

**HEALTH PROJECT
MCA MONGOLIA**

халдварт бус өвчин ба осол гэмтэл
Non-Communicable Diseases and Injuries

**EVALUATION
FINAL REPORT**

January 5, 2014

Executive Summary

The scope of the Health Project, three approaches.

Mongolia is confronted with a rapidly increasing burden of non-communicable diseases and injuries. The MCA-M Health Project intended to help implement an existing National Strategy for Non Communicable Diseases and Injuries (NCDIs) in Mongolia during the five years 2008-2013. At the start, the project, with a budget of USD 17 million, was considered as a pilot for Mongolia that targeted six (out of 21) aimags (provinces) and two (out of nine) districts of the capital Ulaanbaatar. Three approaches were chosen: strengthening the national capacity for the development and implementation of NCDI policy and practice, including prevention and early detection of NCDIs; strengthening of service delivery by primary, secondary and tertiary levels of health care; informing and motivating the population for life style change. These three leads contained a large number of activities with many dependencies between them. In addition, some cross cutting activities were included. Overall, the project strategy represented a shift from a hospital based to a population-based approach.

This resulted in a very comprehensive NCDI program, whose complexity was a large challenge at all levels of planning and implementation. When the project was in full preparation and the first implementation activities were to be started, more than one year into the project, the budget was more than doubled, to USD 39 million, for reasons external to the project. It was then decided to expand the project to the whole country: all aimags and districts. Additional activities within the three approaches were also included. During 2010, one of the components, the construction and equipment of Units for urgent diagnosis and treatment of patients with stroke and acute myocardial infarction (AMI) in two hospitals, proved to be much more expensive than expected, leading to cancellation of part of them and later also to cancellation of some other activities of the project. Finally, 7 months prior to the closure date of the project, an additional budget of USD 3 million was made available to the project by redistribution from other projects. It helped to fill the remaining shortfall of the Stroke and AMI Units.

The change from a pilot project to a country-wide project obliged the project management to adjust strategy and implementation. This was successfully done, amongst others because of a very intensive interaction between the Project Implementation Unit of the Health Project, the Institutional Contractor and other (sub) contractors and the Ministry of Health.

The following section reviews the three different approaches. Next, a number of considerations on the project logic, effectiveness and efficiency, results and outcomes and sustainability are offered.

Capacity building.

The first major approach, capacity building, consisted of several sub-projects. Training, designed on the basis of needs assessments, targeted many health staff at primary, secondary and tertiary health care level (nurses and doctors, laboratory staff, management staff) for the below mentioned screening but also for clinical care of those with important biochemical risk factors and (imminent) chronic disease. More than 17.000 staff received one or more trainings, mostly of several days. A particular initiative was to provide 35 physicians a Masters course in Public Health for NCDs. These are well positioned to initiate further NCD activities and research in the aimags and districts. A pilot program of HPV immunization among girls of 11-15 years old provided valuable insights for the later planning of this and similar immunization programs. These components of the project are very successful because they engaged many health staff directly and gave an important impetus to a culture of quality in the health system.

Strengthening of service delivery was the second major approach.

Early identification of risk factors and disease of individuals requires adequate screening and care. Therefore, the development and roll out of screening programs at primary care level for high blood pressure, diabetes, cervical and breast cancer were a major undertaking: it required standardization of screening and treatment with the help of newly developed guidelines; staff training (discussed above); the development of a registration system that allows for actively calling the targeted individuals and monitoring for follow up; the supply of equipment for the consultation room and laboratories; the development of referral options at tertiary level; the development of a recall system. Burdening a weak health system with these heavy programs carries the risk of lack of effectiveness and efficiency. By the end of the Health Project, screening activities are ongoing for a year and the first patients are benefitting, including at least 25 more women whose cervical cancer was discovered in an early phase than would have been the case without screening. However, the system of screening has several weak links in the chain and quality needs to further improve. Strong monitoring and supervision are needed to sustain the activities at the required level. The jury still is out on the final results of these programs.

Strengthening emergency care included the development of Stroke and AMI Units, including high tech diagnostic equipment, that have been installed in Hospital 3 in UB. They were not operational at the closure of the Health Project, because refurbishment of spaces for the equipment and training of staff were not yet finished. In November 2013, the Units started to receive patients but the diagnostic equipment still was not yet in use. At 25 % of total costs of the Health Project the benefits in terms of lives-to-be-saved or disability to be prevented are expected to be limited. The conceptualization and planning of this component must be considered as poor, this is acknowledged by the Hospital 3 and Health Project leadership. However, once the investment done, the Units now should be optimized and benefit as many patients as possible rather than reduced. Hospital 3 leadership is fully aware of the tasks ahead. A smaller component was to strengthen existing ambulance services, as by training in Basic Life Support and supply of a modern ambulance.

Third approach: stimulating behaviour change.

According to internationally agreed policy, life style change is regarded as indispensable for the prevention and control of NCDs. Therefore, behavior change with regards to smoking, alcohol consumption, food, physical exercise and participation in screening was targeted through several activities. First, there were 13 different national campaigns for information and awareness building to the population through a number of communication channels: TV and radio spots, articles in magazines and newspapers, organization of special events like sports and festivities, distribution of Information and Education materials. Each campaign lasted for several months and was repeated once or twice and included an activation of local stakeholders, like businesses and local authorities, in the aimags and districts. The program was a tool as well for stimulation of work place health promotion. Further, a small-grants program served to stimulate organizations, including health services and authorities, companies and NGO's to initiate themselves activities in the field of Information, Education and Communication for behavior change. 219 organizations received funding of between USD 2,000 and 20,000; a total of USD 2.4 million was dispensed.

Through pre- and post-surveys, the effects on the level of knowledge and awareness of the population and of specific target groups, like teachers, was measured. Modest changes were observed, signaling that the campaigns and grant program had some effect. For lack of a counterfactual this cannot be substantiated, however. Actual behavior change was not measured. Possibly one pearl was found: against all trends, young people have less a pro-smoking attitude than several years ago, likely as a result of the health education campaigns.

International experience shows that nudging towards healthy behavior and the creation of the right conditions (tobacco and alcohol availability, affordable healthy food, playgrounds, areas for physical

exercise, etc) can lead to concrete behavior change. In this respect, Mongolia is at the start of a long road. The tobacco law, restricting smoking in public places amongst others, is a very good start the project helped to bring about.

Prevention of Traffic Injuries.

This final component of the project was an integrated part of the 3 approaches of the project: it was included in the information campaigns and capacity building at the level of the Police and some concrete road safety measures were taken. The modest volume of this component cannot result in measurable changes in terms of traffic safety, although a number of dangerous spots in UB may prove to be less dangerous due to the treatments. This component of the project helped the traffic related authorities with tools and capacity to improve planning and monitoring of traffic and roads.

The Health Project's interaction with the health system.

The overall project logic with the three components is in line with the current state of knowledge, internationally, and was well balanced also in geographical sense: the aimags were as well served as the districts of UB. The approach to support and strengthen the current health system and public health and not to add new layers or organizations, thus to integrate the project in the system, required a very intensive interaction between the project agencies and all the stakeholders in the country, at policy and at implementation level. The initial choice to work with a Project Implementation Unit and an Institutional Contractor, in close relationship with the Ministry of Health and many other authorities, has enabled such interaction and in practice worked well. In spite of its efforts to work in an integrated manner, in some respects the project was dropped on to the health system rather than integrated in it. However, on balance, mostly the health system is strengthened rather than affected by the project. The screening programs are new activities with a lasting additional workload and they need high maintenance with a gradual increase of dedicated staff like "cytologists" and primary care staff. For the short term, starting in 2014, supplies and equipment are a concrete worry.

The project made itself very well visible in the country, especially within the health system, and it was appreciated for its thoroughness and quality.

Outputs and results of the Health Project.

The project did everything the amended Compact said it would do and did most of it well. The assessment of concrete project outcomes versus expectations is hardly possible, due to lack of relevant initial quantitative objectives and targets. Only late in the project targets for results and outcomes and their associated indicators were described and in several cases these have no baseline value or they have not been measured. ERR methodology seems not yet to grasp the complexities of a project as comprehensive and integrated as the NCDI project.

The project organised a study tour to Finland that is world famous for its public health approach on NCDs in Karelia province, with measurable effects on the health of the population. One of the take home messages for the participants, and also for the readers of this evaluation, was that it takes an effort during many years before policy measures, nudging and campaigns lead to behavior change which, in combination with effective health services, result in significant morbidity and mortality changes related to NCDs. Five years is short. The Health Project's actual implementation period was two-three years, ultra-short for its objectives.

Sustainability.

Because the project implementation period was so short, continuation of the project investments and activities is paramount and it needs strong commitment and resources to sustain the project's results. The condition precedent of public funding for health promotion activities provides for reassurance for a minimum follow up. Political and technical leadership in the country seem

motivated to continue to provide guidance and resources and the outlook is positive, although short term setbacks can be expected. The Project Implementation Unit and the Institutional Contractor of the Health Project had accumulated a vast amount of know-how that would have served well to sustain the project's activities and results but they were dissolved and this capacity has been lost. This may be considered in future cases.

Conclusion.

The effects of the MCA-M Health Project on the health of the population of Mongolia are mainly mid- and long term, on its health system they are immediate and mid-term. A reduction or slowdown of increase of morbidity and mortality due to NCDs can be observed only in the further future and will be contingent on a favourable balance of factors in society that reduce NCDs and that increase them. In this respect, this evaluation offers a mid-term rather than a final view. However, by and large, the approaches of the Health Project were successful and more than that. Many elements of the project can be considered as good practice that can serve for future initiatives in the field of NCDI and beyond.

Acknowledgements

This evaluation was supported by many stakeholders and others throughout the country. Most persons who were asked for information, experiences and opinion, through an interview or email, have been very forthcoming and helpful. In the aimags and districts visited, the attitude of the interlocutors was very open and hospitable. Their contribution to this evaluation is very much appreciated. The PIU members of the Health Project were very willing to provide information in spite of the stressful period of closure of the project in September. My special thanks goes to the two persons with whom I worked most closely: Dr Gerelmaa, M&E officer (and much more) of the MCA Health Project, who went to great lengths to support this evaluation and make it a useful contribution; Dr Enkhtuya, who acted as translator and facilitator and who conducted the Focus Group Discussions. Their tireless and understanding support contributed strongly to making this evaluation a pleasure to work on.

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Contents

- Executive Summary2
- Acknowledgements6
- Contents7
- 1 Introduction..... 12
 - 1.1 Background to the Health Project 12
 - 1.2 This evaluation 12
- 2 Health in Mongolia 16
 - 2.1 Introduction..... 16
 - 2.2 Mongolia, population and administrative divisions..... 16
 - 2.3 Health status of the population. 17
 - 2.4 The Health System in Mongolia..... 20
- 3 Health Project..... 24
 - 3.1 Introduction..... 24
 - 3.2 Project objectives, logic and scope 25
 - 3.3 Project Administration and Implementation Structure; M&E 29
- 4 Capacity building 35
 - 4.1 Introduction..... 35
 - 4.2 Study Tours and Conferences..... 35
 - 4.3 General Training 37
 - 4.4 MPH program 41
 - 4.5 HPV vaccination..... 45
- 5 Service Delivery 48
 - 5.1 Introduction..... 48
 - 5.2 Screening 48
 - 5.3 Stroke and Acute Myocardial Infarction Units 62
 - 5.4 Emergency Response..... 68
- 6 Prevention and Public awareness 69
 - 6.1 Introduction..... 69
 - 6.2 Campaigns 69
 - 6.3 Grant program..... 74
 - 6.4 Results of IEC/BCC campaigns and grants program 79
- 7 Special groups..... 80
 - 7.1 School health..... 80
 - 7.2 Health at the workplace 82

8	RTI.....	84
8.1	Introduction.....	84
8.2	Background.....	85
8.3	Activities	86
8.4	Results	88
9	Cross cutting issues	90
9.1	Quality Assurance.....	90
9.2	People with special needs.	92
9.3	Gender issues	93
9.4	Waste Management.....	94
10	Results and Outcomes	97
10.1	Introduction.....	97
10.2	Results in context	97
10.3	Achievement of the amended Compact.	100
10.4	Integration.....	107
10.5	Sustainability	108
10.6	Economic Rate of Return, ERR.....	109
11	Overall conclusions and good practices	120
11.1	Conclusions.....	120
11.2	Good practices.....	121

12.	Annexes	123
	Annex 1 Terms of Reference of this evaluation, extract.	124
	Annex 2 Evaluation framework	128
	Annex 3 List of stakeholders spoken with during the evaluation.	129
	Annex 4 Compiled report of Focus Group discussions	131
	Annex 5 Evaluation MCA Health Project - Feedback on evaluator's findings and views.	136
	Annex 6 Amended Compact.....	138
	Annex 7 PIU organigram.....	139
	Annex 8 International presentations.....	140
	Annex 9.1 Indicators: Outcome.....	143
	Annex 9.2 Indicators: Output	144
	Annex 9.3 Indicators: Process	145
	Annex 10 Sustainability plan.....	146
	Annex 11 Results of KAP studies 2010 and 2013 among teachers.....	160
	Annex 12 Comparative tables of the FBIS studies 2010 / 2013	162
	Annex 13 Comparative tables of the STEPS surveys 2010/2013.....	183
	Annex 14 Comparative results of KAP studies among the general population, 2010/2013	185
13	References.....	195

Acronyms

ADB	Asian Development Bank
AH	Arterial Hypertension
AMI	Acute Myocardial Infarction
BC	Breast Cancer
BCC	Behavior Change Communication
BLS	Basic Life Support
BS	Black Spot
BSE	Breast Self-Examination
CBE	Clinical Breast Examination
CC	Cervical Cancer
CDC	Centre for Disease Control
CHD	Center for Health Development
CSGP	Competitive Small Grants Program
CVD	Cardiovascular Diseases
DALY/QALY	Disability-Adjusted Life Year/Quality-Adjusted Life Year
DM	Diabetes Mellitus
DoH	Department of Health
FBIS	Facility-Based Impact Study
FD	Family Doctor
FGP	Family Group Practitioner
GIA DoH	Governmental Implementing Agency Department of Health, which during the project is re-established as Center for Health Development, CHD. This report will only use the term CHD.
GoM	Government of Mongolia
GP	General Practitioner
HE	Health Education
HP	Health Promotion
HPV	Human Papilloma Virus
HPWP	Health Promoting Workplace
HSUM	Health Sciences University Mongolia
IARC	International Agency for Research on Cancer
ICD-O-3	International Classification of Diseases for Oncology, 3rd Edition
IEC/BCC	Information, Education and Communication/Behavior Change Communication
ITT	Indicator Tracking Tool
KAP	Knowledge, Attitudes and Practices
LEEP	Loop Electrosurgical Excision Procedure
Luxdev	Luxemburg Development Cooperation
M&E	Monitoring and Evaluation
MCA	Millennium Challenge Account
MCA-Mongolia	Millennium Challenge Account-Mongolia
MCC	Millennium Challenge Corporation
MNCCI	Mongolian National Chamber of Commerce and Industry
MNPRT	Mongolian National Public Radio and Television
MoECS	Ministry of Education, Culture and Science
MoH	Ministry of Health
MONEF	Mongolian Employers' Federation
MoU	Memorandum of Understanding
MPH	Master of Public Health
MPHPA	Mongolian Public Health Professionals' Association

NCC	National Cancer Centre
NCD	Non-Communicable Diseases
NCDI	Non-Communicable Diseases and Injuries
NGO	Non-Governmental Organization
NPHC	National Public Health Center
PHC	Primary Health Care
PHI	Public Health Institute
PIU	Project Implementation Unit
PPP	Purchasing Power Parity
QA	Quality Assurance
QI	Quality Improvement
QM	Quality Management
RTI	Road Traffic Injuries
RTIS	Road Traffic Injuries Study
SHC	Soum Health Centre
SICA	Statistical Institute for Consulting and Analysis
SPH	School of Public Health
STE	Short-term Expert
STEPS	STEPwise approach to Surveillance
TAIS	Traffic Accident Information System
THL	National Institute for Health and Welfare Finland
TLC	Training Logistical Contractor
ToR	Terms of Reference
ToT	Training of Trainers
UB	Ulaanbaatar
UNICEF	United Nations Children's Fund
URC	University Research Co.
VIA	Visual Inspection with Acetic Acid
WHO	World Health Organization
WHP	Workplace Health Promotion

1 Introduction

1.1 Background to the Health Project

The Millennium Challenge Corporation is a funding agency established by the United States Congress in 2004 to assist countries meeting specific criteria of good governance, economic freedom, and investments in their citizens. Since then, it has invested over USD 8.4 billion worldwide in programming aimed at reducing poverty through sustainable economic growth.

