of this first national policy on NCD prevention and control aligns closely with the stepwise framework for policy and intervention development recommended by WHO (Figure 5). It was recognised that as a result of this first policy, support for NCD prevention and control was established within MoH and that development of subsequent policies would have the support of MoH. It was also recognised that WHO had played a key role in the advocacy and development of this National Target Plan, and provided necessary technical support and seed funding in the implementation phases.

Governance

The establishment of the NCD Programme by a Prime Ministerial Decision, and the chairing of the Steering Committee by the Deputy Minister of Health, provided the potential for leadership from the Central to Provincial levels, across government. Establishment of such a high level governance arrangement raised the priority accorded to NCDs, a fundamental step in addressing this issue (Appendix 5.5).10

Organisation of MoH uses a disease specific approach, with vertical programmes for prevention and control, rather than using a horizontal approach to address multiple conditions in an integrated manner. This is the case for both communicable and noncommunicable diseases. The NCD Programme has been developed and implemented based on this historical way of working, led by disease specific hospitals. Such an organizational structure while supporting treatment of NCDs, will not effectively prevent NCDs.

The 2002-2010 Steering Committee structure and membership posed a number of challenge:
- Little evidence could be found that the Steering Committee made decisions that affected more than one disease specific project.
- With the 2010 decision to have an additional permanent Vice Chair of the NCD Prevention and Control Steering Committee, and the establishment of a new Division in GDPM (Division of NCD Control and School Health), some confusion across the Programme has grown as to which area of MoH is coordinating the NCD Programme. This must be clearly addressed by the Steering Committee for future programmes.
- The Steering Committee was comprised of representatives from across the health sector, which was very important. Equally important for the prevention of NCDs is intersectoral collaboration, whereby the governance structure of the NCD Programme should include membership of the relevant other sectors. To date there has been limited engagement across all of government in the prevention of NCDs. The development of partnerships to address NCDs is one of the six objectives of the global strategy for the prevention and control of NCDs.10
- The NCD Office was specifically established for the coordination of the NCD Programme. The NCD Office is a temporary facility. MSA provides the coordination role for the Program, through the NCD Office. However, as MSA is responsible for hospital services, this role of coordination of a prevention program is not an optimal arrangement for a prevention and control programme.
- A well-resourced and empowered NCD office is required to coordinate collaboration and partnership within the programme, minimising the amount of separate work each programme
undertakes in risk factor prevention. Working together in NCD risk factor prevention, particularly in health promotion, has the high potential to save financial and human resources.

- There is little evidence of sharing of experiences and knowledge between the NCD projects. While this is appropriate for specific treatment activities, it is inefficient and may be compromising to the prevention effort.

Clinical networks were established for each of the disease specific projects. These networks included representatives from central to local levels. However not all networks covered the complete country. Furthermore, it was unclear whether local level representatives came from the hospital or preventive medicine centres or both. This was particularly the case for the hypertension project. Representation on these networks should align with the role of preventive medicine staff and local hospital staff in NCD prevention and control.

Strong project management structures were implemented, particularly for the diabetes and hypertension projects. These structures appeared to improve the consistency of implementation of activities in different parts of the country.

Treatment and management of NCDs

It is clear that prevention and control of NCDs requires three strong, interrelated components: hospital and outpatient based treatment; primary health care; and preventive medicine. Each of the projects in the NCD Programme undertook some activities in each of these areas. However, the sector is currently primarily focused on treatment of disease, rather than prevention. Thus the NCD Programme was primarily a programme to treat specific NCDs.

Activities for the management of NCDs related to providing enhanced infrastructure to hospitals, increasing the knowledge and skills of health staff, and implementing local programmes for disease control. Each of the disease specific projects was implemented almost in complete isolation. This is appropriate for treatment of the NCDs, but not for prevention as cancer, cardiovascular disease and diabetes share common risk factors. This section will focus on the treatment of diseases with prevention considered in the next section.

This Programme implemented community based NCD management projects for the first time, including for mental disorders. This was a major achievement. There were a number of effective models for community based prevention and control of NCDs implemented in this Programme, including the WHO funded model of integrated prevention and control in Linh Son. These models are currently implemented in a number of communities in Vietnam, but cover only a small proportion of the population due to lack of resources.

In addition, because these were initial or pilot projects, they were very resource intensive. This is clearly unsustainable and alternative strategies must be developed. Potential components of these community interventions which can be reviewed to develop more sustainable delivery models are:

1. Case finding. In the current diabetes and hypertension projects, population based screening was undertaken within a target age group. As identified by both these projects, this is clearly unsustainable and cost ineffective.

2. Screening: Cancer, diabetes and hypertension projects undertook population based screening for a target age group. However, the international evidence is clear that population based screening for breast and cervical cancer is cost effective, and that screening for the other two diseases is not. It is important to distinguish between population screening and opportunistic
screening. There are recognised criteria for establishing population based screening programmes, which are well documented.\textsuperscript{27}

3. Facility for management consultations. In the current community based models, diabetes is managed at hospitals, while hypertension was generally managed at health centres. While hospital treatment is essential for the treatment of many acute episodes of each of the NCDs, community based prevention and treatment of patients is an evidence-based approach to NCD control.

3. Development of clear clinical guidelines and patient management plans, including self-management. Clinical pathways and checklists are an important part of the action plans, and have been developed and used in the disease specific projects. However, there are not national guidelines for each of the specific NCDs to date. Some training has also been provided in the use of these instruments.

4. Provision of pharmaceuticals. The provision of pharmaceuticals must be on the basis of cost effective, best practice evidence. In the current project, hypertension drugs are provided to patients diagnosed with the internationally accepted criteria of raised blood pressure. However for diabetes, patients who were diagnosed as pre-diabetes according to international criteria were provided with drugs at the hospital based consultations.

5. Provision of healthy behaviours advice. Many NCDs have common risk factors. At present there is no integrated suite of resources to support primary health care providers in advising patients on healthy behaviours.

NCD control is a long term undertaking by patients and the health staff. However the current limit for prescribing pharmaceuticals is five days in most local health stations to five days, although this has been extended to 15 days in some stations. This issue is currently being considered by the Health Insurance Department and must be resolved for a sustainable NCD management system in the country. Related to this is the low volume of pharmaceuticals allowed at commune health stations, which is inconsistent with longer term prescribing requirements for NCD management.

**Capacity building**

Extensive training and retraining of health staff is required for the effective management of NCDs at hospital or community level. Each of the projects included multiple activities to educate health staff. Most of the training was provided for staff at central level and in the specific communes where projects were implemented. Thus there remain large portions of the current health staff that do not have the appropriate level of knowledge to undertake the expanding requirement for NCD management.

The knowledge and attitudes of the health staff and public are an important part of building successful non-hospital based NCD management strategies. A challenge for the control of NCDs in Vietnam is the perception of the people and many health practitioners that the first contact of a person with symptoms of NCD should be at a hospital. However, many of the cases which present at hospital could have been treated by staff at the commune level. This is an inefficient use of the under-resourced and over-burdened hospital system.

Furthermore hospital care is thought by many to be the best place for treatment and management of illness. To address this, each of the disease specific projects conducted health staff training and health education for the population. A related education issue is the fact that many medical staff as well as the community do not think of NCDs as a collective, but think of each disease separately. There was little
Prevention of NCDs

Vietnam has excellent capacity and experience in preventive health for communicable diseases. Capacity and experience in NCD prevention is developing, but much more work needs to be done.