In October 2007, the Government of Mongolia and the Corporation signed an agreement (called a “compact”) under which a Millennium Challenge Account (MCA) would be established to invest USD 285 million in the country over a five-year period ending in 2013. This compact was ratified by the Parliament of Mongolia in the following year, and a legal entity called MCA-Mongolia was established to implement the compact¹.

As amended at the end of 2009, the compact consisted of six projects: (a) improving the land registration system in major urban areas (b) supporting sustainable management of rangelands in peri-urban areas (c) improving vocational training to help Mongolians qualify for market-oriented jobs (d) assisting the health system to address non-communicable diseases and injuries (e) increasing the adoption of energy-efficient and lower-emission appliances and homes in the “ger districts” (shantytowns) and support the development of renewable energy (f) constructing a 174 km road in the country’s north-south economic corridor.

1.2 This evaluation

This report on the evaluation of the MCA Health Project 2008-2013 in Mongolia aims to provide feedback to MCC and the Mongolian authorities on the activities and achievements of the project, with a view to support future decisions on health projects or programs, in particular in the field of Non Communicable Diseases (NCDs). It also aims to account for the activities, results and resources used.

This evaluation is carried out in accordance with the stipulations in article 3(a) of the (amended) compact: “MCA-Mongolia shall engage an independent evaluator to conduct an evaluation of the Program at the expiration or termination of the Program...The Final Evaluations shall, at a minimum (i) estimate quantitatively and in a statistically valid way, the causal relationship between the Compact Goals (to the extent possible), the Project Objectives and Outcomes; (ii) determine if and analyzes the reasons why the Compact Goals, project Objectives and Outcomes were or were not achieved; and (iii) assess the overlapping benefits of the Project.”

This ex-post evaluation has been carried out in the period August-November 2013, before, during and after closure of the Health Project, which officially came to an end on September 17, 2013. The evaluation team consisted of one international evaluator, contracted for 75 working days, of which 45 were spent in Mongolia, and one national assistant that was engaged for a total of 40 working days. One economist was consulted for the ERR chapter and one editor helped editing. A staff member of the Health Project acted as counterpart and first line of contact with MCA.

Terms of Reference

The Terms of Reference of this evaluation are a concrete translation of the requirements of the (amended) compact, see Annex 1 for an extract of the ToR. The scope of the evaluation is to provide a narrative of planned and realized activities, their rationale, the use of resources and an assessment

of the results and outcomes. Issues like the tendering and bidding processes, audit or verification of facts, contracts and finances are out of scope.

The evaluation has specifically tried to answer the following questions:

1. What was done and with what resources? What major changes in the project logic and the planning of activities occurred?
2. What are the results and achievements? This is assessed at population level, health system level and at project level, with comparison to targets. Where possible, the counter-factual, is assessed and discussed: what would have happened without the project?
3. In how far have the Health Project policies and activities in the field of NCDs been integrated in the health system?
4. What is the sustainability of the achievements of the Health Project? The condition precedent is included here: what conditions for continuity and sustainability, have been agreed with the Mongolian authorities, preceding the project; what is the current outlook on the condition precedent.

These questions form one of the frameworks for the evaluation, as is shown in Annex 2. The evaluation to a large extent is of a descriptive nature, mostly through questions 1 and 2, although it has also aimed to assess strategic and practical decisions taken, through questions 3 and 4. A specific point of attention has been the degree to which pro-poor policies have been part of the Health Project.

Approach to the evaluation

The Health Project itself has had a strong inbuilt M&E function, with surveys pre and post-project activities. Also, throughout the years, the Health Project has commissioned several evaluations of specific parts of the project that provided for conclusions and recommendations. These reports have been consulted and their findings have been used in this evaluation. As a consequence of the availability of many reports, data and (interim) evaluations, primary data collection in the sense of population or health services based data collection through surveys is not part of this evaluation, a minor exception are the Focus Groups Discussions.

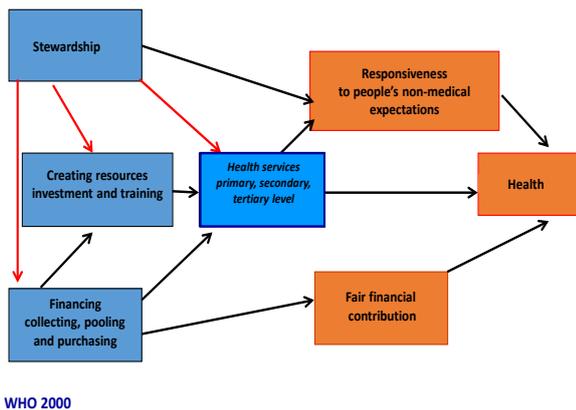
The evaluation consisted of the following activities:

- Desk research, identifying, sorting and reviewing the large amount of available English language documentation, that has been accumulated during the years of the project; where they have provided concrete input for this evaluation they are referenced throughout this report. Especially, conclusions and recommendations from recent reports of main actors and stakeholders in the project have been used, since they provide expert opinions.
- Individual interviews with a wide range of stakeholders who have been involved in the project over the years. Some of these were contacted by email or telephone. See Annex 3 for a list of the interlocutors.
- Visits to 2 aimags, Arkhangai and Uvs, and one UB district, Bayanzurkh, in September 2013, mainly for a reality check;
- Three Focus Group Discussions on particular questions. Main issues discussed and conclusions are listed in Annex 4.
- Request for feedback. An early draft version of this report received some feedback from MCC.
- Workshops on November 5, 6 and 12 in UB, with selected stakeholders, to provide opinions on preliminary conclusions of the evaluator. Main issues discussed and conclusions of these workshops are included in Annex 5.

- The draft version of this report of November 18 received comments from MCC. In a separate document responses are given to these comments. Where appropriate, the comments have led to adjustments or clarifications in the report.
- Report writing.

Figure 1 WHO framework

The WHO framework of health care functions



Throughout this report, reference will be made to the health system or parts of it. The health system is understood as the all organizations, people and actions whose primary intent is to promote, restore or maintain health. Service delivery, the actual diagnosing and treating patients and providing prevention and promotion, is just part of the entire system.

The evaluation makes use of the WHO model for description of health systems performance, see figure 1. This basic model helps to structure observations and comments.

Stewardship, sometimes more narrowly defined as governance, refers to the wide range of functions carried out by governments as they seek to achieve national health policy objectives. Not represented in this model is the collection and feedback loop of information, which is an intrinsic part of the health system at all levels.

Limitations of the evaluation

Accepting the ToR and approach of this evaluation, limitations have been mostly of a practical nature: the abundance of documentation available; the slow release of this documentation because it was necessary to unearth many documents from old files, since there was no systematic filing; identification of the status of the documents (some of the documents provided by PIU proved to be outdated versions); availability of many documents only in Mongolian; need to translate some key documentation in English and the resulting delay; unavailability of (ex) PIU staff and stakeholders in the country or internationally, partially linked to the closure of the project. The STEPS 2013 report was only available in mid-November. Further, it proved not to be possible to meet the Minister or Vice-Minister of Health, which deprived the evaluation of an important strategic discussion partner. The evaluation was not fully independent because it was oriented by and dependent upon Health Project and MCA staff. Occasionally, an interviewee felt constrained by presence of PIU staff. The request of the evaluator to interview a MCC staff member was refused on the grounds that "it was not necessary" (verbal communication). However, overall the limitation to the independence did not weigh heavy since there were many opportunities to interact independently from PIU or MCA staff and to complement and triangulate information and opinions.

Feed back to this report.

Draft and final versions of this report have been submitted to MCC and MCA-M, for comments and feedback. The feedback that was received mostly concerned requests for clarifications of the text, corrections of (minor) factual errors and adding information and context. For a large part these requests have been taken into account in this version of the evaluation report, which is then a

definite final version. A separate document lists the comments / feedback and the evaluator's point of view.

Structure of the report

Following Chapter 1, this introduction, Chapters 2 and 3 give general information on the health situation in the country and the Health Project.

Chapters 4 to 9 included describe specific strategies, concrete activities and their results. Chapter 10, on Results and Outcomes, takes a helicopter perspective of the Health Project and discusses its results from a program and system perspective; further it synthesizes its achievements and, through its respective sections, works towards final conclusions in Chapter 11.

Chapters 12 contain s a series of annexes. Annexes 11 to 14 contain comparative tables of surveys and studies done in 2010 and 2013.

Chapter 13 contains a list of references, in as far they have not yet been included in the different chapters.

For readability, many tables, boxes and figures are shown in the main text. Only those tables and figures that do not need to be seen immediately for understanding the main messages have been located in the Annexes.

2 Health in Mongolia

2.1 Introduction

This Chapter summarily describes the health status of the Mongolian population, health system and policies, as background to the choices and approaches of the MCA Health Project in the years before and during the planning of the Health Project. Also, it provides some data on the years during the Health Project implementation. As will be discussed later in this report, the actual implementation period was 2-3 years, 2011-2013, which was too short to impact on population data like morbidity, mortality or behavior. So, the data presented in this Chapter reflect the counterfactual.

This Chapter draws in particular on the 2013 *Mongolia Health System Review*² and the STEPS surveys of 2005³ and 2009⁴. The methodology for STEPS surveys is developed by the WHO and includes interviews, physical measurements like blood pressure and weight and biochemical measurements like blood glucose and cholesterol. Currently, it is the golden standard for assessment of NCD factors and risks.

Additional sources will be referred to specifically.

2.2 Mongolia, population and administrative divisions

Mongolia's population currently stands at nearly 2.900.000, see Table 1.

Table 1 Distribution of population over rural and urban areas.

Distribution of population	1980	1990	2000	2005	2010	2011	2012
Rural %	48,8	42,9	43,4	39,8	36,7		32,8
Rural numbers	800.000	900.000	1.030.000	1.020.000	1.020.000		943.000
Urban numbers	840.000	1.199.000	1.343.000	1.542.000	1.871.000		1.932.000
Total population	1.640.000	2.089.000	2.373.000	2.562.000	2.760.000		2.867.000

Source:

for data 1980-2005: *Mongolia Health System Review 2013 (ref 1)*;

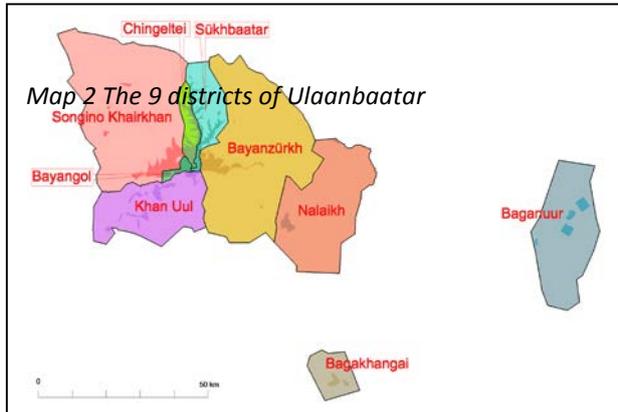
for data 2010 & 2012: *"Health Indicators 2012", Center for Health Development, 2013*

Map 1 Mongolia with 21 aimags



The country is divided in 21 provinces or aimags, see map 1. The population of the aimags varies between 14.000 and 116.000. Aimags are subdivided in soums, of which there are 329.

The capital, Ulaanbaatar counts 1.302.000 inhabitants and lodges approximately 2/3 of the urban population of the country. There are



2 other larger urban centers in aimags and a series of much smaller ones.

Ulaanbaatar counts 9 districts that have, in many respects, the same responsibilities and organisation as aimags. Their size varies from 8.000 to 295.000 inhabitants, with the 4.000 of Bagankhangai district as outlier. The districts are subdivided in khorooos, of which there are 152.

In this report, aimags and districts will often be mentioned together, because they are similar in many respects in terms of administration

and health organisation. The same goes for their subdivisions, respectively soums and khorooos.

2.3 Health status of the population.

Trends in the leading causes of disease in Mongolia clearly demonstrate the epidemiological transition the country has gone through. Infectious diseases are no longer in the leading 5 causes of death since 1990 and life expectancy has increased considerably over the last 20 year. Remarkable progress has been made over the past fifteen years: the country is on track to meet the Millennium Development Goal 4 and 5 targets for reductions in maternal mortality, under-5 mortality and infant mortality rates. Instead, lifestyle- and behavior-dependent diseases, such as circulatory system diseases, cancer and injuries, have become the leading causes of morbidity and mortality. Also occurrences of infectious diseases like HIV/AIDS, STI, TB and viral hepatitis and zoonotic diseases are on the increase. Although mortality rate due to infectious diseases has dramatically decreased, it continues to be a challenging public health issue as incidence rate of total infectious diseases has not been contained yet.

However, diseases of the circulatory system, cancer and injury & other external causes remain the three most important causes of death, see Tables 2 and 3. Internationally, Mongolia stands out in a negative manner, see Table 4. Important gender and rural/urban differences in morbidity and mortality are observed. For the age group of 45-64, mortality rates for men are 3.8, 1.7 and 1.5 higher in male than in females, for ischemic heart disease, stroke and arterial hypertension. As of 2010, the leading causes of morbidity per 10 000 population were diseases of the respiratory (1027.7), digestive (900.5), genitourinary (756.3) and circulatory (679.4) systems, and injuries and poisoning (416.9). The rates have been increasing steadily, resulting in one and a half- to twofold increase in 2009, compared to 2000. When the incidence of the five leading causes of population morbidity are stratified by place of residence, overall morbidity for respiratory, digestive and genitourinary diseases is higher in rural settings, while the incidence rates for injuries and cardiovascular diseases are higher in urban areas (MOH, 2010). In the last few years, an increasing number of deaths have been caused by suicide, homicide and traffic accidents. The suicide rate is four times higher among men than in women. The homicide rate is 4.4 times higher in men, and men are 3.8 times more likely than women to die as a result of traffic accidents. As Table 2 shows, high mortality rates occur among the population of working age due to NCDs and injuries, which have a negative impact on the productivity of the labour force.

Table 2 Main causes of death, per 10 000 population, selected years

Causes of death (ICD 10 classification)	2000	2002	2004	2006	2008	2010
Diseases of the circulatory system	20.37	22.30	23.06	22.88	20.54	23.60
Cancer	12.73	13.02	12.16	11.03	11.80	13.02
Injury, poisoning and certain other consequences of external causes	7.64	8.01	10.34	10.95	9.33	10.11
Diseases of the digestive system	4.68	4.77	4.82	5.67	5.27	5.30
Diseases of the respiratory system	5.77	4.43	3.03	2.37	2.40	2.72
Certain infectious and parasitic diseases	2.11	1.70	1.50	1.61	1.27	2.36
Certain conditions originating in the perinatal period	1.85	1.93	1.87	1.84	2.42	1.34
Diseases of the genitourinary system	1.48	1.39	1.35	1.26	1.07	1.15
Diseases of the nervous system and sense organs	1.09	1.06	0.88	0.94	0.95	1.03
Congenital malformations, deformations and chromosomal abnormalities	0.38	0.58	0.55	0.62	0.83	0.78
Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	0.64	0.38	0.39	0.40	0.12	0.44
Endocrine, nutritional and metabolic diseases	0.16	0.24	0.26	0.39	0.36	0.40
Mental and behavioral disorders	0.14	0.29	0.10	0.12	0.12	0.10
Pregnancy, childbirth and the puerperium	0.18	0.17	0.12	0.08	0.07	0.09
Diseases of blood and blood forming organs and certain disorders involving the immune mechanisms	0.33	0.15	0.09	0.07	0.09	0.07
Diseases of the musculoskeletal system and connective tissues	0.21	0.13	0.16	0.01	0.14	0.07
Diseases of the skin and subcutaneous tissues	0.11	0.14	0.04	0.02	0.04	0.00

Source: Health Indicators 2000, 2002, 2004, 2006, 2008 and 2010, Center for Health Development.