As stated, the major NCDs have common risk factors. Being part of the NCD Programme has assisted in some integration of activity to address these risk factors. However the management of each project within the Programme recognised that considerably more integration of prevention activities should be undertaken, and that there are opportunities for this, particularly at the provincial level.

As part of the NCD Programme, the provincial and districts centres detect people with NCD biomarkers for disease and provide prevention and control services. Population based screening for diabetes and hypertension is not cost effective, even within target populations. Opportunistic screening for these diseases is the appropriate strategy for early diagnosis of patients. However in Vietnam there are some large challenges to this. Encouraging people to come to health centres for the assessment of symptoms is a necessary step in diagnosis. This will be a challenge in Vietnam, and thus opportunistic screening will not be a viable strategy for early detection for some time. In contrast, population screening for breast and cervical cancer is an internationally accepted cost effective strategy. The coverage of the nation is limited for both these population health interventions. There is inconsistent encouragement of women aged 40 years and older to perform monthly breast examination.

The key prevention activity in the current NCD prevention and control policies of Vietnam was health education for the population and for patients as part of discussions on healthy lifestyles within consultations. This was conducted by each disease specific project in isolation from the others. All projects collaborated with the relevant National Institute or VINACOSH, depending upon the topic.

Four key issues are concluded from the prevention activities of the NCD Programme:

1. Health education was the primary activity, yet health education is only one component of health promotion;
2. NCDs have common risk factors, yet the disease specific projects operated independently;
3. NCDs are determined by whole of government policies and societal influences, yet these other sectors were not involved in the strategic or operational components of the Programme;
4. Given these conclusions, it is imperative that it is made clear which sections of MoH and hospitals are responsible for the prevention of NCDs.

The need for an integrated and intersectoral approach to NCD prevention are identified as objectives of the WHO global strategy (Appendix 5.5).

1. Health promotion

In this review there was little evidence of health promotion, using the broad definition of the Ottawa Charter. Health education is one component of health promotion. However, strong evidence indicates that the single strategy of health education in the absence of broader health promotion will achieve minimal effect, particularly in the longer term.

Health staff who led each of the disease specific projects are not responsible for health promotion activities as part of their usual work at the hospitals. Thus it is inappropriate to consider that they will necessarily have the skills to lead health promotion activities within a disease specific project. Specialist staff within the Department of Preventive Medicine, and in particular in the Health Promotion Programme, have the skills to implement a health promotion project. There was no collaboration of the
projects with this Health Promotion Programme, in part because the latter was very poorly resourced. However with additional capacity in the Health Promotion Programme there is an opportunity for collaborative work on risk factor prevention. As health promotion must be implemented at central and local levels to be effective, the capacity of staff at each level in health promotion should be reviewed. Training and capacity building will be required at all levels.

There has been very little activity using the health promoting settings approach, which is international best practice for health promotion. Some activities have occurred specifically in schools, although these related to health education.

2. Integrated approach
Recognising the commonality of the major NCD risk factors, an essential element identified for the future is the necessity for a holistic programme for NCD risk factor prevention. On this basis, an identified key challenge is the development of a mechanism for the integration of NCD risk factor prevention and the clarification of the role of each of the relevant departments, hospitals and institutes in this critical work. In the development of the 2011-2015 NCD Programme the key decision for the government is whether the Programme will consist of disease specific projects for control and prevention of NCDs, as per the current Programme, or whether a more integrated approach to prevention of risk factors will be taken, with disease specific projects for the treatment of disease.

A challenge to the successful implementation of an integrated approach to NCD prevention is an understanding by the health staff and the community of the commonality of these risk factors. Evidence suggests that both medical staff and the community do not think of NCD as a collective, but think of each disease separately. Education in the common causes of the NCDs should be instigated.

Integration of NCD prevention and control would provide a strong foundation for a more holistic model of primary health care to be implemented in Vietnam. Such a model would strengthen the capacity of local health services to address the needs of patients with multiple conditions.

Within the NCD Programme there has been little activity to address physical inactivity and harmful alcohol consumption, both key risk factors for NCDs. Best practice in interventions to promote physical activity in developing countries have been outlined by WHO. Restricting access to retail alcohol, enforcing bans on alcohol advertising and raising taxes on alcohol are three of the ten best buys for the prevention of NCD identified by WHO.

3. Intersectoral approach
The health behaviours that are risk factors for NCDs are the result of whole of government policies and societal influences. Thus to reduce the prevalence of these risk factors, activity needs to be undertaken in partnership with the sectors of Vietnam government and society that influence these factors. That is, an intersectoral approach is the only way to reduce the prevalence of NCD risk factors. VINACOSH is an example of intersectoral work to reduce tobacco smoking. There are also examples in communicable disease control and immunisation. This knowledge must now be applied to NCD prevention.

To date there has been limited engagement with other Ministries of Vietnam that develop and implement policies which affect the determinants of NCD. In addition, the prevention of NCDs requires the collaboration of local and national civic agencies such as Women’s Union, NGOs, and professional associations such as the Vietnam Public Health Association. Partnership with the People’s Committees is critical for community activities.

There are challenges to intersectoral partnerships. Key to intersectoral partnership is a mutual understanding of the role of each sector in the prevention of NCDs. At present, evidence suggests that
the government is unclear of the necessity of an intersectoral approach for NCD prevention. In addition, different sectors and ministries do not understand the determinants of NCDs and thus their role in NCD prevention, as well as the impact of these diseases on the economy and development of the nation.

There is a clear role for intersectoral work in mental health also. The Ministry of Education and Training is important for strengthening of the mental health workforce and in developing and implementing school-based mental health promotion and prevention programmes. Development of an effective mental health system is a whole of government responsibility.

4. Responsibility for NCD prevention

If the decision is made that the 2011-2015 NCD Programme is an integrated approach to prevention of risk factors, with disease specific projects for the treatment of disease, the governance of the Programme must be reviewed from the current arrangements. An effective Steering Committee will determine the success of the Programme. The Vice-Chair positions in the Steering Committee and the membership of the Committee must be reviewed in light of the changed focus of the Programme. A related decision is to give clear responsibility to a section of MoH to lead the prevention of NCDs.

If the 2011-2015 NCD Programme is based upon disease specific projects for the prevention and control of each disease, as per the current Programme, many of the current challenges will remain. However, if a disease specific approach is taken, the Steering Committee may take the opportunity to incorporate both the intersectoral and integrated approaches to prevention into the decision making of the committee.

**Monitoring and surveillance**

Vietnam does not have a surveillance system for NCDs and risk factors, which is critical to inform policy and practice, including evaluation of the current and future NCD Programmes. Specifically, in Vietnam there is currently no reliable means to collect even the simplest forms of data on these priority diseases at a national level. In short, it is difficult to identify the populations at risk, quantify the extent of the problem, and then plan and evaluate appropriate interventions with any degree of confidence. Without consistent and reliable surveillance information on NCDs, even advocating for appropriate investment becomes difficult.

Monitoring NCDs and their determinants and evaluating progress at the national level is one of the six objectives of the WHO global strategy for the prevention and control of NCDs.0

As part of the NCD Programme, three key monitoring and surveillance activities were undertaken:

1. 2009-2010 STEPs survey of NCD risk factors;
2. Surveys were conducted as an activity of the disease specific projects of this Programme: national survey of diabetes in 2008, national survey of hypertension in 2008; and
3. Establishment of cancer registry system including six centers throughout the country.

The STEPS surveys did not develop an NCD surveillance system for Vietnam, but was a single survey which developed resources which can be utilised for another survey, or more appropriately for development of a surveillance system for Vietnam. A national surveillance system for NCDs, as recommended by WHO, is listed in Appendix 5.7.

The disease specific surveys provided valuable information to their respective plans, and were an important step in the development of community based screening and management activities. However, the ongoing implementations of disease specific surveys, particularly those which report nation-wide data, are an inefficient and costly way to obtain this data. Many of the surveys collected
data on the same indicators. A single survey or, more appropriately a surveillance system, collecting and reporting all the required information for monitoring and surveillance of NCDs is a far more cost effective activity. Furthermore, the surveys used different sampling regimes and data collection tools, resulting in different values for the prevalence of NCDs and risk factors. The reporting of different values creates uncertainty and reduces the capacity of the country to monitor trends over time.

Monitoring and surveillance of NCDs includes death, hospitalisations and cancer incidence data collections and registries. While these important databases were out of scope for this review, the cancer registries were reviewed as part of the separate evaluation of the 2006-2010 NCCP.\(^8\)

An important part of monitoring and surveillance is assessment of whether the NCD Programme met the objectives. The Key Achievements section of this Chapter has discussed the achievement of the objectives. Assessment of the achievement of many of the objectives in the Programme and disease specific plans was unable to be undertaken because many of the indicators were imperfect. The objectives, particularly the specific objectives, were written as quantitative objectives, yet could at best be reviewed qualitatively. All objectives were relevant to the Programme and projects. Specifically many objectives:

- Did not have a baseline; What was the starting point or baseline value?
- Did not have a target; What was the value to be reached and by when?
- Did not have a measurement system; How was the information to be obtained?
- Were not achievable within the timeframe.

All of the plans and projects within the Programme undertook applied research. These were principally related to management of NCDs, rather than prevention of the development of NCDs. Many of these research activities have been, or are in the process of publication in the peer-reviewed literature.
4. Conclusions and recommendations

In this Chapter

4.1 Conclusions
- Key achievements
- Key challenges

4.2 Recommendations
1. Establish two National Target Programmes
2. Establish strong national leadership and governance
3. Establish clear responsibilities
4. Establish a permanent coordinating office
5. Enhance preventive medicine
6. Enhance hospital and outpatient services
7. Build capacity
8. Undertake research
9. Establish a surveillance system
10. Evaluate the programme

Non-communicable diseases are the largest cause of death and ill health in Vietnam. The epidemic is large, and rising. While infectious diseases such as HIV/AIDS, tuberculosis and avian flu, maternal and child illness and death, and disorders due to under-nutrition and deficiency diseases are not to be ignored, it is clear the NCDs are the major causes of morbidity and mortality in the country. It is also clear from international evidence that much of the impact of NCDs is preventable.

There are clear global and regional policy frameworks to address the developing NCD epidemic. A global goal was proposed in 2005 for preventing NCDs. The target is a 2% annual reduction in NCD death rates over and above projected declines during the ten years from 2005-2015. The establishment of the National Target Programme for NCD prevention and control in Vietnam aligns with the international frameworks, and was a major step in Vietnam’s history to improve the health of the population.

The UN High Level Meeting on NCD prevention and control on 19-20 September 2011 provides a unique opportunity for the international community to take action against the epidemic of NCDs, save millions of lives and enhance development opportunities. The Government of Vietnam will attend the meeting and be a co-signatory on the documents. This review provides background information to inform Vietnam’s position at this High Level Meeting.

4.1 Conclusions

Key achievements
The Prime Ministerial Decision in 2002 to establish the first National Target Programme for NCD prevention and control was a significant achievement in itself, recognised internationally. The decision to develop and subsequently provide funding for the NCD Programme provided a solid foundation to address the burden of these diseases, the first step in the WHO framework to build well developed capacity in Vietnam (Figure 5, Appendix 5.5). Establishment of this programme represents strong commitment by the government at the highest level and establishes NCD prevention and control as a priority for Vietnam. With the establishment of the NCD Programme, Vietnam had a system for the prevention and control of NCDs, which was recognised across the health sector. The development of the NCD Programme provided sound and explicit government policy, which is key to effective prevention and control of NCDs, as defined by WHO.

The establishment of the NCD Programme Steering Committee, comprised of executives from each of the relevant departments, hospitals and institutes of MoH was a significant step forward for Vietnam in the prevention and control of NCDs. The active participation of these units in a single National Target Programme was unique. In addition, through the implementation of the Programme, the support of
local authorities and community was obtained. Such collaboration is both an achievement, but also a critical requirement for effective prevention and control of NCDs.

The 2010 review of the Committee membership and structure following the 2010 Decision to establish a Mission to develop a national action plan for the prevention and control of NCDs reflects both a growing awareness of the significant role preventive medicine has in reducing the impact of NCDs, and the cost effectiveness of employing an integrated approach to prevention of NCD risk factors.

As a result of the national leadership in establishing a NCD Programme, a number of donor organizations committed funds to Vietnam to address NCDs. Most of these funds were provided for specific activities for a specific disease, including from WHO, World Diabetes Foundation, International Diabetes Fund, American Cancer Society, International Agency for Research on Cancer, SADA/SAREC Stockholm and Atlantic Philanthropies.

Implementing the 2009-2010 STEPS nation-wide survey of NCD and risk factor prevalence was a key achievement. This was the first survey in Vietnam to use the WHO STEPS surveillance framework for national surveillance of NCDs. All previous surveys have focused on a specific disease and the relevant risk factors.

Prevention and control of individual diseases have made significant achievements. Management of these conditions has moved gradually closer to the locality of the patients, from central level to more local management at community level, particularly in the project sites. The quality of treatment provided to some of the people of Vietnam with NCDs has improved. In addition, the range of treatment provided at the provincial level has increased, as described in the disease specific sections of Chapter 2. Highlights of these achievements are listed in Table 18.

Table 18: Key achievements and challenges of disease specific plans within the NCD Programme

<table>
<thead>
<tr>
<th>Programme area</th>
<th>Key achievements</th>
<th>Key challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health</td>
<td>• Community treatment of people with schizophrenia, resulting in reported large reduction in the burden of schizophrenia in Vietnam, although unable to be verified</td>
<td>• Within existing resources, the key challenge is staff numbers. The principal challenge is the low income of these staff, relative to other parts of the health system.</td>
</tr>
</tbody>
</table>
| Cancer               | • Screening for breast and cervical cancer in 100,000 women. Screening and early detection for breast cancer was listed as the most cost effective activity of this project  
                        • Increase in facilities to 26 oncology centres and 5 hospitals nation-wide. | • Within the existing resources, a key challenge is lack of doctors trained in oncology.  
                        • Provincial staff have limited knowledge of oncology. |
| Cardiovascular diseases | • Commune based hypertension management project  
                          • Development of first national guidelines for the diagnosis and treatment of hypertension. | • Capacity of most commune health station to only prescribe hypertension medications for 5 days. |
| Diabetes            | • Screening of 242,295 people for diabetes. This activity had a negative cost effectiveness ratio.  
                        • Community based diabetes management project, based at hospital outpatients. | • Capacity of staff. Specifically lack of knowledge of doctors and nurses in how to prevent and control diabetes, and of provincial staff of the difference between running a screening programme and a survey programme. |
The education of the health profession and the community on the healthy lifestyle choices which prevent NCDs, and the role of treatment in prevention of morbidity and mortality of NCDs has begun. However much more needs to be done. In addition, the building of the capacity of the workforce through both networks and training has been the focus of many activities.