Table 3 2012 Health Indicators

	Total morbidity	Diseases of circulatory system	Neoplasms	Injuries, poisoning and other external causes	Diseases of digestive system	Diseases of system
Sex						
Males	75.79	25.02	14.74	18.85	6.19	2.78
Females	44.30	17.04	10.67	4.07	4.50	1.75
Age group						
Under 20 years old	17.34	0.12	0.57	3.94	0.47	2.63
20-44	28.07	2.61	2.68	14.05	2.86	0.44
45-65	127.41	54.40	35.17	21.29	12.80	2.77
Over 65 years old	530.86	280.53	143.80	9.95	47.67	17.02
Residency						
Urban	59.65	17.50	12.63	13.87	5.51	2.13
Rural	59.55	23.81	12.57	9.03	5.16	2.36
Regions						
Western	57.79	23.90	14.52	6.59	4.11	2.78
Khangai	62.57	27.31	12.14	6.69	4.43	2.10
Central	56.83	20.46	12.65	9.97	5.43	1.93
Eastern	64.60	20.33	13.74	10.86	8.50	3.06
Country average	59.59	20.91	12.60	11.25	5.32	2.25

Source: Health Indicators 2012, Center for Health Development, 2013

Table 4 Probability of dying between 15 and 60 years per 1000 population, data for latest year available

Probability of dying between 15 and 60 years per 1000 population		
	Male	Female
Russia	351	131
Mongolia	309	147
Romania	209	84
Thailand	207	102
Vietnam	128	87
Australia	80	46

Source: WHO database, accessed October 21, 2013

According to the 2009 STEPS survey, one in five (26.4%) Mongolian adults and one in two (53.8%) adults of 45-64 years of age have three or more common modifiable NCD risk factors. One quarter of men aged 15-44 have three or more risk factors, twice those affecting women of the same age (26.0% vs. 12.4%).

The survey results also showed that in Mongolia 27.6% of the population smoke (48.0% of men and 6.9% of women). Nearly half the population (42.9%) was exposed to second-hand smoking at home. Current drinking or consumption of alcohol in the past 30 days was reported by 38.6% of respondents. The prevalence of binge drinking was 39.7% in men and 15.1% in women. Results of the comparative study STEPS 2005 vs. 2009 indicated that the prevalence of smoking in the adult

population has stayed about the same, although, women now start smoking at a younger age. With regards to alcohol consumption, the percentage of respondents drinking alcohol in the past 12 months has decreased. The same survey found that 39.8% of the population was overweight and 12.5% was obese. Prevalence of overweight and obesity tended to increase with age, and the proportion of overweight or obese women in all age groups was higher than for men. During 2005-2009, the mean body mass index of the adult population increased as well as the prevalence of obesity (by 2.7%), and overweight (by 8.3%).

Salt deserves a specific mention here. In the whole country but especially in the western aimags, salt consumption is high, but only incidental data were available at the start of the Health Project. As contributor to hypertension and CVD's it is a major risk factor that was to get attention in the project.

In combination, these data point to an increase of NCDs and their risk factors. This was the reason for the MCA Health Project to focus on NCDIs.

The next section reviews the health system and its capacity to address the NCDs.

2.4 The Health System in Mongolia.

The description in this section is limited to just a few features of the health system, in as far as they are relevant for a good understanding of this report. The delivery of health services knows many challenges, including the country's extremely low population density over a large territory. An additional challenge is the growing urban population, the numbers of which have been shown above in Table 1. Investments in the Health System have been growing constantly, as Table 5 shows.

Table 5 Total expenditure on health / capita at Purchasing Power Parity (NCU per USD)

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
77	91	94	104	153	163	151	151	186	225	220	221	244	250

Source: WHO database, accessed October 21, 2013

Traditionally, Mongolia had a public health system with a national health service. Previously, the health system contained three levels of service delivery (primary, secondary and tertiary) but did not detail the types of health facilities at each level.

After previous reforms, shifting the Semashko oriented health system to a health insurance based system with a stronger focus on primary care, the new Health Act of 2011 is the second round of structural reforms since independence. The Health Act reorganized health care organizations in terms of function and structure in different levels of the system and laid out in detail the different types of facilities to be available at each level, and their designation.

For instance, Family Group Practices (FGP's) in the districts and soum hospitals restructured into family/soum health centers, which will focus more on public health intervention rather than just on curative services. The health centers are private health facilities and deliver government funded public health services through contracts with the State. In addition, there is a rapidly growing and poorly regulated private health sector.²

In Ulaanbaatar, district outpatient clinics and hospitals were reorganized into district public health centers and district general hospitals and its medical service expanded from the existing two disciplines (internal and neurological medical services) to seven major medical services including internal medicine, paediatrics, surgery, obstetrics and gynaecology, neurology, infectious diseases and dental care. Moreover, the new Health act also brought changes in clinical governance; governing board of the state central hospitals, specialized centers and Regional Diagnostic and Treatment Centers are newly established to provide elements of health care organizational autonomy in decision-making (ref 1).

There are some significant differences between the provision of primary care services in urban and rural areas in terms of the setting, nature of providers, functions and funding. However, country-wide, primary care services are included in the package of essential services designed to address priority health problems.

Urban areas

In Ulaanbaatar, primary health care (PHC) services are mainly provided by family health centers; three village health centers also serve the outlying suburban areas. The secondary level of care is delivered by district general hospitals and public health centers in Ulaanbaatar.

A total of 16 specialized centers and tertiary-level central hospitals belong to the MOH in Ulaanbaatar, including the National First Central Hospital (Hospital 1), National Third Central Hospital (Hospital 3), and the National Cancer Center of Mongolia (NCC). These three hospitals will play a role in the Health Project as will be described in later chapters.

In their short history, family health centers in urban areas have achieved a lot: the concept of family medicine has been introduced, family doctors have been trained, people's attitudes towards family medicine have been changed, and capitation payment has been successfully piloted. However, there is still plenty of room for the further strengthening of primary care provision in urban areas, including strengthening postgraduate and in service training for family doctors and nurses, improving the quality of services, reducing the high level of self-referrals, sustaining continuity of care, and maintaining good management of chronic diseases. However, their gate keeping is weak. The preponderance of oversized hospitals in the capital city and the poor capacity of family health centers are the most influential factors in the comparatively high levels of self-referral.

Rural areas

Primary care is provided through the soum health centers, which consist of soum doctors, nurses, midwives, feldshers and support staff. All soum health centers are public health facilities owned by local governments. A peculiarity of rural PHC in Mongolia is that the soum health centers provide not only outpatient services, but also inpatient services for the rural population. This is mostly because of the geographic and demographic features of Mongolia where the rural population is sparsely distributed over a huge area and they need some inpatient services before travelling long distances to get secondary inpatient care in aimag centers. Most of the soum health centers have 5 to 15 beds and provide antenatal and postnatal care, minor surgery, normal deliveries, referral to an aimag hospital, and prevention activities, such as immunization, provision of health education, etc. Most soum health centers have simple laboratories providing rapid blood and urine tests. Attached to the relevant soum health center is a network of 881 bagh feldsher posts which provide primary care services in more remote areas. Where a rural hospital serves more than one soum, it is called an intersoum hospital. As of 2011, there are 37 intersoum hospitals and 274 soum health centers providing primary care services to the rural population

Most surveys and reviews revealed that the quality of services is a major constraint in the Mongolian health sector. The delivery of services shows a number of weaknesses, in spite of progress made over the last decade. Since the Health Project invested massively in the health system, at the level of stewardship, resources and service delivery, it is relevant to mention a number of issues, as highlighted by the documentation reviewed and by interlocutors during this evaluation. Later in this report, this helps to assess the effectiveness of the investments of the Health Project.

The following are considered weaknesses of the Health system (ref 1):

Stewardship level:

- Weak accountability & transparency, as well as corruption, are evident in Mongolia including the health sector.

At the level of human resources

- The social security of the health workforce is weak. Low wages, harsh working conditions and a lack of proper incentive packages negatively affect morale and productivity.
- Mobility of health workers is high, with strong preference for work in an urban setting of a large part of the work force. This leads to shortage of staff in quite some rural areas.
- Training of specialists is short and relatively ineffective, leading to under-qualified and inexperienced specialists. This may help to explain the hospitalization issue, see below.

At the level of financial resources

- Primary care is for free, which is a strong element of the health system, but out-of-pocket payments are increasing and may be as high as 40 % of the share of total health expenditure, which is obviously a financial barrier for many citizens.
- Social Health Insurance (SHI) was implemented from 1994 onwards and has become an important source of health financing. Population coverage has reached 98.6% in 2011 by a one-time subsidy from mining revenues but then fell back to 82,6 % in 2012 when students and herders were not subsidized anymore by the state. SHI faces many institutional and governance challenges which have prevented it from acting as a strong purchaser.

At the level of service delivery

- Most health system studies reveal that the health system suffers from notable inefficiencies, related to both excess capacity and overuse of services. Three types of inefficiencies in the utilization of health care have been consistently identified in Mongolia: (i) medically unnecessary hospitalization, (ii) hospitalization at a higher-level hospital than is medically necessary, and (iii) longer-than-medically-necessary hospital stays.
- An ineffective primary health care system, perverse incentives to patients and providers, and a weak referral system are evident in the provision of health care. A recent publication points, for example, to the high rate of unnecessary injections in the Mongolian health system.⁵

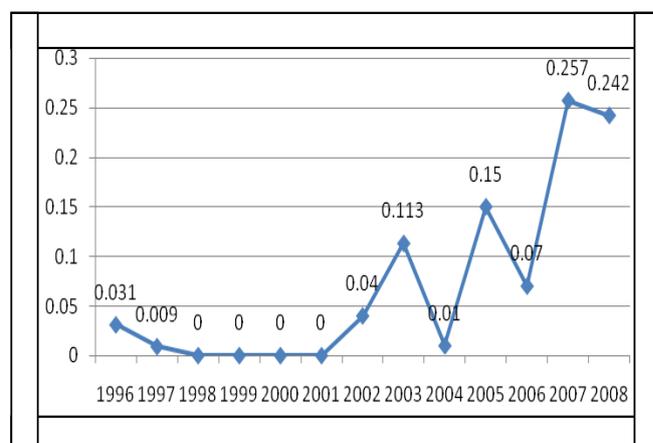
At the level of information and feedback:

- Data collection is intensive but validity of data is questionable. The variations in the values in graph 2.4 cannot be explained by real variations but by variation in data definitions, collection, registration and processing. Obviously, not all statistics show such an evident weakness.

One example of weak performance of the health system in spite of progress is the way cervical cancer is addressed. Cervical cancer ranks as fifth cause of death in the general population and second in women. The incidence rate of cervical cancer has increased during 2002-2008 as well as the mortality rate. Early diagnosis of cervical cancer in stages I and II has improved from 26% in 2003 to 38.6% in 2008. Despite of this, 62% cases are still diagnosed in advanced, III and IV stages. Indeed, according to the 2009 STEPS survey, cervical cancer screening coverage was very low with only 5.2% of female respondents reporting visual inspection with acetic acid (VIA) and 11.4% Pap smear testing. Breast cancer screening was also insufficient with one in three surveyed women reporting breast self-examination, and only 3.2% and 1.7% undergoing Clinical Breast Examination and mammography, respectively.

In 2005, the GoM approved the National Programme on Prevention and Control of Non Communicable Diseases. It counts 81 separate actions. The Sub-programme on Cancer Prevention and Control 2008-2013 was approved in 2008. Both programs are strongly oriented towards primary care. When a Rapid Needs Assessment of the NCDI disease control strategies was done, at the start of the Health Project, the following specific findings emerged:

Figure 2 Diabetes mortality in Mongolia, per 10,000 population - Source: Health Indicators, Department of Health, Implementing Agency of the Government of Mongolia (later to change in CHD)



nurses) included insufficient information regarding the health promotion, NCDI prevention and control.

- The health professionals had limited knowledge and skills on health promotion and NCDI prevention and control, including counseling skills.
- Screening of AH, DM, CC, BC was conducted by the specialists from the secondary health care and only as opportunistic.
- The primary and secondary health care facilities were lacking the equipment and supply for the implementation of population based screening activities for AH, DM, CC, and BC.

Since many years Mongolia has welcomed international support to help develop its health system. The GoM currently implements the fourth ADB development project, for strengthening the hospital sector in Ulaanbaatar and improving drug safety nationwide. The fifth development project addresses improvement of patients and health workers safety in hospitals in Mongolia with financial support of the Japanese Development Assistance. Further, the Luxemburg Development Cooperation (Luxdev) assists with development of e-health and UNICEF and UNFPA do have assistance programs targeting several aimags and districts of UB, focusing on Mother and Child Health and adolescents, respectively. World Vision lends support to TB and HIV/AIDS activities in specific aimags and districts as well. Many more small-scale initiatives are ongoing. The MOH has established a single steering committee overseeing all projects and programs.

- The National Program on NCD prevention and control and Sub-program on cancer, developed by the MoH and approved in 2008, was comprehensive and well designed, but lack the implementation mechanisms.

- Documents such as clinical guidelines, clinical standards, procedure protocols on the main NCDI (hypertension, diabetes type II, breast and cervical cancer, palliative care, basic life support, stroke, Myocardial Infarction) were not in place or needed extensive revision and adjustment to the best practice.

- The curriculum for undergraduate students (GP and

3 Health Project

3.1 Introduction

Non-Communicable Diseases and Injuries

The choice for NCDIs as a focus for this project was based on the growing awareness in the middle of the years 2000 among Mongolian authorities and other stakeholders, like WHO, of the importance of NCDIs. The previous chapter described some elements of the health status and of the health system and its weaknesses, in relation to NCDs. The National Program on Prevention and Control of Non Communicable Diseases was waiting for implementation. On advice of WHO, MCC and the GoM decided to start a project that would support this program. While initially the ideas were to establish regional diagnostic centers, further analysis, including an ERR calculation of such centers, led to a strategic shift from a hospital based approach to a population based approach. This would include emphasis on prevention and early diagnosis/treatment and limit the amount of hospital based investments. Although MCC does fund and support health or health care programs in several other countries, the Mongolian Health Project is MCC's first project focusing on NCDs. The Compact describes the objectives, activities and budget.

From the first contacts between MCC and the GoM in 2004, it took around 4 years to discuss and pre-plan the MCA Mongolia. A pre-compact MCA Mongolia working group was established and a specific one for the field of health under the lead of the MoH. The latter working group developed the proposals and corresponding budgets, in close collaboration with MCC and WHO acting as adviser. This resulted in the plans that were finally to be included in the Compact, was signed on October 22, 2007.

Changing Budget

The Health project was allocated initially 17 million USD and ultimately 42 million USD, or 12 % of the MCA-M budget. This major change resulted from the cancellation of one of the other MCA-M projects and the distribution over the other projects of the budget that fell free.

Initially, the Health Project aimed at six aimags and three districts of UB and was conceived as a pilot project that was going to build experience and set good practices for the rest of the country. When the budget was more than doubled, during the preparation phase, the ambition enlarged from a pilot project to a project that covered the whole country. Also, entirely new components were added: Stroke and AMI Units in Hospital One and Three on special request of the MoH, as well as a pilot HPV vaccination campaign that was already part of the NCDI National Program. This has led to the project objectives and scope as described below. At the beginning of 2013, the Health Project budget was increased by 10%; this amount became available through re-distribution of funds from other MCA – M projects. These USD 3 million were used for covering additional expenses for the “Stroke and AMI” component, see below. Table 6 shows the timeline of the main financial changes of the Health Project.

Table 6 Compact with Mongolia (all amounts in USD)

2007 2 nd half	2008 1 st half	2008 2 nd half	2009 1 st half	2009 2 nd half	2010 1 st half	2012 2 nd half	2013 1 st half	2013 2 nd half
Budget Health Project				Budget Health Project			Budget Health Project	Realisation
17 MILLION				39.1 MILLION			42 MILLION	40,980 MILLION

3.2 Project objectives, logic and scope

Starting point: the amended Compact

After the redistribution of budget over the MCA projects in 2009, an amended Compact was signed in January 2010. The Project objectives were formulated as follows: **Health Project Objective:** Reduce the risk and incidence of premature death and disability from NCDs; **Outcomes: (1)** Improved National and Local response to NCD, (2) Increased understanding of NCDI prevention, and (3) Increased availability of sound NCDI services.