This review did not assess the achievement of the Programme against the objectives listed at the establishment of the programme. It was recognised that these objectives were unachievable given the potential funding allocation and were assigned before the implementation projects were developed. The assessments of the objectives of each disease specific plan are detailed in Tables 10, 11, 14, 15. At a population level, those objectives which were able to be measured showed clearly that the Programme had made no difference to mortality or morbidity for the nation. Some of the objectives are measurable in parts of the country, often in only small parts of the country. Many of these objectives were met within the small populations who received the intervention. For example the hypertension management project was successful in the less than 2% of the population who received the intervention and the less than 2% who received the diabetes management programme. Less than 10% of women received the successful breast and cervical cancer screening activity.

Key challenges

Resources

The resources for NCD prevention and control in Vietnam have not yet matched the large health and economic burdens imposed by NCDs. The limited relative funds for NCD prevention and control relates to the historical focus of the health system in Vietnam on communicable Disease. The epidemiological transition in Vietnam has rapidly occurred in the last decades (Figure 1). It is a significant challenge to move from a health system focused on communicable diseases to substantial inclusion of NCD prevention and control activities. This is a challenge related to funding as well as knowledge and capacity of the government and sector to implement the NCD Programme.

Health system organisational structure

The Vietnam health system is organised in to disease specific hospitals and institutes, with leadership provided centrally to local facilities, including preventive medicine centres. The NCD Programme was developed and implemented based on this historical way of working, that is led by hospitals with a disease specific, vertical approach. Thus the NCD Programme was very focused on clinical management of specific diseases in individuals, with little activity in prevention, particularly at the population level. The establishment of vertical disease specific projects within the NCD Programme was a major challenge to effective NCD prevention. This weakened the potential for central leadership in health promotion and population health activities, as well as integrated primary health care for the prevention and control of NCDs to be implemented in Vietnam.

The NCDs considered in the NCD Programme, with the exception of mental disorders, share four common risk factors. International evidence is clear – effective and efficient prevention of NCDs requires an approach which includes all these risk factors. The Department of Preventive Medicine has clear national responsibility for prevention of disease, including risk factor prevention for NCDs. However, in the development and implementation of the NCD Programme, approval was provided by MoH through the Steering Committee for the implementation of activities by hospitals for disease specific prevention of risk factors.

A further challenge is that the role of preventive medicine staff at provincial and lower levels in the prevention and control of NCDs is unclear to staff and decision makers at central level in both hospitals and Department of Preventive Medicine.
It is important to note that the prevention and control of mental disorders is very different to that of the other major NCDs. Specifically, the only shared risk factor is harmful alcohol consumption. In addition, the facilities and skills required for community based treatment of mental disorders are very different to those of the other diseases. Thus the mental health project will be considered separately.

NCD Programme governance
The ambitious, organisationally challenging NCD Programme required strong governance to achieve its goals. The NCD Programme Steering Committee was the overarching governance mechanism of the Programme. There was effective governance of the disease specific projects. However, the governance of an integrated NCD prevention and control programme was not effective. This was due to the health system organisational challenges described, as well as the membership of the Committee. The NCD Program Steering Committee membership was mostly from the treatment sections of the sector, with little representation on the Committee from decision makers with knowledge and responsibility for the prevention of disease and the determinants of NCDs.

The magnitude of the current burden of NCD, and the consequences for the health system if policies and activities are not implemented to reduce the incidence of NCD and the rates of complications from these diseases is now understood by government. In contrast, the preventability of these disease and the consequences for the economy, is less well understood.

Thus prevention needs a greater voice in the Steering Committee. In 2010 the Minister agreed to revise the membership of the Committee, which if implemented according to the revised membership, will address this challenge.

4.2 Recommendations
Recommendations were developed to align with the national, regional and global policy frameworks for NCD prevention and control. These recommendations build upon the implementation of the 2002-2010 NCD Programme, and the conclusions of this implementation review.

2. Establish two National Target Programmes
3. Mental disorders prevention and control programme.
   The National Taskforce on Community Mental Health System Development in Vietnam will make recommendations in 2011 for the strategic focus of mental health care in the country: A focus on institutional or community care. This programme will require:
   • Stepwise implementation in building the planning framework and prioritising interventions, as described by WHO (Figures 11, 12), building on the existing infrastructure and capacity, and based upon the Taskforce recommendations;\(^{20}\)
   • Implementation of the seven strategic action areas described in the Western Pacific Regional Action Plan, and listed in Appendix 5.5;\(^{4}\)
   • Future directions for mental disorder prevention and control are listed in Section 2.1. This programme will not be discussed further in these recommendations.

4. NCD prevention and control programme.
   The prevention and control of the major NCDs of cardiovascular disease, cancer, diabetes and chronic respiratory diseases requires three strong, interrelated components: Hospital and outpatient services; Primary health care; and Preventive medicine services. This programme:
   • Should have a stronger focus on prevention of NCDs than the 2002-2010 Programme, while maintaining focus on the treatment of disease;
   • Will require enhancement of the preventive medicine system across the country;
• Will require stepwise implementation in building the planning framework and prioritising interventions, as described by WHO (Figures 11, 12), building on the existing infrastructure and capacity;4

• Should be implemented based on the seven strategic action areas described in the Western Pacific Regional Action Plan, and listed in Appendix 5.5;4 and

• Should set priorities for population-based and targeted interventions, based on trends in risk factors and NCD prevalence from ongoing monitoring. WHO has identified ten best buys for the prevention of NCD, listed in Appendix 5.5.10

11. Establish strong national leadership and governance

• Vietnam Government explicitly states that addressing the risk factors of NCDs requires an integrated, intersectoral approach. Vietnam Government explicitly state that addressing NCDs is a whole of government priority, requiring intersectoral collaboration to address the epidemic of disease threatening the economy and development of the country.

• Review and establish the NCD Steering Committee with Vice Chair positions reflecting the enhanced role of preventive medicine. The Committee must be intersectoral, including membership of those Ministries which have a key role in the determinants of NCDs. This may be best implemented through a sub-committee for the prevention of the NCDs.

• Establish local intersectoral committees chaired by provincial Preventive Medicine Centres and supported by central agencies.

• Enhance the established disease specific networks to gain nationwide coverage.

• Establish a central budget line for the integrated NCD prevention project, as well as the disease specific projects.

• Review the organisation chart for the NCD Prevention and Control Programme in line with scope and responsibilities for 20011-2015 Programme.

12. Establish clear responsibilities

• Designate responsibility to:
  i. A specific part of MoH for the coordination of the 2011-2015 NCD Programme;
  ii. GDPM for prevention of NCD; and

• Integrate the NIN and VINACOSH into the NCD Programme, defining their respective roles at central and local levels.

• Define the role preventive medicine center staff in NCD prevention and control, and develop role descriptions for the provincial, district and commune health centre staff.