Table 7 shows the objective indicators as formulated by the amended Compact. These will be commented upon in Chapter 10.

Table 7 Health Project objectives & indicators as given by the amended Compact

Indicators: Health Project				
Objective-level result	Objective Indicator	Definition of Indicator	Baseline	Year 5 Target
Reduced risk and incidence of premature death and disability from NCDs	Increased productive years of workforce	Disability adjusted life years (DALY) related to NCD's.	TBD	TBD
	Increased productive years of workforce	Increased life expectancy, mean at birth	67.2	67.4
	Mortality due to traffic road injuries reduced	Number of road deaths in UB	562	495
	Treatment of diabetes increased	Percent of cases of diabetes treated by medication or life-style advice (e.g. healthy diet)	TBD	TBD
	Treatment of hypertension increased	Percent of cases of hypertension treated by medication or life-style advice (e.g. healthy diet)	TBD	TBD

Beneficiaries

In order to show the population oriented approach of the Health Project, below follows the description of the beneficiaries as given by the amended Compact.

“The Health Project targets all 21 *aimags* and approximately 95 percent of the Mongolian adult population for community-level communications for behavioral change, early detection and disease management activities. This will lead to extended productive years and productivity of the labor force and decreased health expenditures by households on NCDIs.

Specifically, the beneficiaries are expected to include approximately the 43 to 45 percent of the adult population aged 35-59 nationwide who has developed or has multiple risk factors for developing cardiovascular diseases, cerebra-vascular diseases or diabetes. Women represent 45 percent of this high risk population. The Project has an additional focus on women’s health – aiming to reduce deaths among women nationwide from cervical and breast cancers through early detection and appropriate follow-up care and assessment of the feasibility of a national HPV vaccine program. During the Compact, ten percent of girls aged 9-14 will be targeted over two years for outreach by the HPV vaccine to determine vaccine acceptability and program costs for delivery to school-aged girls. Cervical cancers in the vaccinated group are projected to be reduced by 60-70 percent during the lifetime of these girls. Presuming the program results in a national HPV immunization policy, future national incidence of cervical cancer will be greatly reduced as the vaccinated girls age. Other beneficiaries include youth who will benefit from changes in school curriculum and mass education campaigns targeted at reduced smoking, reduced alcohol usage, and improved diet and physical activity among school-aged children, and healthcare professionals who will receive specially-designed NCDI training that will improve their capacity to respond to client wellness needs.”

Scope

The Health Project itself was not going to provide health services but would work through the national structures and systems on strengthening of the capacity of the health system, not only at the level of service delivery but also at the level of stewardship and resource input; to strengthen delivery of health services to the population.

Four groups of activities in the amended Compact were going to be used. Annex 6 contains the full list. In summary:

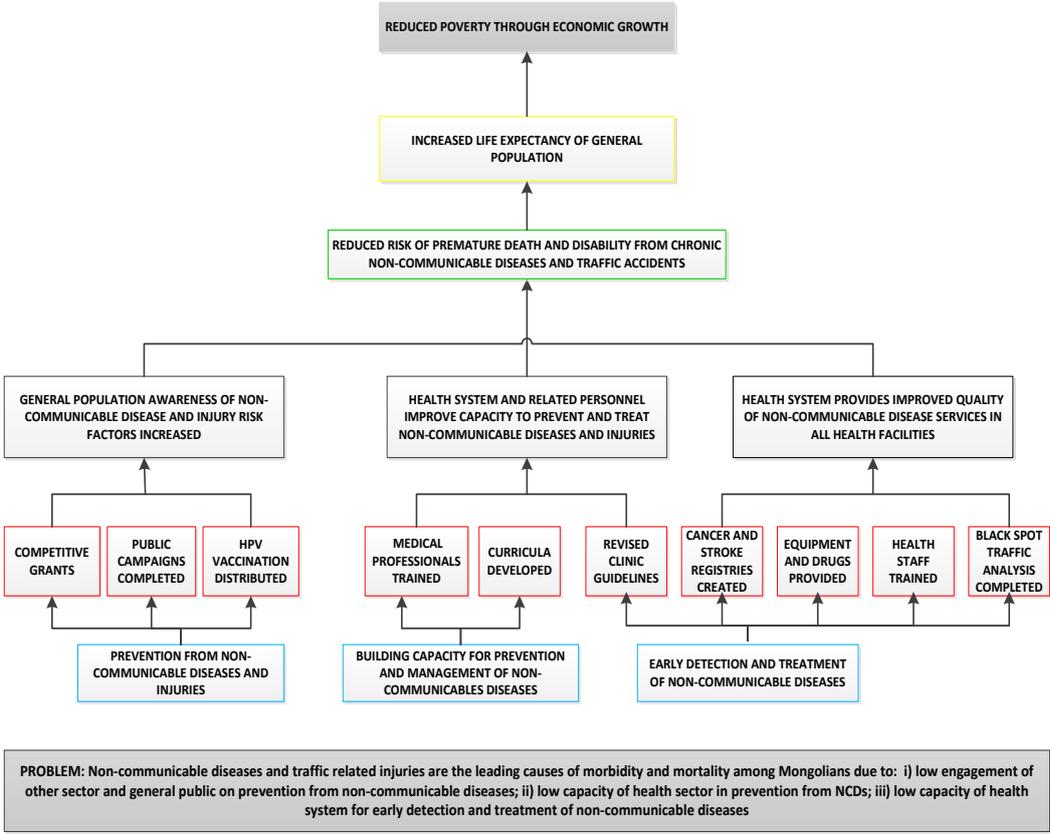
- (a) NCDI Capacity Building Activity.
- (b) NCDI Prevention Activity...to reduce factors for NCDIs through such behavior change communications as public awareness campaigns and education outreach.
- (c) NCDI Early Detection Activity...to mobilize client demand for screening, introduce modern cost effective procedures, and provide key equipment.
- (d) NCDI Management Activity. MCC...to improve protocols and update training for medical professionals.

Structuring and funding the Health Project

Throughout the Health Project, attempts have been made to structure the initial objectives, four sets of activities and outcomes, as given by the amended Compact, in a coherent (logical) framework.

Figure 3 shows the framework of objectives, strategies and activities of the project as it has evolved over time and was finally adopted in May 2013 as an adequate summary of the project logic.

Figure 3 Project logic



Over the years, discussion time in the PIU and with MCA was spent on creating this framework, trying to piece together the different elements and keep it logical. A few key issues kept returning. In the first place, in the amended Compact a distinction was made between capacity building and service delivery support, these were considered as two distinct strategies. However, this is somewhat artificial because they actually refer to the same type of contribution or results from the Health Project: a strengthened health system. It explains why training is mentioned twice: medical professionals trained and health staff trained both, which is a largely overlapping activity. Health staff includes managerial staff and not just medical professionals.

Further, HPV vaccination was ranged under the strategy to create awareness of the population but it is as much part of capacity strengthening, as a pilot to test the campaign strategy, capacity and cold chain. The other new component, development of Stroke and AMI Units, also can be considered both as capacity building and as strengthening service delivery. Black Spot traffic analysis was ranged under health system although it has nothing to do with the health system. Several RTI components are not mentioned in this framework. Training of teachers and other non- health system professionals is not mentioned either.

All in all, this framework of the project logic was not entirely complete and consistent because it tried to frame the four different activity groups in three overall strategies. For internal functioning this was not so much of a problem but for external communication and accountability it was a slight hindrance.

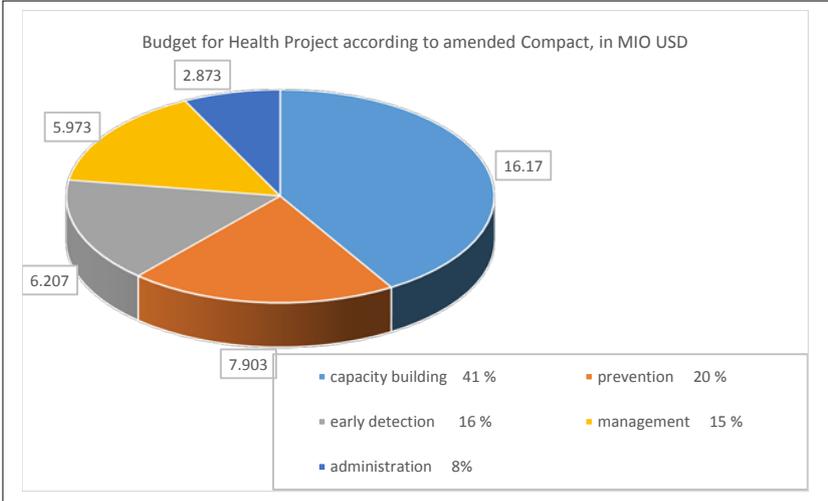
The Road and Traffic Injuries component is foreign to the health system, in the sense that the interventions require an entirely different set of organizations and activities. In line with the WHO approach, it was included in the project because accidents and injuries are an integral part of the

complex of interactions, which is painfully felt in Mongolia. It was naturally included in the Health Project without much discussion. Capacity building of the system and development of awareness at population level are key approaches. Contrary to the rest of the project, direct intervention also was a component: the “treatment” of black spots, see Chapter 8.

The MCA Environment Project, addressing air pollution in UB through the introduction of an alternative type of household stoves, works in synergy with the MCA Health Project, because it helps to reduce chronic obstructive pulmonary disease and cancer. In terms of activities, there was no concrete collaboration.

The amended Compact prescribed the budget and the subdivision over the four major components, as shown in Figure 4. *Management* refers to disease management or case management and administration to project administration.

Figure 4 Health Project budget according to amended compact



According to the amended Compact, “Stroke and AMI Units” were planned in Hospital One and Three, both in UB. Rather late during project implementation, it became clear that the costs of these Units for two hospitals, so four Units, were prohibitive. After ample discussion, it was decided to drop the Units in one hospital and the choice was made to install the remaining Units in Hospital Three, while reducing their size

from 20 to 10 beds each. This will be more detailed in the Chapter on Stroke and AMI.

Even so, the costs of two Units for one Hospital proved to be so high that other components of the project had to be reduced or cancelled. These changes took place at the end of 2012 and included the cancellation of the Second National NCDI Conference, a regional training, the last two communication campaigns, and the fifth grants round.

Then, in March 2013, there was a redistribution of funds between the MCA projects, and again additional funds were available for the Health Project, USD three million. This helped to pay the shortfall for the Stroke and AMI Units and to bring their size back to 20 beds each and to full equipment.

3.3 Project Administration and Implementation Structure; M&E

Project Implementation Unit

As is the case with other MCA projects, for the implementation of the Health Project a Project Implementation Unit (PIU) was created, as part of and under supervision of MCA. The function of the PIU was to plan and implement the Health Project’s activities through national and international experts and organizations. The Compact described under what (legal) conditions MCA and its implementation units would operate. MCA appointed the PIU Project Director who selected a staff of national experts, mostly medical doctors. Their task was to liaise with the MoH and national and international organizations and experts, in order to design and implement in detail the activities. Contrary to MCA custom, the PIU Director installed a Financial and Contracts officer and later a second Contracts Officer, since the medical staff in the PIU were not used to prepare, manage and monitor contracts and all the financial corollaries.

While most PIU’s do have a planning and documentation officer, this function has not been created in the Health Project PIU. Indeed, one result was an absence of coherent and structured archiving of Health Project documents. When the extension added a large workload to the PIU, the structure was not changed but staff was added. The organigram of the PIU, attached in Annex 7, shows that the three objectives of the Health Project were carried out by three teams, each with its own team leader. For each major activity, a working group was established with the MoH, involving national and international experts, according to needs. The organigram also shows the administrative support functions and the M&E function of the PIU.

The contacts with the general working group of the MoH, later developed in a Board within the MoH, were maintained by the PIU Director.

Institutional Contractor

In order to handle the wide range of activities, stakeholders and experts, additional expertise and manpower, PIU intended to work with an Institutional Contractor (IC). After a tendering procedure, EPOS Health Management GmbH from Germany was contracted. EPOS had formed a consortium with the Institute for Health and Welfare, Finland (THL) and worked with it throughout the Health Project, using several of its experts and its network. The contract between the IC and MCA-Mongolia was signed on June 8, 2009 and its official start was on June 22, 2009. Further, the contract with the IC was adjusted several times over the years: October 2009, July 2010 and February 2011. The most important change was the so-called variation 2 in July 2010 when the Health Project budget more than doubled and the contract volume of the IC increased from USD 6.3 million to 10.1 million. Table 8 shows the IC budget as it was finally contracted for, after several variations to the contract.

Table 8 Final IC budget

2007 2 nd half	2008 1 st half	2008 2 nd half	2009 1 st half	2009 2 nd half	2010 1 st half	2010 2 nd half	2011 1 st half	2011 2 nd half	2012 1 st half	2012 2 nd half	2013 1 st half	2013 2 nd half
Budget Health Project 17 million			IC budget 6.3 million	Budget Health Project 39.1 million		IC budget 10.1 million					Budget Health Project 42 million	Realisation 40,980 million
			↑ IC contract			↑ variation 2 of IC contract						↑ end of IC contract

Not only was the now the whole country targeted instead of a number of pilot aimags/districts, also the IC was asked to do additional tasks.

The IC was tasked to assist with all the Health Project components except for two: the IC was not involved in the HPV immunization campaign and it was requested to support the Stroke and AMI Units, but it did not carry responsibility for it. All in all, the IC has played a major role in the project.

For the component of Stroke and AMI Units, the World Health Organization country office was contracted as Institutional Contractor in July 2010.

Further in this report, “IC” refers to the Institutional Contractor EPOS/THL, unless indicated otherwise.

Getting started

PIU and the IC over the years have been working closely together for planning and implementation of all activities, for the purpose they established offices at walking distance from each other. Immediately after the contract with the IC was signed, an orientation workshop with the participation of MCC, MCA-Mongolia, the IC, WHO, MoH, PHI, Traffic Police and other stakeholders was organized in UB. The IC was introduced to project counterparts. The project priorities and objectives, roles and responsibilities of PIU, IC and other players were discussed. Another workshop was organized one month later by EPOS in Germany to review the early plans and mobilize future experts.

During the first preparations, the Rapid Needs Assessment, mentioned in Chapter 2.2, was done and on the basis of the incoming data the project work plan was developed and discussed in workshops with a large number of stakeholders and approved by the MoH in July 2010. The MoH established a general working group for the coordination of the Health Project activities with the PIU and IC and with other stakeholders and donors.

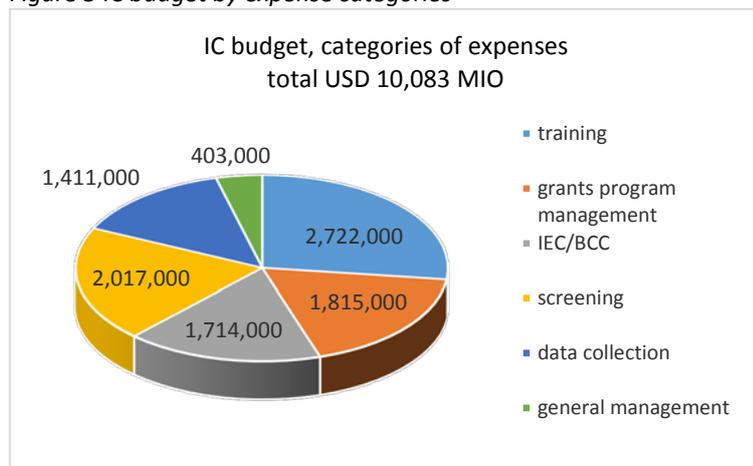
A work plan was established that was adjusted from the original activity areas as described in the amended Compact and ToR of the IC, see Table 9.

Table 9 Work plan activity areas

Amended compact	Activity Areas according to the Overall Work plan:
Activity 1: NCDI Capacity Building	(A) Implementation of Surveys, Monitoring and Evaluation
Activity 2: NCDI Prevention: Reduce Risk Factors	(B) Training and Capacity Building
Activity 3: NCDI Early Detection	(C) Grants and Research
Activity 4: NCDI Case Management	(D) IEC, BCC and Outreach
	(E) NCDI Best Practices

A budget was established for the different components of the work, indicating the level of effort for each component, see Figure 5. The budget for the grants themselves was managed by MCA and is not included in this figure.

Figure 5 IC budget by expense categories



The following phasing of the Health Project was planned:

- Inception phase, 6 months, from July-December 2009. This includes the Rapid Needs Assessment and development of work plan
- Preparation phase 12 months, the year 2010
- Implementation phase, the years 2011 and 2012
- Assessment phase, the first 8 ½ months of 2013

It is important to realize that the implementation phase for the activities for which the IC was contracted would cover a period of 2 years. Implementation refers to project implementation, for example, training of professionals and equipment/supply of health services. This means that the results of this implementation, for example trained professionals, would start to operate from that period on. This issue will come back in Chapter 10, results and outcomes.

Through the years

Once the work plan and general working group established, five technical sub-working groups were established by MoH, PIU and IC, on: 1) Training and capacity building, 2) Surveys and M&E; 3) IEC/BCC and health education, 4) Best Practices and Quality Assurance, and 5) Road Traffic Injury. The technical working groups included representatives from the public health sector as well as from the primary, secondary and tertiary health care facilities and worked on the development of project activities. Throughout the Health Project, the WHO was closely involved for advice and technical support. It advised on the identification and selection of many of the experts involved. Further workshops with stakeholders in the country were held later in 2010 to keep the momentum and maintain close relations with all stakeholders. Bags, soums, aimags, khoros and districts all were represented in these meetings and workshops.

Quarterly meetings were conducted by the general MoH working group and monthly meetings by the technical working groups. All plans and activities required official approval from the MoH. The documents were often discussed in a Terminology Committee Meeting of the HSUM, and agreed on the terminology in Mongolian before the official approval.

Regular management and technical meetings were also conducted by PIU with the IC and other contractors. In 2009-2011, regular meetings were conducted with the general MCA-Mongolia stakeholder committee members, PIU and the IC. The project progress and pending issues were discussed in the meetings. Since 2012, the meetings were conducted between the PIU and the IC only.

Regular consortium meetings of the IC partners, EPOS and the Finnish partner THL, were also held during the project implementation. The project progress, planning of activities for the remaining years, development of the project reports, as well as pending issues were discussed in the meetings.

Over the years, 157 IC experts contributed to the project activities during the project life: 4 key international experts permanently residing in Mongolia or frequently visiting; 21 national full time experts; 93 national short term and 39 international experts. The IC project team was led by a team leader, public health expert based in Mongolia and by the Project Director, based at EPOS HQ in Germany. The project was supported by EPOS and THL backstopping teams.

The Health Project contracted a large number of Mongolian agencies, institutes and companies for specific tasks. They all will be mentioned in the corresponding chapters. A number of suppliers of equipment and services was contracted directly by the PIU, through Crown Agents as procurement service for MCA. These will be mentioned in the respective chapters as well.

Over time, the planning of activities was adjusted constantly. The initially planned “assessment” period of 8 ½ months at the end of the project was actually also spent on implementation activities: IEC/BCC activities, refresher trainings, the grant program, the RTI component and the Stroke and AMI component.

Monitoring & Evaluation

MCA has an M&E function included in its central office in Mongolia, serving all the MCA projects. Exceptionally, the Health Project recruited its own M&E officer, in view of the large and complex set up of the Health Project and the relative inexperience of MCC and MCA with NCDs.

The Health Project had a strong focus on evidence based working, trying also to strengthen the culture of evidence based working in the country. For this reason, many surveys were done at the level of the population and of (health) services. The M&E officer delegated to the IC the commissioning of many of these surveys and studies. Some of them were pre- and post- project surveys to establish baselines and later to assess changes. Others are studies or surveys to assess needs and plan activities, see Table 10.

Table 10 Surveys and studies conducted by the Health Project

Nr.	Title of study	Years	Surv eys	Survey implementation
1	Health Seeking Behavior Study regarding Breast Cancer Screening	2010	1	School of Public Health, Health Sciences University of Mongolia
2	Health Seeking Behavior Study regarding Cervical Cancer Screening	2010	1	School of Public Health, Health Sciences University of Mongolia
3	Knowledge, attitudes and practices related to non-communicable diseases and injuries among School Teachers in Mongolia	2011 2013	2	HSUM 2010 National Center for Public Health 2013
4	Knowledge, attitudes and practices related to non-communicable diseases among the Mongolian general population	2010 2013	2	MoH 2010 HSUM 2013

5	Knowledge, attitudes and practices of pedestrians, drivers and traffic policemen on traffic safety related issues	2010 2013	2	IC / PHI 2010 SICA via THE IC 2013
6	Facility-Based Impact Study	2010 2013	2	PHI 2011 IC 2013
7	Road Traffic Injury Study	2010	1	IC / Danya
8	Black Spot Study and Black Spot Interventions	2010	1	National Center for Public Health (PHI)
9	Analysis of Road Traffic Accidents and Crimes	2010	1	National Center for Public Health (PHI)
10	STEPS (STEPwise Approach to Surveillance, WHO)	2009 2013	2	PHI/WHO 2009 National Center for Public Health (PHI)
11	Global School-Based Student Health Survey (GSHS) Survey	2010, 2013	2	PHI / WHO 2013 PHI / WHO / CDC 2010
TOTAL SURVEYS CARRIED OUT BY PROJECT			15	

NB During the Health Project, the Public Health Institute (PHI) transitioned to the National Center for Public Health.

Throughout the Chapters below, these surveys and evaluations will be referred to.

Work on the overall framework for planning and evaluation of the Health Project was carried out during the years. This was in agreement with one of the stipulations of the amended Compact: “(ix) finalization of baseline data and indicators for monitoring and evaluation of the Health Project.” The objectives and indicators of Table 7 were considered to be an initial attempt.

The amended Compact also phrased what an M&E Plan needed to achieve:

“The M&E Plan shall measure the impacts of the Program using objective and reliable information (“*Indicators*”). Each Indicator shall have one or more expected values that specify the expected results and time for the impacts to be achieved (“*Target*”). The M&E Plan shall measure and report on Indicators at four levels. First, the Indicators at the Compact Goal level (“*Goal Indicator*”) shall measure the impact of the overall Program and each Project. Second, the Indicators at the Project Objectives level (“*Objective Indicator*”) shall measure the final results of each of the Projects, including impacts on the intended beneficiaries identified in Annex I (collectively, the “*Beneficiaries*”). Third, indicators at the intermediate level (“*Outcome Indicator*”) shall measure the results achieved under each of the Project Activities and will provide an early measure of the likely impact under each of the Projects. A fourth level of Indicators (“*Output Indicator*”) shall be included in the M&E Plan to measure the direct outputs of Project Activities. Indicators shall be disaggregated by sex, income level and age, to the extent practicable. Subject to prior written approval from MCC, MCA Mongolia may add Indicators or modify the Targets of existing Indicators.”

Indeed, quite some efforts were made to develop these indicators. Two sets of indicators were developed:

1) those reported to MCC and 2) a longer list that MCA used for project monitoring.

Discontinuity in support from MCC to develop M&E in the field of health and inexperience at Health Project level in the early days, led to delays and several revisions and versions. Plans to develop a measurement and calculation for DALYs, the international standard for assessment of the impact on

health, as the amended Compact mentioned, were dropped at some time during the Health Project for reasons that remained unclear during this evaluation. Finally, in May 2013 an M&E plan and a set of indicators were established for the Health Project, as it was for all MCA-M projects.

During the project, vulnerabilities for fraud and corruption of the Health Project were discussed between MCC's Washington investigation group and the PIU and IC.

In Chapter 10, the review of the results and outcomes of the Health Project will start with a discussion of the indicators used.

The following chapters will describe the activities the project undertook, under the three headings of capacity building, service delivery and prevention and awareness. This is followed by a review of two specific groups of beneficiaries: school youth and workplaces. Finally, the RTI activities and cross cutting issues are reviewed.

4 Capacity building

4.1 Introduction

Apart from the Rapid Needs Assessment, a baseline Facility Based Impact Assessment or Study (FBIS) was done in 2010. This study collected information through questionnaires from health workers, so it was an opinion based assessment, not observation based. Processing and publishing the results took nearly one year, because the methodology and results were scrutinized by the PIU and IC, which in itself also was a capacity building exercise. The study had pointed to the need to train different categories of health staff and formulated some specific training recommendations. From the onset the intention was to repeat the study at the end of the project to see change. This indeed has happened and the changes will be reported in chapter 5.1.

Key documents on the capacity building program reviewed for this evaluation.

1. EPOS 05_FINALREPORT_MainBody_v07.doc
2. TLC Training Final Report – ENG.pdf
3. FINAL REPORT Facility Based Impact Study (follow-up study 2013) MCA-M and HSUM.
4. STEPS 2009 and 2013 reports.
5. Cardiovascular Disease Component: Programmatic Strategies and Recommendations; Mongolia; Working Draft; January 12, 2010
6. “Non-communicable disease and Injury oriented Primary Health Care”; Curriculum; HSUM; School of Public Health; plus four other modules of the MPH course.
7. Supporting Mongolia’s fight against non-communicable diseases: A five-year project and its achievements; MCA-Mongolia Health Project Success Stories_FINAL VERSION
8. The Evaluation and Scale Up of HPV Vaccine Program in Mongolia; February 7, 2013; Victor Boguslavsky, MD, University Research Co., LLC; Mary Catlin MPH, BSN, Consultant
9. Donor Agreement between the World Health Organisation and Millennium Challenge Account Mongolia. Assistance to the Government of Mongolia with Stroke and Heart Attack; July 2010.
10. REPORT OF MID-TERM EVALUATION OF NCDI PREVENTION TRAINING PROGRAM OF MCA MONGOLIA HEALTH PROJECT Written by: D.Dungerdorj, Kh.Gelegjamts, R.Otgonbayar, Ts.Gankhuu, T.Khulan; no date

Various forms of training were envisaged and they were planned in agreement with the other components of the Health Project, which required an important amount of coordination from the PIU and IC.

The different methods of training are reviewed below.

4.2 Study Tours and Conferences

Study Tours

Six study tours abroad were conducted, mostly prepared by the IC, with the PIU and MoH closely involved and approving the consecutive steps. 99 Mongolian specialists took part in either one of the study tours.

The intention of each study tour was to support a specific part of the project, by providing international comparison and opportunity for reflection and discussion with peers. The tours were extensively prepared including the development of a study tour concept. The concept included the following elements: a) study tour objectives and expected outcomes; b) presentation of 2-3 countries of potential interest and study tour agenda; and c) selection criteria for participants. An information

package for participants was prepared in advance, with a study tour agenda, information about the country, training and reading materials translated into Mongolian and an evaluation form. The study tour participants were selected by a team of representatives from the MoH and PIU based on the developed selection criteria.

An orientation meeting was conducted before each study tour. The study tour participants were accompanied by an IC staff member who provided translation and logistical assistance. After completion of the study tour a debriefing with the MoH and other stakeholders was organized and the participants presented the study tour results and their applicability to the conditions of Mongolia. All study tour participants shared experience gained in the study tour at their workplaces.

Table 11 shows the destination of the study tours, the topics and the number of participants.

Table 11 Study tours overview

Nr.	Country	Topic	Nr. of participants	Date
1	Finland	Health promotion & NCD prevention	11	March 13-23, 2010
2	Taiwan	Health promotion & NCD prevention	25	February 19-26, 2011
3	Germany	Quality assurance	18	October 9-17 2011
4	Sweden	Road traffic safety	16	November 12-20, 2011
5	USA	Workplace Health Promotion	15	September 22-30 2012
6	Slovenia	Best practice	14	March 14-22, 2013
TOTAL			99	

The results of the evaluation of participants' satisfaction from the study tour demonstrated a high degree of satisfaction with the content and quality of the study tours.

As was emphasized by several interlocutors during this evaluation, the Finland study tour brought home the message that an effective NCDI program needs many years before it is going to yield results in terms of reduction of morbidity and mortality and before it's activities have become routine, sufficiently.

Participation in international conferences

The Health Project supported extensive participation of Mongolian researchers in international conference outside Mongolia and presentation of project results. 45 abstracts were developed on Health Project topics by Mongolian specialists with the support of the IC and PIU staff. One abstract was rejected and 44 accepted: 19 for oral presentation, 23 for poster presentation, and 2 for E-presentation, see Annex 8. 21 Mongolian specialists instead of the initially planned 20 were supported financially by MCA-Mongolia Health Project to attend the international conferences outside Mongolia.

The first Annual Public Health Conference - The Health Project and the Mongolian Public Health Professionals' Association organized this conference on December 8, 2011, in collaboration with the MoH. 65 presentations and poster sessions were shared, of which 11 on NCDs.

A second national conference, planned for the end of 2012, had to be cancelled due to the financial needs of the component on Stroke and AMI.

Two International Conferences were held in UB, respectively in April 2010 and in May 2013. The Health Project organised these conferences with the Association of Public Health professionals in Mongolia. During the second conference, nine presentations were held on NCDs plus a number of other ones, based on findings from the grants program.

4.3 General Training

A training plan was developed with input from all stakeholders and participants in December 2009. The training plan was intensively discussed by the IC, PIU, and MoH staff and approved by the MoH in May 2010. The follow up was done by the IC, in close collaboration with the PIU and national stakeholders and experts. The IC also contracted international experts for advice.

In order to support the IC with the organization and logistics of the trainings in the country, the Health Project contracted a national company, TLC, which was a consortium of Onom Foundation and Eurasian Medical Education Program, Washington, DC. It worked in tandem with the IC throughout the following years.

As a first step, a team of local and international experts, jointly with the HSUM staff, worked on the revision of the pre- and in-service training curriculum for GP and nurses, feldshers and midwives. They identified the modules related to health promotion, NCDI prevention and case management and revised the content of the modules within the same amount of teaching hours. The revised curriculum has a holistic approach to the health system in comparison with the previous one, which was mainly disease oriented and used purely a medical approach. The subjects related to NCD prevention, management of risk factors, communication and counseling skills. The revision of curricula was finalized in August 2010 and officially approved in August – October 2010 by the HSUM.

The implementation of the revised curriculum started in the academic year 2010-2011. 2500 copies of the revised in-service curriculum for GPs and the revised curriculum for nurses were printed by HSUM with the financial support of the Health Project.

Another action was the development of a ToT program and training materials for public health specialists, GPs, nurses, quality assurance specialists, gynecologists, midwives, health educators and teachers. These were developed by a team of international and local experts and agreed with the main stakeholders in May-September 2010. The objective of the ToT trainings was to create a body of trainers throughout the country, with the ability to provide trainings independently.

A ToT pre-testing was done in August-October 2010. As a result, training materials were reviewed. PIU approved the set-up and the materials. ToT courses have been conducted for 510 future trainers (3153 person training days) from HSUM, NCC, National Research Center for Maternal and Child Health, Red Cross, City Emergency Department, Road Traffic, Aimag and UB Education and Culture Departments, schools, WHP organizations etc. with the participation of international and local experts. This all happened in the period March 2010 – November 2011.

The preparation of the further regional training activities took the largest part of 2010 and included the editing of a book, "Community and primary health care based control of NCD", and the translation of an English language book on colposcopy. The IC developed training materials for all the regional trainings, 36, that were distributed by LTC. The National Cancer Center took care of the other two trainings.

Implementation of nationwide regional training activities started in January 2011 and was to last until the end of 2012. A few additional trainings were given in 2013, as will be reported below. The on-site trainings were simultaneously conducted throughout Mongolia and covered all 21 aimags and all nine districts of Ulaanbaatar city. The target groups of the trainings were family doctors, soum-level general doctors, general practitioners, nurses, doctors specialized in cardiology, doctors specialized in endocrinology, public health specialists, local health organization managers, quality managers, health education teachers, school teachers and doctors of the secondary schools, social

workers, community members, and directors or managers of the public and private health organizations. The length of the trainings varied from 1 (for community members) to 40 (for colposcopists) days, with the majority around 4-5 days. See Annex 9 for an overview of all the trainings, their duration and the participants.

A few trainings were cancelled for several reasons: first, due to a lack of funds, when the Stroke and AMI Units required much more funding than initially foreseen; second, because during the planning PIU became aware that MCC does not allow training of enforcement agencies like the police. Further, a few training events were postponed due to the delay in procurement of equipment and supplies.