13. Establish a permanent coordinating office

• Establish a permanent office for coordination of the NCD Programme within GDPM;

• Provide recurrent funding to the office, similar to that of the Office for VINACOSH.

14. Enhance the preventive medicine system

• Designate responsibility to the preventive medicine system for prevention and control of NCDs.

  The system should focus its efforts on population wide approaches for the main NCD risk factors and on the management of people at high risk of NCD.

• Enhance the capacity of the preventive medicine system to be responsible for:
  i. Leading the development and implementation of an intersectoral integrated approach to NCD prevention;
  ii. Support of primary health care in NCD prevention and control, specifically diagnosis of raised blood pressure, non-pathological assessment of patients at risk of diabetes, pharmaceutical management of some NCDs (hypertension and some diabetes
management), provision of advice of healthy behaviours to healthy and diseased patients, and referral of patients for cancer screening at hospitals.

- Preventive Medicine Centres and District Health Centres should provide local leadership and coordination in NCD prevention and control. The role of Commune Health Centres and Village health workers should be expanded in line with capacity.
- Provide sufficient staff numbers at central and local level to work exclusively on NCD prevention and control.

**Individual based activities**

- Regulations should be altered to increase the period local health workers can prescribe medications, matched with the amount of pharmaceuticals which are stored at these facilities.
- Review the prescribing practices for patients with pre-diabetes to ensure cost effective best practice is implemented
- Develop simple risk charts for primary health care staff to identify people at high risk of NCDs. Where possible, remove the need for blood tests which add greatly to the cost and complexity of the assessment.

**Community based activities**

- Develop a model for community based prevention and control of NCDs, addressing the risk factors in an integrated manner, and using an intersectoral approach. This model should be implemented nation-wide, with local variation based upon circumstances.
- The prevention of NCDs should focus initially on prevention of CVD, due to both the burden of CVD in Vietnam and the cost-effectiveness of internationally established interventions.
- Enhance the focus on health promotion within the community based project for integrated prevention of hypertension and diabetes, currently being piloted in Linh Son. Finalise the evaluation of this pilot project. Based on this evaluation determine the suitability of this model for extension to other sites and/or to cover prevention of all the NCDs in the NCD Programme.

**Screening**

- Determine the national model of population based breast and cervical cancer screening for women of target age groups, defining the role of outpatient and preventive medicine centres. Review the health insurance implications of the procedure being undertaken as part of primary health care.
- Establish registries to follow up women who have been screened for breast cancer, to ensure treatment is provided.
- Discontinue the current population based screening for hypertension and diabetes, developing an opportunistic approach. Identification of potential at risk people for hypertension or diabetes should be identified by the village health centre as part of the evolving practice of prevention and control of NCD undertaken by these staff. The people identified as potentially at risk should be referred to the commune health centre for assessment. Diagnosis of hypertension should be undertaken for all at risk patients. Guidelines and criteria should be developed for undertaking diagnostic tests for diabetes.

**Health promotion**

- As a priority, develop policies for health promotion interventions for the prevention of NCDs using an integrated approach to address smoking, poor diet, harmful alcohol consumption and physical inactivity.
- Based on these policies, a model of health promotion focused on NCD prevention, based upon international best practice, should be developed. The model should be implemented in a range of pilot sites, selected based upon the estimated prevalence of risk factors and the capacity of
local staff from the relevant multiple sectors. A robust evaluation framework should be
developed and funded.

- The intersectoral approach should be led at central level, with implemented at all levels. Central
  level implementation should focus on the national policy frameworks to address the
determinants of risk factors, as well as policies which are implemented at national level, such as
legislation and taxation.

- The healthy settings approach should be implemented focusing on high priority groups. Health
  promoting schools should be the initial focus, with development of a model with the community
sector. Healthy workplace models should then be developed when the capacity of the
preventive medicine system to undertaken health promotion activity is further developed.

- Tobacco control should be integrated within the NCD Programme, while maintaining
  VINACOSH and the proposed Tobacco Control and Health Promotion Foundation. This
Foundation may be able to be adapted in the future to encompass additional NCD risk factors.

- Designate responsibility to the National Institute of Nutrition in the NCD Programme, specifically
  in population wide nutrition interventions.

- Department of Preventive Medicine should develop a general protocol for health education for
  each risk factor. If appropriate, each preventive medicine centre would localised these protocols
in collaborate with the relevant other agencies and stakeholders. The protocol would include
best practice guidelines, and resources and communication materials to be used nation-wide.
VINACOSH should write the tobacco protocol and the National Institute of Nutrition the nutrition
protocol.

- The current proposal to implement a social marketing campaign for reduced salt reduction in
  food should be implemented, with a defined evaluation plan. The campaign should be
evaluated both to determine the impact and outcomes of the plan, but specifically as a pilot for
a nationwide social marketing campaign which could be applied to other NCD risk factors.
Implementation of a fruit and vegetable social marketing campaign should be considered.

Primary health care

- Using a primary health care model, there should be an integrated approach to NCD control in
  community based health care to enable diagnosis and treatment of NCDs.
- Protocols should be developed for each enhanced responsibility of primary health care.
- Patient self-management should be advocated by primary health care staff as part of the
  standard management of NCDs.

15. Enhance hospital and outpatient services

- The management of people with established NCDs should be the responsibility of hospitals,
  except where local staff at commune and district level can provide management services, with
  the support of hospitals.
- The disease specific treatment projects should remain the responsibility of the national hospital
  or institute
- Establish a system to exchange information between hospitals, outpatients and local medical
  centres for continuity of care.
- Develop national clinical guidelines for the treatment of each disease.
- Develop policies and capability for all provincial hospitals to prescribe insulin, according to
  established guidelines.
- Review the health insurance policies to enable outpatient treatment.

16. Build capacity

- Provide training and re-training for health staff across the country;
i. In the different role of hospitals and community based health care in the control of NCDs, based upon the designated roles and role descriptions;
ii. For preventive medicine staff in health promotion principles and implementation of an integrated prevention approach;
iii. For hospital and preventive medicine centre staff in the determinants of the NCDs;
iv. For hospital, centre and primary health care staff in disease specific diagnosis, management and palliative care, as appropriate.

- Provide health education for the public, within the health promotion activities, in:
  i. The value of early diagnosis
  ii. Symptoms of the major NCDs, and the need for people with symptoms to consult their local health staff for early diagnosis.
- Provide training for coordination and project management staff in: Project management; and Evaluation.
- The general training for health staff and the education for the public should be coordinated by the Programme coordination office.

17. Undertake research
- Integrate scientific research into the NCD Programme, with the aim of building evidence based prevention and control activities.
- Applied research should be the priority, particularly to develop knowledge of the applicability to Vietnam of evidence based interventions in the literature. Priority should be given to evaluation of the community based interventions models in primary prevention, early detection and secondary prevention, and assessment of cost-effectiveness. This research is interrelated to both the recommendation for the evaluation of future programmes and should be integrated into the surveillance system.