Regular field trip visits to all aimags and UB districts have been conducted by the IC, PIU and CHD teams separately. One of the objectives of the visits was to monitor the implementation of regional training activities. In view of the observations, the IC and PIU decided to do a formal and complete evaluation of the trainings. In July 2011, the IC developed a methodology for that and recruited and instructed nine short-term experts as evaluators. They evaluated the Health Project training activities countrywide. On December 1, 2011, the results of the evaluation were presented in a workshop organized by the Health Project. It was concluded, that project training activities were well implemented and appreciated. There was a series of minor improvements to bring about, amongst others in the logistical sphere, like training accommodation. On December 20, 2011, the IC proposed to PIU to organize additional but shortened refresher training for GP's, nurses, midwives and quality managers for the following reasons:

1. The regional training activities for mentioned target groups were conducted in first and second quarters of 2011.
2. Some trained specialists have left their jobs due to various reasons, and new specialists were hired.
3. Implementation of screening and case management of Hypertension, Diabetes, and Breast and Cervical cancer will start only in April and August 2012 respectively, due to the delay in procurement of equipment.
4. Needs for additional training were expressed by aimag specialists and training evaluators.

The second factor, the movement of doctors and nurses who have been trained to other positions and their replacement with new ones, is a structural and permanent feature of the health system in Mongolia and is a major reason why training on major programs like NCDI's needs to be semi-permanent.

Upon acceptance by PIU, LTC and the IC initiated the additional regional training courses that were completed in the first week of April 2012.

Altogether, three types of trainings were given: regular trainings, covering all aimags and districts; ad hoc trainings on specific request and needs; and refresher trainings.

Table 12 shows a list of all trainings as reported at the end of 2012 by TLC.

Table 12 Trainings as reported by TLC		Training Person---Days as of December 31, 2012			
		Actual number of days per course	Planned person days adjusted by cancelled trainings	Actual number of participants	Actual number of training person---days
Training Subjects and Types					
1	Training for endocrinologists	5	300	59	295
2	Training for oncologists	5	85	29	145
3	Training for nurses on training, communication, and counseling for patients with diabetes type II	3	180	61	183
4	Skills training for cytologists	40	1,280	32	1,280
5	Skills training for cytologists' assistant	30	960	32	960
6	Training for pathologists	10	210	30	300
7	Skills training for radiologists	3	60	20	60
8	Training for statistician on M&E tools	2	124	59	118
9	Training for quality assurance specialists	2	40	35	70
10	Training for traffic police staff	cancelled			
11	Training for statisticians on DALY/QUALY estimation	cancelled			
12	Training for statisticians on cancer registration and recall system	5	150	30	150
13	Training for local authorities	1	200	149	149
14	Training for decision makers	1	200	149	149
15	Training for journalists	2	120	60	120
16	Training on NCDI in---service	10	6,200	611	6,110
17	Skills training on performing ophthalmoscopy, reading & interpreting of ECG	2	1,240	577	1,154
18	Training on schools for patients with Hypertension and Diabetes	2	1,240	615	1,230
19	Training on palliative care	2	1,240	573	1,146
20	Training on teaching physical therapy	3	1,395	429	1,287
21	Training for gynecologists	5	1,550	274	1,370
22	Training for emergency service staff	3	930	310	930
23	Training for midwives and FD	4	2,232	591	2,364
24	Training for feldshers and nurses on NCDI in---service	5	3,100	602	3,010
25	Skills training for surgeons on breast biopsy	2	120	59	118
26	Training for cardiologists	5	800	159	795
27	Training for nurses on training, communication, and counseling for patients with hypertension	3	480	157	471
28	Training for public health specialists	4	1,860	437	1,748
29	Training on quality assurance and M&E	3	1,860	516	1,548
30	Training for school doctors and nurses	2	1,240	511	1,022
31	Training for social workers	3	1,395	431	1,293
32	Training for volunteers	2	930	476	952
33	Training for school directors and teachers	2	1,240	565	1,130
34	Training for community members	1	620	522	522
35	Training for workplace managers and doctors	2	1,240	524	1,048
36	Training for traffic police on traffic rules enforcement	cancelled			
37	Basic life support for non-medical staff	3	1,500	491	1,473
38	Training for researchers	2	400	187	374
39	Training for grant applicants	2	400	200	400
TOTAL			37,121	10,562	35,474

Table 13 shows a breakdown of the trainings given in another manner. Refreshment trainings and ad hoc trainings refer to trainings that have been planned on the basis of specific requests and are a measure of reactivity and flexibility of the Health Project.

Table 13 numbers of trainings and participants for 3 training categories

	All Training and Workshops as of December 31, 2012	Number of Participants	Training Person-Days
1	NCDI training person--days	10,562	35,474
2	2012 Refreshment training person--days	2,344	7,036
3	All <i>ad hoc</i> training and workshops person--days	4,630	5,952
Grand Total		17,536	48,462

By the end of the project, a total number of 17,536 persons were trained in 36 types of regional activities and 19 types of ad-hoc training workshops, accounting for 48,462 training person days. In total, 13,370 medical and 4166 non-medical staff were involved in the regional training activities. Of all 17,536 training participants, 76.3% or 13,370 participants were healthcare professionals, while 23.7% or 4166 participants were non-healthcare professionals. Further, 81.1% or 14,225 participants were female, 18.9% or 3311 of participants were male. This reflects the composition of the health staff in the country.

The satisfaction of trainees with regard to the training events was evaluated immediately after the course through oral feedback of the participants and application of anonymous questionnaires. The participants highly appreciated the content and issues related to the organization of the training activities.

The knowledge of participants was evaluated before and immediately after the training events by application of a KAP questionnaire, developed specifically for each training event. The results demonstrated an increase in knowledge by an average of 21% for all ToT courses (variation between 10.3 – 40.1%) and by 28.9 % for regional training activities.

Evaluation of the competences, obtained as a result of training activities, were conducted by nine IC international and local experts at least four months after the training implementation through observation of the practices of health staff from the selected health care facilities and conducted interviews and FGDs with the trained medical staff. These observations indicated positive changes at all levels of care and demonstrated an improved performance regarding NCD prevention and management. All physicians were supplied with revised clinical guidelines for prevention and case management of hypertension, diabetes, cervical and breast cancer, and basic life support. After training nurses assumed greater responsibility for performing NCD prevention, and education activities as well as counseling of patients. Also, the doctors and nurses started to work closer with the whole community, not only with the patients who visit the clinic.

The experts also observed that primary health care doctors have changed their consultation style and apply a more comprehensive and holistic approach in identification and management of NCDs. They are now able to address not only the health related problems of their patients but they also address pro-actively risk factors and apply more often the patient centered approach and empowerment of patients in decision making.

The results of monitoring visits were published in Mongolian Journal on Family Medicine⁶ and an international journal⁷ and presented during the final 2013 International Conference on "Prevention and Control of Major NCD and Injuries."

Finally, the Health Project left behind fully equipped training rooms in the Health Departments of the 21 aimags, 9 districts of Ulaanbaatar city and Railway Central Hospital.

The Health Project also organized a training course on the revision of secondary school health education program for the working group of the Ministry of Education, Culture and Sciences, see Chapter 7.1.

4.4 MPH program

Historically, Mongolia's training for medical professionals has focused primarily on supporting a health delivery system for curative care rather than on prevention and behavioral change and early detection. There is however a medical and public health center of excellence: the School of Public Health (SPH) of the Health Sciences University of Mongolia (HSUM). This university has been educating public health professionals since its inception in 1956. The SPH consists of four departments: the Department of Epidemiology and Biostatistics; the Department of Preventive Medicine; the Department of Health Economics and Management; and the Department of Social Studies and Humanity. The school has a primary care specialty, which has largely focused on NCDI. During the last 10 years, the SPH has benefited from donor assistance and international collaboration for its curriculum and training of faculty. The SPH offers 24 months Master courses since 2005. To date, 100 MPH degrees have been awarded; for the most part MPH students have been selected from Ulaanbaatar.

The aim of the Health Project's MPH training was to prepare a select group of currently practicing physicians in the knowledge, skills and competencies required for a MPH degree and return those physicians to their local jurisdiction where they will immediately apply their training to address the public health needs of their communities, especially in the area of prevention of NCDI.

The Health Project undertook to support the SPH to develop and implement a one-year intensive in-service MPH training program with a focus on NCDIs to increase the availability and quality of public health professionals skilled in NCDIs throughout Mongolia. George Washington University (GWU) has provided technical assistance through a partnership with the SPH.

Implementation

A specific competency-based curriculum has been designed, whereby four existing MPH modules have been modified and integrated in the course and one additional NCDI module has been newly developed. The SPH training emphasized strategies to identify NCDI risk factors and improve prevention tactics by health departments.

The challenge was to develop a body of public health professionals who reside in all of the parts of Mongolia and are fully conversant in the realities facing rural Mongolia's cities and towns. Selection criteria of the candidates were: doctors who have been working for at least three years in a soum, aimag, or district. They must be interested in working in public health and must be committed to serving three years in their home regions and be under age 40. Thirty-six doctors, one from each of the 21 aimags, one from each of the nine districts of Ulaanbaatar, three participants from branch schools of HSUM in Gobi-Altai, Dornogobi and Darkhan-Uul aimag, two participants from NGOs and one participant from private medical colleges have been selected. There was no tuition fee for this MPH; participants were expected only to support financially their accommodation and living costs.

Box 1 shows the list of expected competences of the MPH graduates. This is emphasized here because competency based training was a novelty in Mongolian health care.

Box 1 Expected competencies of MPH graduates

At the conclusion of the project, candidates will be able to do the following:

1. Advocate and describe to public officials and health authorities why prevention of NCDI is important for the health of the community;
2. Carry out in-service education for community health department staff on behavior modification techniques that will promote healthy living and NCDI prevention;
3. Assess health risks in the community, prioritize the needs, and formulate strategies to address those needs;
4. Share awareness of the importance of NCDI prevention with colleagues, associates and the community in general;
5. Analyze community health needs and develop projects to NCDI related issues;
6. Increase community participation and participation of other stakeholders in solving environmental health problems;
7. Monitor and evaluate community based projects;
8. Publish a short report in a newsletter or journal for rapid communication of study results;
9. Present a paper at a national or international scientific conference;

The 12-month curriculum (June 2011- June 2012) contained:

Core modules

- Public Health Introduction
- Epidemiology and Biostatistics
- NCDI oriented primary health care
- Health care policy and management
- Health Promotion

Required Modules

- NCDI control
- Social and Behavioral aspect of Public Health
- Identifying of health problems in the community, and
- Develop community based public health project including NCDI

Optional Modules

- Environmental Health and Risk Management
- Maternal and Child Health
- Advanced epidemiology
- Public Health Practice
- Public Health Nutrition and Policy

Two periods of 3 months were spent on classroom teaching and discussion. In between, one period of 3 months was spent in the workplace (aimag, district, etc.) of the students, in order to implement local research, based on a plan that was made during the first 3 months. A last period of 3 months was used to write and defend a thesis. This last period was mostly extended to reach 6 months and included the holiday season, bringing the total number of months on the MPH course to 15.

Throughout the course, all students were assigned to a tutor who provided advice, especially on the research topic. Tutoring was a voluntary task, taken up by HSUM staff and external experts like IC staff.

Results and evaluation

Out of the 36 selected candidates, 35 successfully finished their MPH training and graduated. All of them wrote a thesis based on local research. The variety of subjects adds to the body of knowledge in the country on NCDIs, their risk factors and on health services. Box 2 shows the list of topics of the

theses. Several of the theses have been presented at the international conference on NCDs in May 2013.

After their graduation, the students all went back to their original working place, sometimes in the same and sometimes in a different position. They have established a Google network to maintain contact, which has both a practical and a motivational function.

Box 2 Student thesis topics by category

Research Title			
<i>KAP Studies</i>	<i>Prevalence Studies</i>	<i>(Health) System Studies</i>	<i>Intervention Studies</i>
KAP on Cervical cancer and Precancerous disease among municipal workers	Smoking Prevalence among Chingeltei district's high school students	Current situation of Non-communicable disease registration system in Capital city	Study on decreasing the injury incidence among informal coal mining workers in Nalaikh district
Knowledge on Non-communicable Disease among students of Gobi-Altai Medical College	Survey on car emission of capital city	Factors influencing on Hypertension control in soum and Family Clinics	Evaluation of food court menu intervention in Gobi-Sumber aimag
Knowledge & Attitudes on Nutrition among students of Nursery Schools	Prevalence of Cervical cancer risk factors in Baganuur district	Evaluation on information source of Diabetes type 2 among residents of Khan-Uul district	
KAP on Breast cancer and Precancerous disease among secondary hospital nurses	Survey on Obesity prevalence among citizens of Capital city	Self control of patients with Diabetes type 2	
Knowledge, Attitudes and Practice on Non-communicable disease of Nalaikh and Bayanzurkh districts residents	Survey on Prevalence of Diabetes risk factors among civil workers of Bulgan aimag	Evaluation on information source Diabetes type 2 among people under 40 age of Bayan-Ulgii aimag	
Survey on Knowledge, Attitudes and Practices on CVD risk factors among civil workers of Zavkhan aimag	Survey on Non-communicable disease risk factors among civil workers of Uvurkhangai aimag	Evaluation of Non-communicable disease programme	
Knowledge, Attitudes and Practices on Nutrition of children among doctors and health professionals	Survey on the prevalence of Hypertension and risk factors among the population over 30 years Bayankhongor aimag	Usage of antihypertension drugs among patients with hypertension in Khuvsgul aimag	

Evaluation of Darkhan-Uul province public transportation service driver's knowledge, attitude and risk behaviors toward preventing road traffic injury	Evaluation of alcohol usage of 15-64 aged people of Dundgobi aimag	Knowledge on cervical cancer screening among nurses
Study on Knowledge, Attitudes and Practices of NCD among elders of Khovd aimag	Uncontrolled Hypertension prevalence among citizens of Selenge aimag	
KAP Survey among passengers travelling through Khentii aimag	Prevalence and cause of Hypertension in Gobi area residents	
	Study on injury prevalence in Dornod aimag	
	Evaluation of Stroke risk factors among residents using hospital based cases	
	Prevalence study on Diabetes type 2 risk factors among health workers of Darkhan-Uulaimag	
	Evaluation of salt usage and rate of Uvs aimag	
	Smoking prevalence among high school students of Umnugobi aimag	

The MPH course in practice knew three major obstacles, as reported by students and staff alike. First, the evaluation of the students' performances, including their thesis, proved to be a rather laborious process, with seven separate decision moments for approval of the theses, including MoH and Ministry of Education involvement. This created delay and unproductive waiting time, sometimes unexpected. Second, the tutors who were allocated to the students were often not sufficiently available, leading to limited or delayed support to the students. This second factor was certainly influenced by the relatively high number of students, 35, which obliged the course administration to look for volunteering staff with limited availability. Thirdly, the introductory course and other courses in English from foreign teachers were lost on quite a number of students, because they didn't master English sufficiently to really absorb or discuss the messages.

Sustainability

The MPH course under the Health Project was for free. In future, a tuition fee needs to be paid. In return, the recent graduates have a commitment to stay for three years in their current work place. For the academic year 2013-2014, 18 candidates started a MPH course in occupational medicine, 15 started a general MPH course and 22 candidates registered for the MPH in NCD course. The tuition

fee of USD 5,000 of the latter group is sponsored by nine companies. The good news is that both medical doctors and companies apparently view an MPH course in NCDs as relevant. This is an important basis for sustainability. Since the other MPH courses are two years and the NCD MPH is one year, it cannot be excluded that this also is a reason for the attractiveness of the NCD-MPH. However, that does not matter, really.

Another product of the MPH course development is a series of reports issued by staff of the GWU:

1. MPH Curriculum Review. This report provides a synthesis of the activities undertaken by the GWU in technical collaboration with the SPH and describes systematically the existing MPH curriculum.
2. Accountability Framework. An accountability framework is a fundamental component of building a solid postsecondary educational program, which can be regularly assessed through measures of performance and related indicators.
3. Curriculum Performance indicators. The report discusses a framework for development of curriculum performance indicators and provides a synthesis of steps, which may be applied toward development of performance indicators and assessment tools across the respective master of public health programs at HSUM SPH.
4. NCD indicators Framework. This Report lists the indicators of the recently developed Global Framework for Monitoring NCDs and makes the link with the MPH program effectiveness.
5. Annual Reporting Plan. The Annual Reporting Plan and Template lays out a yearly reporting mechanism for HSUM SPH to compile, synthesize and assess indicators across past, present and future student cohorts. Together, these reports constitute a support to the SPH and an important part of the Health Project's repository.

Reports 1, 3 and 4 are being used by the HSUM SPH for planning the second MPH course mentioned above and for the assessment of the students' results. The evaluator could not assess in how far reports 2 and 5 actually are being used.

Conclusion

The introduction of a 1 year MPH course in NCDs is a major achievement of the School of Public Health and of the MCA Health Project, because it has given NCDs an academic basis at post-graduate level and a growing group of public health NCD experts is working in the country. This can be considered as a good practice.

4.5 HPV vaccination

Background

As in many other countries, HPV vaccination is included in Mongolia as primary prevention of cervical cancer, as part of the cancer sub-program of "National program on prevention and control on non-communicable diseases (NCD) 2008-2013". However, the subprogram had no concrete plans or resources for HPV vaccination. When the Health Project was allocated additional resources through the amended Compact in 2008, MCA and MoH agreed to implement a pilot HPV vaccination program in support to the implementation of the cancer sub-program. This was approached as capacity building, using the opportunity to review vaccination strategies, to test the feasibility of introducing HPV vaccine into the national immunization campaign and to review implementation capacities, including the cold chain. In that period, a Gardasil Access Program donation of 44,800 doses of vaccines was an offer that could not be refused and an opportunity for the pilot. The campaign was planned and implemented in collaboration with the MoH that authorized the use of this non-registered vaccine. "Hope," a National Organization for a Cancer-free-Mongolia, helped with implementation.

Planning and implementation of the pilot

The National Center for Communicable Diseases (NCCD) implemented the pilot HPV vaccine on the basis of an agreement with the Health Project. A MCC consultant firm, University Research Co., LLC (URC), provided technical assistance during implementation of the pilot HPV vaccine program. Also, it drafted a report on the pilot experience⁸. Several of the data below are derived from this report.

The HPV vaccination targeted 14,063 girls in school aged 11-15 in the Selenge and the Umnugobi aimags and the Bayangol and the Baganuur districts of UB. This is 10% of the target age group nationwide. The HPV campaigns were to be held in March, May, and September of 2012 with 3 doses of vaccine provided at selected sites for the targeted girls. This was to be followed by catch-up campaigns in local clinics and home visits.

Prior to the HPV vaccination, preparation activities such as the trainings for key workers of hospitals and schools, the distribution of IEC materials, and the delivery of the HPV vaccines, syringes, and cold chain equipment to the sites were completed. For example, NCCD procured cold chain equipment from UNICEF with MCA funds, and distributed them to the aimags and districts. Consent forms were signed by parents, which gave the project permission to vaccinate the targeted girls. Before and during each dose vaccination, NCCD specialists, including WHO, held supportive supervisions in temporary, mobile and permanent units and provided recommendations with technical assistance of URC. In addition, some girls from other provinces and districts were vaccinated if they were around at the vaccination places, also free of charge.

Promotion of HPV vaccination such as TV and radio advertisements was integrated with other campaigns of the Health Project. However, as has happened in other countries as well, negative information related to the HPV vaccination, claiming important adverse effects of the vaccination started to circulate on the Internet and in the press. To counter this misinformation, during the kick-off of the vaccination campaign, press conferences were held in collaboration with the MoH and the WHO country representative. These press conferences provided evidence-based information through national broadcasting and newspapers to the public.

NCCD staff vaccinated 9111 girls age 11-15 with 3 doses of vaccine, reaching 65% of the target population. Due to the negative media exposure, the coverage rate in Bayangol district was low with 51.4%, whereas 3 other sites located outside Ulaanbaatar reached 70%. Overall 14% of children in the target group declined vaccination, presumably as a result of the misinformation. Coverage was lower in private schools than public schools and believed to result from anti-vaccination rumours, but also from the use of unfamiliar consent forms. The vaccine wastage rate was a very acceptable 2.6%, and there were no reports of frozen vaccine, nor reports of serious adverse events.

As of June 3, 2013, about 12,500 doses of vaccine of the original 44,800 doses remain in the central vaccine storeroom of the NCCD. The NCCD is conducting a survey of girls from the UB districts who wish to be injected by HPV vaccines voluntarily. After the survey's completion, the NCCD has developed a proposal to the MoH to vaccinate girls with the remaining vaccines in 2014.

As reported by the consultant, the main conclusions and recommendations of this pilot vaccination include:

- This well-organized pilot project showed that the GoM can successfully implement HPV vaccination through a school immunization program.
- Vaccine costs are deemed affordable. The cost of administration using a lump sum external fund, excluding the cost of vaccine, was USD 55/fully vaccinated girl. Based on past experience, the most affordable option would be to introduce vaccine to a single age cohort, at an age young enough to prevent pregnancy, during a school based campaign starting in September, using a "fast chain" of cold boxes. A national roll-out covering 60% of 11 years

old (for example), with vaccine priced at USD 10 per dose would cost minimum of USD 552,000 to 690,000.

- Possibly, this campaign has prevented 191 cases of cervical cancer: if the lifetime risk of cervical cancer is as high as 0.0249 (based on incidence of 83/100,000), the vaccine could prevent 70% at the reasonable cost of USD 2,890 to 3,612 per cancer prevented. Data for incidence and risk come from national statistics, as they have been reported, amongst others by Tuvshingerel and Erdenechimeg⁹. In the evaluator's view, while these projections are based on extrapolations and may be not very precise, they certainly point to the order of magnitude of the results of the vaccination.
- The MoH now has the tools to forecast pricing of vaccines and vaccination and thus can determine at what cost the regular introduction of the vaccine would be affordable.
- Use the remaining vaccines in a second pilot campaign in the prepared aimags/districts to avoid wasting the USD 1.6 million dollars of remaining vaccine.
- Improve the flexibility, capacity and control of the cold chain by learning to use "fast chain" cold boxes and continuous volume and temperature monitoring for campaigns (i.e. using existing data loggers and freeze tags). This serves during emergencies, during power failures and lack of available cold storage.
- During the second HPV pilot, document and test ways to minimize national HPV vaccine program costs. Increase coverage in the private schools and begin doses in September to minimize loss due to migration. Track costs to identify areas for improvement.
- Serological vaccine effectiveness study of 200 girls in Mongolia would not derive useful information at this time, but future HPV typing studies may be useful.
- Participate in international efforts that may result in lower price of vaccine.

The report contains more observations and considerations, amongst others on costs and tracking of costs during planning and implementation of campaigns, and can be used as part of the Health Project's repository. Although the aim of 80% vaccination of the target group was not achieved, in terms of learning this project was most successful.

5 Service Delivery

5.1 Introduction

Strengthening service delivery aimed at broadening the scope of health services, to include preventive and curative care for NCDs. Not only the needs were obvious, as Chapter 2 has shown, but also the feeble performance of the health services justified the choice for this component. Strengthening prevention, early detection and early diagnosis + treatment were planned through several activities described in this chapter: screening, the development of units for patients with stroke and acute myocardial infarction and emergency services.

Key documents on the service delivery program reviewed for this evaluation.

1. Cancer Registry and Recall System - NCDI Health Project; FINAL REPORT; Reporting period: 2010 – 2013; plus annexes
2. Draft Contract between PIU and NCC, 23 June 2010.doc. Final version could not be located.
3. Center for Health Development, Implementing Entity Agreement, March 2013.docx
4. Center for Health Development Annexes December 2012- FINAL 2013.03.27
5. NCC final report 2010-2013.
6. EPOS 05_FINALREPORT_MainBody_v07.doc
7. TLC Training Final Report – ENG.pdf
8. Annual Report of Breast cancer screening_2012 ENG.xlsx; source: NCC.
9. Annual Report of Cervical ca screeniong_2012 ENG.xlsx; source: NCC.
10. NCD screening data April 2013.xlsx; source: CHD.
11. FINAL REPORT Facility Based Impact Study (follow-up study 2013) MCA-M and HSUM.
12. STEPS 2013 report
13. Cardiovascular Disease Component: Programmatic Strategies and Recommendations; Mongolia; Working Draft; January 12, 2010
14. MOU Aimag-draft-ENG

5.2 Screening

Introduction

This section reviews the development, implementation and results of four screening programs and their prospects for the future. For a correct understanding of the concepts, criteria and conditions for effective screening programs, the following paragraph provides a short background.

Background: modern screening programs world-wide

Medical screening programs have been introduced world-wide, but with caution. There is consensus that they can prevent disability and death and improve quality of life, if they are effectively implemented and if effective, affordable and acceptable treatment is available to those who require it. The number of screening tests that have proved to correctly identify individuals at high risk of a disease or with an early stage of disease is limited, and those that do exist require sufficient health system capacity for effective implementation.

Screening, and then treating, individuals for elevated risk of cardiovascular disease using a total risk approach, which takes into account several risk factors at once, is more cost-effective than focusing just on individual risk factors. In countries with sufficient resources to provide appropriate treatment, it is also effective to screen individuals for early detection of breast and cervical cancer, particularly if this takes place through organized, population-wide screening programs. Diabetic retinopathy is an easily identifiable and treatable complication of diabetes, but it is an important cause of visual loss: regular screening, and treatment, of individuals at high risk can prevent blindness.¹⁰

Several conditions for effective screening programs must be taking into account. They need effective communication to those people with easy access for them. National funding sources or the national healthcare system must pay for both the program and the communication. International collaboration and joint development of novel tools to detect chronic diseases are necessary to use the latest available evidence. Attention for the psychological implications for those labelled to be at risk is important. Over-emphasis on early detection can lead to medicalization of non-medical conditions with an upward effect on healthcare utilization and costs. People with chronic conditions need to receive patient-centered care throughout primary care. One of the principles of patient-centered care is to put people first, which means patient care needs to be managed holistically (i.e., considering the broader context, including all of the individual’s health problems and needs). NCD management does not require a vertical health service program ¹¹.

In previous years, screening programs have been implemented in Mongolia, like Healthy Mongolian (2006-2008)¹² and Healthy Child (2012). Although both programs may have helped to identify in an early stage illness among a number of Mongolians, the main disadvantage of these programs was that they were ad-hoc, implemented in the form of a campaign (a few months per year) by teams of roving doctors from secondary level hospitals. They were not part of primary care activities. Since these screening activities did not fulfil the conditions mentioned above and there was an absence of concrete medical focus and standardisation, low continuity and little follow up to the screening itself (only referral), these programs were relatively inefficient and not sufficiently beneficial. Most interlocutors for this evaluation agree with this view.

The stewardship role of the Health Project: introduction of screening programs

It shows from the documentation that, when screening programs were being considered, most stakeholders were aware of the very high ambition level, in view of the resources of the country and the capacities of the health system. Planning and development of the screening programs were to be very thorough, if they were to be really beneficial. Under the leadership of a working group, headed by the MoH, that started work in 2009, the Health Program introduced four screening programs for NCDs in Mongolia that are all internationally tested and proven to be effective and cost-effective, if they are adjusted to the epidemiology and culture of the country and implemented with adequate resources. One screening program identifies risk factors for disease, AH, and the other three screening programs identify disease in an early stage: DM, BC and CC.

AH	= Arterial Hypertension
DM	= Diabetes Mellitus
CC	= Cervical cancer
BC	= Breast Cancer

The working group, assisted by expert support, discussed the strategy for the implementation of the four screening programs. The Mongolian adaptation of the strategies used in other countries will be shown for the individual programs. An extensive review by an international expert at the end of 2009 on the Cardiovascular Disease Component formulated Programmatic Strategies and Recommendations.¹³ This served as a basis for decision taking. Once the strategies were agreed, revision and development were done of clinical guidelines/standards for screening and case management that are used in other countries, of AH and DM. Also development was done of clinical guidelines/standards for screening of BC and CC for primary and secondary health care levels.

The screening is implemented by pre-existing primary care and mainly carried out by nurses, family doctors and GPs in soum hospitals and family health centers. Also at secondary and tertiary level opportunistic screening activities take place and some outreach screening was included as well. The Health Program initiated screening for:

- 1) Arterial Hypertension and 2) Diabetes Mellitus.

The target group for these two screenings is identical and does address both genders.

For the general population active screening is initiated at 30 years and repeated every year if no abnormalities are found: no high blood pressure, no high cholesterol and no hyperglycaemia. In compliance with legislation, opportunistic screening takes place for some groups older than 18 year, for example for people who enter college, university, the army or pregnancy health care.

3) Breast cancer screening.

Target group: the female population between 30 and 60 years old. The screening is opportunistic, meaning that women are not especially called for the screening but are screened if they visit a health service for another reason. This approach is motivated by the low incidence of breast cancer in the country. The screening is done through a Clinical Breast Examination (CBE), with referral for biopsy when a lump is found. For taking biopsies, all the aimags and districts plus the NCC received biopsy equipment plus related consumables. Due to the large distances in the country and the fact that breast cancer is a relatively rare phenomenon, it was impossible to follow the normal international standard of doing a mammography when a tumour is suspected by palpation. It would have led to little used mammography machines in all the aimags and districts. So, the biopsy is the first escalation level after palpation. In a relatively high proportion of cases, the biopsy will not reveal any tumor that needs to be treated – when the palpation is false positive. This system has the disadvantage of much pain, discomfort and anxiety for the women, but this cannot be avoided. An empathic approach and counselling is required in order to reduce this adverse effect.

For women with a known high risk, a mammography strategy is in place.

Further, during consultations women are proposed to do regular self-examination and they receive instructions for this if they feel this is helpful. If they suspect a lump, they then can seek diagnosis and advice in a first line facility. Also, several of the public campaigns organized by the project encouraged and taught women to do regular self-examination.

4) Cervical cancer screening.

Target group: the female population between 30 and 60 years old. The screening is done through a Pap smear and is repeated every three years. The previous screening method of VIA was abandoned, after expert consultation. So, per year one third of the target population is screened. In case of suspected or proven cancer cells, referral takes place to the aimag or district hospital for colposcopy and further follow up. Sometimes referral is directly to the NCC, mostly on request of the woman herself. A special feature of this screening is the need to have laboratory staff, equipment and consumables available in the central laboratory in all aimags and districts for the Pap smear.

Since screening for AH, DM and CC is active, a call system for the population needed to be established. Primary care facilities send an invitation to the targeted individuals. BC screening is opportunistic and needs no specific call system; anyway, women who are called for CC screening simultaneously are offered BC screening.

Numbers to screen.

After the definition of the target groups, a next step was to agree on the numbers and on the proportion of the target groups to reach. The population numbers originate from the National Statistics Office and the targets for the first years were defined by the PIU, IC in agreement with the CHD, NCC and MoH.

AH: annually, 66 % of total target group to be screened. Total target group estimated at 632.000.

DM: annually, 66 % of total target group to be screened. Total target group estimated at 632.000.

CC: annually, 80 % of 1/3 of total target group to be screened. Screening is once in three years.

Total target group is around 600.000, so the annual target is 160.000.

BC: no specific target in terms of numbers, because this is opportunistic screening. The overall target group is equal to the CC target group.

Preparation

The implementation of the screening programs was preceded by a large series of preparatory activities.

The monitoring and supervision of the AH and DM screening is tasked by the Ministry of Health to the Center for Health Development (CHD). During the project, these activities of the CHD, and its predecessor the Governmental Implementing Agency - Department of Health (GIA-DoH), were contracted and financed by the Health Project and in future will be funded from the government budget. A MoH decision to this effect has been taken, so the continuity of this role of the NCHD is assured.

For cancer screening, the National Cancer Center (NCC) was appointed as the lead agency. The NCC, essentially a tertiary level hospital, also serves as the National Registry for Cancer. Prior to the project, the NCC did have its own specific national databases for cancers. For the screening, it was tasked to

- supervise the flows of patients and data through the screening process, according to the screening algorithms and guidelines;
- deliver health data and data on the health system's performance for statistical analyses;
- monitor the process and identify and correct any malfunctioning, bottle-necks and misunderstandings.