18. Establish a surveillance system
- Establish a surveillance system based using the framework for a national NCD surveillance system, revised by WHO in 2009 (Appendix 5.7). Implement the system in accordance with the general principles of the WHO STEPwise approach to surveillance of NCDs (STEPS) methodology, utilising sentinel sites as required.
- Determine a survey program, inclusive of required disease and risk factor specific surveys.
- Determine whether Vietnam will continue to develop additional sites for cancer incidence registries or enhance the quality and reporting capabilities of sentinel sites.
- Enhance the quality and coverage of the data collections for deaths.
- Establish a separate entity responsible for the integrated surveillance system. In the short term, this should be a separate entity within Department of Preventive Medicine. In the longer term, a separate national institute should be established, of similar standing to the National Institute of Nutrition.

19. Evaluate the programme
- Develop a planned approach to the evaluation of 2011-2015 NCD Prevention and Control Programme, integrated with the evaluations of the action plans within the Programme.
- Develop a programme logic model for the entire Programme as a basis for this evaluation.
- Evaluation plans should be built into each project. Each of the projects should have defined process, impact and outcomes indicators, including data collection system systems. Each indicator and objective of activities and plans should be Specific, Measurable, Achievable, Realistic and Timely (SMART).
- Complete the evaluations of the community based models, including the integrated model for NCD prevention in Linh Son.
4. References

11. Technical Assistance Project for the development of National Taskforce on Community Mental Health System Development in Vietnam 2011
5. Appendix

In this Chapter
- 5.1 Report development
- 5.2 Abbreviations
- 5.3 Burden of Disease
- 5.4 Myths about NCDs: Reality check for Vietnam
- 5.5 WHO policies and guidelines for NCD prevention and control
- 5.6 Commune level hypertension management pilot
- 5.7 Components of a national NCD surveillance system

5.1 Report Development

The development of this report was made possible by funding from World Health Organization. This report draws on:

- World Health Organization and Journal Publications as acknowledged in the text
- Consultations, based on a semi-structured interview format, with the following, including unpublished reports as acknowledged in the text;
  - World Health Organization Vietnam office
  - Medical Services Administration, Ministry of Health
  - General Department of Preventive Medicine, Ministry of Health
  - National Cancer Hospital
  - National Hospital of Endocrinology
  - Central Hospital of Mental Health
  - National Heart Institute
  - National Institute of Nutrition

This report could not have been written without the generosity and willingness of each of the senior staff consulted as part of this Review.

None of these data were independently verified by the consultant.

Consultations
World Health Organization
Dr Lai Duc Truong
National Professional Officer/NCD WHO in Vietnam

Medical Services Administration, Ministry of Health
Dr Truong Le Van Ngoc
Medical Officer
Administration of Medical Service
Dr Tran Quoc Bao
Head of Planning Department
National Centre for Health Communication and Education (CHCE)

National Cancer Hospital
Dr Tran Van Thuan
Vice Director
National Institute for Cancer Control
Dr Nguyen Hoai Nga
Department of Cancer Control Network Guidance
National Institute for Cancer Control
National Cancer Hospital
National Cancer Hospital
5.2 Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI</td>
<td>Body mass index</td>
</tr>
<tr>
<td>COPD</td>
<td>Chronic obstructive pulmonary disease</td>
</tr>
<tr>
<td>CRD</td>
<td>Chronic respiratory disease</td>
</tr>
<tr>
<td>CVD</td>
<td>Cardiovascular disease</td>
</tr>
<tr>
<td>GDPM</td>
<td>General Department of Preventive Medicine</td>
</tr>
<tr>
<td>HCMC</td>
<td>Ho Chi Minh City</td>
</tr>
<tr>
<td>HPV</td>
<td>Human Papilloma virus</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IEC</td>
<td>Information education and communication</td>
</tr>
<tr>
<td>IHD</td>
<td>Ischaemic heart disease</td>
</tr>
<tr>
<td>NCH</td>
<td>National Cancer Hospital</td>
</tr>
<tr>
<td>NHoE</td>
<td>National Hospital of Endocrinology</td>
</tr>
<tr>
<td>MoH</td>
<td>Ministry of Health</td>
</tr>
<tr>
<td>MSA</td>
<td>Medical Services Administration</td>
</tr>
<tr>
<td>NIN</td>
<td>National Institute of Nutrition</td>
</tr>
<tr>
<td>VHI</td>
<td>Vietnam Heart Institute</td>
</tr>
<tr>
<td>VINACOSH</td>
<td>Vietnam Steering Committee of Smoking and Health</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
<tr>
<td>WPRO</td>
<td>Western Pacific Regional Office</td>
</tr>
</tbody>
</table>
5.3 Burden of Disease

Table 19: Leading 10 specific causes of disability adjusted life years (DALYs), premature death (YLL), and years of life lost due to disability (YLD), by sex, Vietnam 2008

<table>
<thead>
<tr>
<th>Rank</th>
<th>Specific cause</th>
<th>% of YLD</th>
<th>Specific cause</th>
<th>% of YLL</th>
<th>Specific Cause</th>
<th>% of DALY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Alcohol use disorders</td>
<td>14%</td>
<td>Stroke</td>
<td>14%</td>
<td>Stroke</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Depression</td>
<td>11%</td>
<td>Road traffic accidents</td>
<td>9%</td>
<td>Road traffic accidents</td>
<td>8%</td>
</tr>
<tr>
<td>3</td>
<td>Road traffic accidents</td>
<td>8%</td>
<td>Liver cancer</td>
<td>7%</td>
<td>Alcohol use disorders</td>
<td>5%</td>
</tr>
<tr>
<td>4</td>
<td>Vision loss</td>
<td>8%</td>
<td>HIV/AIDS</td>
<td>6%</td>
<td>Liver cancer</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>Stroke</td>
<td>8%</td>
<td>Lung cancer</td>
<td>5%</td>
<td>HIV/AIDS</td>
<td>4%</td>
</tr>
<tr>
<td>6</td>
<td>Osteoarthritis</td>
<td>6%</td>
<td>Pneumonia</td>
<td>4%</td>
<td>Depression</td>
<td>3%</td>
</tr>
<tr>
<td>7</td>
<td>COPD</td>
<td>5%</td>
<td>Ischaemic heart disease</td>
<td>4%</td>
<td>COPD</td>
<td>3%</td>
</tr>
<tr>
<td>8</td>
<td>Falls</td>
<td>5%</td>
<td>Tuberculosis</td>
<td>3%</td>
<td>Lung cancer</td>
<td>3%</td>
</tr>
<tr>
<td>9</td>
<td>Drug use disorders</td>
<td>5%</td>
<td>COPD</td>
<td>3%</td>
<td>Falls</td>
<td>3%</td>
</tr>
<tr>
<td>10</td>
<td>Diabetes</td>
<td>4%</td>
<td>Drowning</td>
<td>3%</td>
<td>Pneumonia</td>
<td>3%</td>
</tr>
</tbody>
</table>

| Females | | | | | | |
| 1 | Depression | 29% | Stroke | 17% | Depression | 12% |
| 2 | Vision loss | 10% | Road traffic accidents | 4% | Stroke | 11% |
| 3 | Osteoarthritis | 9% | Pneumonia | 4% | Vision loss | 4% |
| 4 | Anxiety disorders | 7% | Liver cancer | 4% | Depression | 4% |
| 5 | Dementia | 6% | Ischaemic heart disease | 4% | Road traffic accidents | 4% |
| 6 | Diabetes | 5% | Diabetes | 4% | Osteoarthritis | 4% |
| 7 | Stroke | 5% | Lung cancer | 4% | Anxiety disorders | 4% |
| 8 | Road traffic accidents | 4% | COPD | 4% | Depression | 4% |
| 9 | Schizophrenia | 3% | Tuberculosis | 3% | COPD | 3% |
| 10 | Hearing loss | 3% | Stomach cancer | 3% | Depression | 3% |

Source: VINE Project; MoH Vietnam and University of Queensland Australia

Table 20: NCDs in the leading 10 specific causes of disability adjusted life years (DALYs), by age group and sex, Vietnam 2008

<table>
<thead>
<tr>
<th>Age group</th>
<th>Sex</th>
<th>Rank</th>
<th>Disease</th>
<th>% DALY</th>
<th>Sex</th>
<th>Rank</th>
<th>Disease</th>
<th>% DALY</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 15 years</td>
<td>Person</td>
<td>8</td>
<td>Depression</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Anxiety disorders</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-44 yrs</td>
<td>Male</td>
<td>3</td>
<td>Alcohol use disorders</td>
<td>7%</td>
<td>Female</td>
<td>1</td>
<td>Depression</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Depression</td>
<td>6%</td>
<td></td>
<td>3</td>
<td>Anxiety disorders</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Stroke</td>
<td>5%</td>
<td></td>
<td>5</td>
<td>Schizophrenia</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8</td>
<td>Liver cancer</td>
<td>3%</td>
<td></td>
<td>8</td>
<td>Diabetes</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Schizophrenia</td>
<td>3%</td>
<td></td>
<td>9</td>
<td>Stroke</td>
<td>2%</td>
</tr>
<tr>
<td>45-69 yrs</td>
<td>Male</td>
<td>1</td>
<td>Stroke</td>
<td>14%</td>
<td>Female</td>
<td>1</td>
<td>Depression</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Liver cancer</td>
<td>8%</td>
<td></td>
<td>2</td>
<td>Stroke</td>
<td>9%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Lung cancer</td>
<td>6%</td>
<td></td>
<td>4</td>
<td>Diabetes</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Alcohol use disorders</td>
<td>5%</td>
<td></td>
<td>6</td>
<td>Liver cancer</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>COPD</td>
<td>4%</td>
<td></td>
<td>8</td>
<td>IHD</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>IHD</td>
<td>4%</td>
<td></td>
<td>10</td>
<td>Lung cancer</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Depression</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>Diabetes</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70+ yrs</td>
<td>Male</td>
<td>1</td>
<td>Stroke</td>
<td>14%</td>
<td>Female</td>
<td>1</td>
<td>Stroke</td>
<td>24%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Liver cancer</td>
<td>8%</td>
<td></td>
<td>3</td>
<td>COPD</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Lung cancer</td>
<td>5%</td>
<td></td>
<td>4</td>
<td>Diabetes</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Alcohol use disorders</td>
<td>5%</td>
<td></td>
<td>5</td>
<td>IHD</td>
<td>4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6</td>
<td>COPD</td>
<td>4%</td>
<td></td>
<td>8</td>
<td>Lung cancer</td>
<td>3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>IHD</td>
<td>4%</td>
<td></td>
<td>9</td>
<td>Liver cancer</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Depression</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10</td>
<td>Diabetes</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: VINE Project; MoH Vietnam and University of Queensland Australia
### Table 21: Leading ten causes of death, by sex, Vietnam 2008

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease</th>
<th>Persons Male Deaths</th>
<th>%</th>
<th>Disease Female Deaths</th>
<th>%</th>
<th>Disease Total Deaths</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stroke</td>
<td>108,988</td>
<td>20%</td>
<td>Stroke</td>
<td>53,217</td>
<td>Stroke</td>
<td>18%</td>
</tr>
<tr>
<td>2</td>
<td>COPD</td>
<td>29,297</td>
<td>5%</td>
<td>Liver cancer</td>
<td>19,915</td>
<td>COPD</td>
<td>6%</td>
</tr>
<tr>
<td>3</td>
<td>Liver cancer</td>
<td>28,502</td>
<td>5%</td>
<td>Road traffic accidents</td>
<td>17,330</td>
<td>Pneumonia</td>
<td>6%</td>
</tr>
<tr>
<td>4</td>
<td>IHD</td>
<td>26,519</td>
<td>5%</td>
<td>Liver cancer</td>
<td>15,720</td>
<td>IHD</td>
<td>5%</td>
</tr>
<tr>
<td>5</td>
<td>Lung cancer</td>
<td>23,589</td>
<td>4%</td>
<td>COPD</td>
<td>14,355</td>
<td>Diabetes</td>
<td>4%</td>
</tr>
<tr>
<td>6</td>
<td>Road traffic accidents</td>
<td>23,080</td>
<td>4%</td>
<td>IHD</td>
<td>15,504</td>
<td>Liver cancer</td>
<td>4%</td>
</tr>
<tr>
<td>7</td>
<td>Pneumonia</td>
<td>20,645</td>
<td>4%</td>
<td>Tuberculosis</td>
<td>11,450</td>
<td>Lung cancer</td>
<td>3%</td>
</tr>
<tr>
<td>8</td>
<td>Tuberculosis</td>
<td>18,248</td>
<td>3%</td>
<td>Pneumonia</td>
<td>9,470</td>
<td>Tuberculosis</td>
<td>3%</td>
</tr>
<tr>
<td>9</td>
<td>n/a</td>
<td></td>
<td></td>
<td>HIV/AIDS</td>
<td>9,417</td>
<td>Road traffic accidents</td>
<td>2%</td>
</tr>
<tr>
<td>10</td>
<td>n/a</td>
<td></td>
<td></td>
<td>Stomach cancer</td>
<td>8,469</td>
<td>Stomach cancer</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>541,229</td>
<td>100%</td>
<td>Total</td>
<td>290,624</td>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: VINE Project; MoH Vietnam and University of Queensland Australia

### Figure 9: Percentage of burden of disease due to NCD risk factors, Vietnam 2008

Source: VINE Project; MoH Vietnam and University of Queensland Australia

### Figure 10: Percentage of deaths due to NCD risk factors, by sex, Vietnam 2008

Source: VINE Project; MoH Vietnam and University of Queensland Australia

---

**Vietnam NCD Programme 2002-2010: Implementation review**

Page 58
5.4 Myths about NCD: reality check in Vietnam

<table>
<thead>
<tr>
<th>Myths about NCD: reality check in Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Low and middle income countries should control infectious diseases before NCDs</td>
</tr>
<tr>
<td><strong>Reality:</strong> Vietnam must continue to deal with infectious disease, while experiencing a rapid upsurge in NCD risk factors and deaths. These risk factors indicate a devastating future burden of NCDs.</td>
</tr>
<tr>
<td>2. NCDs mainly affect rich people</td>
</tr>
<tr>
<td><strong>Reality:</strong> The poorest women have a greater chance of having at least one NCD than better-off women, and there is an arising burden of mortality from CVD among the worst off.</td>
</tr>
<tr>
<td>3. NCDs mainly affect old people</td>
</tr>
<tr>
<td><strong>Reality:</strong> The burden of mental disorders begins before the age of 15 years, with the impact of the NCDs of stroke, cancer and diabetes beginning before the age of 45 years.</td>
</tr>
<tr>
<td>4. NCDs affect primarily men</td>
</tr>
<tr>
<td><strong>Reality:</strong> About 50,000 men and 50,000 women die of stroke each year; about 72,000 cases of cancer are diagnosed each year in males and 54,000 in females; about 25% of men and women have hypertension.</td>
</tr>
<tr>
<td>5. NCDs are the result of unhealthy ‘lifestyles’</td>
</tr>
<tr>
<td><strong>Reality:</strong> Across the globe individual responsibility can have its full effect only when individuals have equitable access to a healthy life, and are supported to make healthy choices.</td>
</tr>
<tr>
<td>6. NCDs can’t be prevented</td>
</tr>
<tr>
<td><strong>Reality:</strong> The major causes of NCDs are known, and if these risk factors were eliminated, at least 80% of all heart disease, stroke and diabetes would be prevented, as would 40% of cancer.</td>
</tr>
<tr>
<td>7. NCD prevention and control is too expensive</td>
</tr>
<tr>
<td><strong>Reality:</strong> Hypertension can be well controlled by medications for about 10 cents (US) per day per patient; very cost effective strategies are known for other NCDs.</td>
</tr>
</tbody>
</table>

5.5 WHO policies and guidelines for NCD prevention and control

The WHO 2008-2013 Action Plan for the Global Strategy for the prevention and control of NCDs identified 6 objectives:

1. To raise the priority accorded to NCDs in development work at global and national levels, and to integrate prevention and control of such diseases into policies across all government departments;
2. To establish and strengthen national policies and plans for the prevention and control of NCDs;
3. To promote interventions to reduce the main shared modifiable risk factors for NCDs: tobacco use, unhealthy diets, physical inactivity and harmful use of alcohol;
4. To promote research;
5. To promote partnerships; and
6. To monitor NCDs and their determinants and evaluate progress at the national, regional and global levels.

WHO has identified ten best buys for the prevention of NCD:

- Protecting people from tobacco smoke and banning smoking in public places;
- Warnings about the dangers of tobacco use;
- Enforcing bans on tobacco advertising, promotion and sponsorship;
- Raising taxes on tobacco;
- Restricting access to retailed alcohol;
- Enforcing bans on alcohol advertising;
- Raising taxes on alcohol;
- Reduce salt intake and salt content of food;
- Replacing trans-fats in food with polyunsaturated fat;
- Promoting public awareness about diet and physical activity, including through mass media.

The Western Pacific Regional Action Plan for NCDs outlines a stepwise process for national NCD prevention and control. This process describes the process to enhance a country’s capacity systematically to achieve progress. Each step in the path to a well-developed national capacity requires four major steps: (1) profiling, (2) planning and priority setting, (3) putting into practice (implementation), and (4) evaluation (Figure 11).

The process for developing well-developed national capacity consists of four steps, starting at the establishment of NCD infrastructure and baseline (Figure 12). The steps in this process use the four major steps described in Figure 11. Each step of the process incorporates eight key principles:

1. A people centered perspective
2. Cultural relevance
3. Focusing on reducing inequalities
4. Encompassing the entire care continuum
5. Involving the whole of society
6. Integral to health system strengthening
7. Consistent with the global action plan and supportive of existing regional strategies
8. Flexible, using a phased approach.

Beginning capacity is based on policy and population-based interventions in response to the specific needs emerging from initial profiling. Growing capacity relates to additional policy, population-based and targeted interventions to address an expanded list of risk factors and NCDs relevant to the country, based on trends in risk factors and NCD prevalence from ongoing monitoring. Well-developed capacity has an optimal mix of policy, population-based and targeted interventions that address the whole range of risk factors and NCDs in a country; monitored through an established surveillance system.

Figure 11: Process for systematically achieving progress in NCD prevention and control

![Figure 11: Process for systematically achieving progress in NCD prevention and control](image-url)
5.6 Commune level hypertension management pilot

Detailed information was available for the pilot programme of commune-level hypertension management at Phu-Cuong commune, Ba-Vi District, which formed the basis for the roll out of commune level hypertension management described in Section 2.3. Emerging NCD risk factors, including hypertension were relatively new concepts to both the local healthcare team and the local population at Phu-Cuong commune, where people were only familiar with traditional infectious diseases. The commune management programme consisted of four sequential phases, gradually reducing the supervision and support from the responsible regional cardiac centre (Figure 13). The programme was three interactive components:

1. Comprehensive information education and communication campaigns (IEC) to improve knowledge of CVD risk factors for the entire commune;
2. Standard protocols at the commune health station to routinely diagnose and treat hypertensive patients with multidrug therapy and lifestyle modification; and
3. Continuous training programme to improve the capacity of the local cardiac care team, including on-site hands-on training.

The preparation phase began in December 2006, with survey of a random sample of 1,200 adults aged 25 years and older, to estimate the prevalence of hypertension and other CVD risk factors and to recruit people with high blood pressure to the management programme. The survey was conducted at the commune health station and included blood pressure assessment. Two-thirds (67.8%) of people identified as hypertensive joined the management programme. During the subsequent implementation phase, patients opportunistically detected high blood pressure were also recruited to the programme.
The implementation phase began in July 2007. Patients were invited to attend monthly check ups at the local health care team: 65.5% maintained routine check-ups of one per 1-2 months; 20.1% had irregular follow up and 14.3% dropped out of the programme. Personal medical records were used at regular check-ups on fixed dates every month. During check-ups, diagnosed or suspected hypertensives were invited to have their blood pressure re-measured, their prescription and lifestyle modifications re-adjusted, receive their medications, re-assess any major adverse cardiac events or adverse drug reactions, and to re-enforce their knowledge of hypertension and other CVD risk factors. By the end of the implementation phase in December 2008 local cardiac care teams independently and effectively managed local patients at the commune health station with minimal supervision from the National Heart Institute.22

Key factors in the successful implementation of the pilot programme at Phu-Cuong commune were use of a convenient infrastructure (including active and effective operations of the local healthcare team), appropriate public knowledge of CVD risk factors and an engaged community. Engaging the local community as much as possible was crucial to developing new social norms for a heart-healthy environment, to grow local will for hypertension and other CVD risk factors prevention, and then to assure the long-term sustainability of the programme. A key part of engaging the local community included getting support from local authorities. In addition, an effective local cardiac care team was necessary, requiring hands-on training and continuous on-demand support from the Heart Institute.

People with several NCD risk factors or a history of NCD were less likely to join the hypertension management programme than those with hypertension alone, as these patients were usually already been treated for their hypertension.

5.7 Components of a national NCD surveillance system
Core and expanded indicators for the prevention and control of NCDs are described by WHO.20 A core indicator is defined as one that is critical to NCD and is feasible to collect in all countries from a technical and resource perspective. Expanded indicators are ones that are central to NCD and provide
useful information for policy development and monitoring. All countries may collect these as their priorities and capacity dictates.

Exposures

- Behavioural: tobacco use, alcohol consumption, physical activity and nutrition risk factors
- Physiological and metabolic risk factors: anthropometric indicators, blood pressure, blood glucose, blood cholesterol and composite risk indicators.

Outcomes

- Mortality: all-cause and cause-specific mortality
- Morbidity: cancer incidence, diabetes prevalence and an expanded set of disease specific indicators
- Cost: expanded indicators out of pocket expenses, health system costs and economic burden.

Health system response

- Interventions
- Health system capacity: access to care, numbers of health staff and economic expenditure

Determinants of Health

- Education
- Gender
- Material well being