Specifically, NCC was to develop improved software for a more comprehensive cancer registry and recall system, as part of the screening system for BC and CC. The health system uses ICD 10 for registration of clinical data and this needed to be updated, ICD-O-3¹ needed to be introduced and a flow chart had to be developed and pre-tested at primary care level as part of the preparation of data registration and transmission. The NCC also was tasked with the development of the guidelines for BC and CC screening.

Surveys

Especially for breast and cervical cancer, two surveys on health seeking behavior were done by the HSUM in 2010, as a basis for design of the screening programs and of communication campaigns for the population. The Facility Based Impact Study (FBIS) of 2010 was mentioned earlier in Chapter 4. It had, amongst others, inventoried training and equipment needs in the health services.

Campaigns and public information

For active screening, active participation of the population is required. Six campaigns through mass media to inform the population and to encourage participation in screening were part of a wider series of campaigns that were developed to inform and motivate the population on adopting a healthy life style. Next to the media campaigns, also organisations and companies were approached to inform and motivate them on facilitating its staff to participate in the screening and to lead a healthy life style anyway. NGOs like the Mongolian Diabetes Association, the Mongolian Heart Association and the Family Doctor's Association approached for example municipal utility companies, university campuses and companies for health education to their staff. The campaigns are discussed in more detail in chapter 6.2.

Guideline development and training

Screening programs need to be standardized through clear algorithms and embedded in wider knowledge & evidence. This is a precondition for correct application of screening by the health staff. As such, a series of guidelines for screening and case management for AH, DM, BC and CC was developed by the combination of international expertise and intense participation of national experts

¹ International Classification of Disease – Oncology – version 3

and stakeholders. This consultative process was led by a technical working group chaired by the MoH and implemented by the NCC and CHD. The development of guidelines and shorter standards needs to follow a well-defined process with discrete steps. Although such a thorough and participatory process takes a lot of time, the result is a guideline that is accepted and has validity and authority in the country. Guidelines did exist in the country but the consensus model of producing them was new. As a result, the approval of the MoH of the guidelines and the shorter standards in respectively May and June 2011 signaled the availability of very useful tools in the country.

Subsequently, many staff in the health system needed to be trained in the implementation of screening and case management and the use of the guideline. For the purpose, 36 training sessions took place in 2011 and 2012, as was discussed in Chapter 4.2. A part of the trainings were so called ToTs (training of trainer) and another part was directly training end-users of the guidelines. A key category of staff to be trained were 32 cytologists, recruited among health staff already at work in the aims/districts and an equal number of cytologist assistants, who are preparing, studying and documenting the Pap smears made by doctors and nurses in the examination room.

Another five training courses were organised for non-medical staff, like school directors and teachers, and volunteers in the community, to strengthen support for and participation in the screening programs and life style changes.

Approximately 40 % of doctors and 25 % of nurses in primary care facilities were trained by the project. A refresher training for a number of them was organised early in 2012 when the screening programs started with a delay.

Equipment and Supplies

All primary care and a number of secondary care facilities in the country were equipped for the screening with the necessary materials, tools and re-usable material and drugs. As the initial FBSI had shown, especially in more peripheral facilities basic material was lacking or dysfunctional. As a result, a wide range of basic medical equipment and tools material was supplied, like sphygmomanometers and stethoscopes. Also more specific equipment was supplied like material to make Pap smears, colposcopes, equipment to take biopsies and mammography machines, see list in Box 3.

Box 3 List of equipment & supplies for screening and follow-up of AH and DM

667 ophthalmoscopes and balances
667 analysers for cholesterol and glucose
12 ECG's
3065 sphygmomanometers, stethoscopes and waist measurement tools
12 analysers for HbA1c
Various drugs for reduction of hypertension and treatment of diabetes
800 litres of PAP stain
1 automatic pap stain machine
Slides, trays and containers for slide transport and storage
31 binocular microscopes and 1 multi-header microscope
518.500 disposable vaginal specula
34 colposcopes, trolleys, LEEP instrument sets
24390 electrodes et cetera
36.500 spinal needles
31 breast biopsy guns
disposable needles for aspiration and breast biopsy gun syringes
4 mammography machines

The project installed a mammography machine in a hospital in three out of four regions, in the aimags Orkhon, Uvurkhangai and Khovd. In the fourth region, with Darkhan-Uul aimag as center, the Luxemburg government had installed a machine previously. The Health Project also provided a mammography machine for the NCC in UB.

The Health Project intended to make the drugs that people would need, on the basis of risk factors or disease found during the screening, available for free, for 10% of the users, the average number of indigents.

Data collection and processing

As was described in the National Program for NCDs, a register/electronic database would be built, with data on the persons screened and the results of the screening and follow up. This would be used also to establish a recall system for those with abnormal results of the screening and for research on incidence, prevalence and risk factors.

For CC and BC, the NCC was to develop and run the database.

For AH and DM, the CHD was to run the database.

Their working processes and reporting are not completely symmetric, so data differ in target groups, timing and probably also quality, although this has not been tested.

Contrary to expectations, due to data confidentiality, the data of the national population register could not be used to establish lists for the active call system. When this became clear late in 2011, an alternative strategy was improvised, which was that all primary care facilities in the country had to establish themselves a registry of the population under their care. In 2012, they registered on average 71% of the roughly expected number of women between 30 and 60, the target group for cervical cancer screening. Once this time consuming investment was largely done, the invitations for screening could go out. In one far away soum in Uvs aimag, 97% of the female target group possesses a cell phone and their numbers had been collected by the primary care centers. This percentage may be taken as representative for most of the country. Hence, large distance is not an obstacle for the invitation to screening itself. The response rate reached 33 % for CC during the first 12 months, see below.

The screening process

Most primary care facilities have set up specific hours and designated specific staff for screening. In case of limited staff numbers in smaller centers, one and the same doctor is doing all the screenings. At the level of the primary care facilities there are now 5 different forms in use for registering the different screenings. They are filled in by hand and these forms are then sent to the health department of the aimags and districts, where the data are entered in an electronic database of respectively the NCC and the CHD. All aimags and districts do have (sometimes failing) Internet connection and equipment to secure the transmission of data.

The Pap smears made for cervical cancer screening are sent from the soum hospitals and family health centers to the laboratory on aimag/district level. The cytologist stains and then reads the slides with a binocular microscope that also can make pictures of the slides and registers the results electronically. These data are sent by Internet to the NCC database. When the diagnosis is doubtful, the cytologist can consult colleagues by sending the picture of a slide by Internet to colleagues. This form of e-medicine benefited from the experience of a project of the Luxemburg cooperation that had pioneered e-medicine in the past in a number of aimags.

Planning the start of the program

Preparation of screening programs is a matter of several years, as a study tour to Slovenia showed, in March 2013. Even the development of a pilot can take three years. Relatively, preparation time in Mongolia for four programs simultaneously was not very long. A major challenge was the simultaneous or sequential timing of all the activities. For example, the screening only could start once all the supplies had been distributed, the guidelines developed and authorised, the training sessions were done, and the population was well informed through the campaigns. Initially, the project planned to start the screening process from July 2011. Therefore, aimag and regional training activities for the defined target groups were conducted in first and second quarters of 2011.

Several aspects of the implementation of the policies were piloted on a small scale, from training modules to patient assessments. This was done in Tuv aimag and one district. However, no pilot was done on the complete chain of tasks and activities of the whole of screening process.

Postponement

However, the implementation of the screening was postponed. For AH and DM first to January 2012, then from January to March and then to April 7, 2012. The implementation of CC and BC screening was postponed to January 2012, then from January to March, from March to April 7 and from April 7 to June, and then to August 1, 2012. Just 3 years had elapsed from the start of planning of the Mongolian screening policies, until the start of the actual implementation after a Ministerial Order. The reasons for postponing were as follows: 1) election time; 2) implementation of "Healthy Children" campaign; 3) the MoH order regarding the cancer registry and recall system guideline was signed on March 12, 2012 only; a general restructuring of the MOH and ministerial bodies and institutions took place during 2012. Amongst others, the new Public Health Division of the Policy Coordination Department of the MoH is now the owner of the cancer screening policies, which is a step forward compared to the previous situation. This change did create delay of Ministerial decisions; 4) training of gynaecologists on how to perform colposcopy and LEEP was completed only on June 26, 2012; 5) some supplies for the preparation and reading the Pap smear tests were still not in place.

While the start of the screenings was delayed, turnover of staff at primary care level was high, so new staff needed to be trained as well. Refresher training was needed for others. This improvised additional activity was planned and implemented.

Starting at last, obstacles

Once the screening started, across the country, staff at hospitals, family health centers and soum hospitals and health centers began to apply the training they had received in the previous months, backed up by reference to their guidelines and protocols. Screening equipment and supplies were used with increasing confidence, and the use of registration forms by primary health care staff gradually became routine. As suspected cases were identified at primary care level, referrals to secondary level (generally aimag and district hospitals) were made for confirmatory diagnosis and treatment.

The start of the screening programs was felt by all involved as a very important moment because preparations had been intensive for the aimag and district health departments and for most of the primary and many of the secondary care facilities. Since there had not been a comprehensive pilot, there was little in-country experience to build on. The implementation was monitored and evaluated in several ways.

Between September and November 2012, Health Project experts conducted field visits to monitor progress and provide further training or advice. While overall implementation was carried out, inevitably a number of problems were identified and recommendations made to deal with them. For example, it was discovered that although referrals from primary to secondary level worked well, feedback from the specialists rarely came back to the primary health care doctors. In spite of the additional trainings, in some places, staff turnover meant that new staff arrived without the requisite skills, or there was a general shortage of trained staff.

Also, in some aimags there was a shortage of staff for data entry in the Internet based database. No major problems were reported in understanding the forms or to enter data. Data entry mainly took place by clinicians first filling in paper forms, after which one responsible officer per workplace entered it into the computer. It was claimed, in some places, that the Internet connection was slow, which delayed data entry into the computer. Nevertheless, the officers managed to enter some 20-30 forms in one hour, or 2-3 minutes per form. In 2012, the NCC electronic database was not yet operational; therefore registration of the cancer forms was on paper, with these paper forms being sent to the NCC. Later, when the electronic data processing started, the cancer registrars did not consider the procedure very time-consuming.

There was however a shortage of money for printing the forms that are used in the consultation room in some aimags and districts. The FBIS survey of 2013 (see below) assessed in how far the data transmission is indeed operational. In 90% of aimags and districts it was working. Stocks of glucose and cholesterol tests ran out in some health centers and hospitals.

No cytologists are working full-time for reading PAP smears. Hence, the maximum number of Pap smears read by the cytologists were just some 20 (-30) per day, whereas a fully dedicated and experienced cytologist usually manages some 50. The cytologists do have other duties as well, therefore a main bottle-neck in the system was the workload increase of the cytologists. A QA system for Pap smear reading was in place and functional, double-checking all positive cases, and a randomly selected sample of negatives. This relied on telemedicine solutions.

Investments and recurrent costs of screening

The investments are related to program development and supplies, training costs are reviewed in chapter 3.2.1

No additional staff for the health care system was recruited to carry out the regular screening, because the necessary staff in primary care and secondary care was already in place. One exception to this rule: in each aimag/district one additional staff member had to be employed for entering the data in the registers, the statistician. Further, from available staff, people were recruited to be trained as cytologists, and they got the new task on top of the previous one, in many cases. So, the burden on the health system in terms of permanent or recurrent resources lies in the cytologists, the

statisticians and the re-supply of consumables, like Pap stain and special needles. Workload of doctors and nurses in primary and secondary care (gynecologists) increased but it was assumed that no additional staff would be required.

Results and follow up

There were three sources of data to assess the results of the screening program by the end of the Health Project.

Two sources of data provide information on the coverage of the screening and there is the FBIS of early 2013 to provide information on the system that performs the screening.

One of the data sources are the statistics from the CHD and NCC, the other is the results of the STEPS survey done in early 2013. Statistics and surveys both have their function and limitations. Below, first the statistics are presented and discussed, then some of the STEPS results, followed by the FBIS survey results.

One test of the success of the screening programs is the proportion of the target groups adequately screened and the adequate follow up on the screening in case of correctly found positive findings.

Statistical data

Statistical data for the first 12 months were closely looked at: from April 2012 – April 2013 for AH and DM screening and from August 2012 – July 2013 for CC and BC.

At the end of the Health Project in September 2013, screening data for the first six and where possible eight months of 2013 were also reviewed.

Table 14 shows results of the first 12 months. The conclusion may be that, during the first 12 months, nearly half of the target groups for AH and DM are screened and for CC one third.

Table 14 Screening results, first 12 months

	Number screened Percentage of target group	Positive findings	Comments
AH April 2013 – March 2013	305.018 48,3 %	18.416 6 % of those screened (proven hypertension)	Between aimags and districts, variation of target population covered is between 113 % and 13 %
DM April 2013 – March 2013	260,975 41,3 %	29063 1,1 % of those screened (DM confirmed)	Between aimags and districts, variation of target population covered is between 95 % and 9 %
BC August 2012 – June 2013	61,575	63	No target
CC August 2012 – July 2013	47,969 33,1 % (target 66 %)	101 (confirmed CC)	42.502 women were included in target group, the others were no target.

Data sources: statistics collected by NCC for CC and BC and by CHD for AH and DM

However, the data have to be interpreted with caution. How can results be above 100%? For this evaluation, PIU members and health staff in the aimags and district, formulated several hypotheses for this. They were (1) the health centers missed out on the initial target group: each health centre had to establish its own target group because national data could not be used which lowers the

denominator. Only 71 % of the expected numbers of the population were identified. (2) People use a health center in a neighbouring aimag/district, not in their own, which increases the numerator in some aimags/districts. (3) Mistakes in understanding what should go in the numerator and what should go in the denominator. (4) Calculation and copying mistakes in reporting the data. For very low percentages of screening, like 13 %, the opposite may have happened, but also real low screening activity due to a series of constraints may have happened. All these factors play out differently between different aimags and districts. So, data reliability is an issue but also variability between aimags and districts may be real.

Table 15 and 16 below show the numbers and percentage screened for the first 8 months of 2013 respectively for the first 15 months, only for AH and DM, so partially overlapping with the table above. For comparison, the data from Bayanzurkh district in UB have been added. The tables show that the targets by far have not been reached. Since these are nation-wide data, there is not an issue with populations shifting between one aimag/district and the other but there may be an issue with the total population, the denominator.

Table 15 Number and percent screened for the first 8 months of 2013

Screening results Mongolia, all aimags and UB Period January-August 2013 (8 months)						Screening results Bayanzurkh district, UB largest district with more than 220,000 population. Period January – August 2013 (8 months)				
	Annual number to be screened	Total number screened	% screened	Total positive	% positive	Total number to be screened	Total number screened	% screened	Total positive	% positive
AH	631.960	127.629	20,2 %	6.535	5	63.292	10.635	16,8 %	241	2,2
DM	631.960	112.970	17,8 %	933	1	63.292	10.635	16,8 %	65	0
CC	145.000	Not available				10.815	2.646	23,5 %	18	
BC	No target					No target	3.889		51	

Data sources: statistics collected by NCC for CC and BC and by CHD for AH and DM

Table 16 Screening results

Screening results Mongolia, all aimags and UB Period April 2012- July 2013, 15 months					
	Annual number to be screened	Total number screened	% screened	Total positive	% positive
AH	631.960	352.754	55.8	20.475	5
DM	631.960	301.539	47.7	3.250	1

Data sources: statistics collected by CHD for AH and DM

Table 17 shows the results for Breast Cancer screening by CBE and CC screening by a PAP smear. In 2012, 45,222 women had a CBE and 49,583 a PAP smear taken. Of the 49,583 women who had a PAP smear, 16,508 were not screened for breast cancer. While there may be reasons for screening for CC and not for BC, and vice versa, the discrepancy of the numbers is too large. Further, 217 women (0.35%) had neither a Pap smear nor a CBE, and were yet entered into the database. These data show inconsistencies in either actual screening procedures or in reporting or in both.

Table 17 Breast and cervical cancer screenings in 2012

		PAP smear		Total
		Screened	Not screened	
Clinical Breast Examination	Screened	33,075	12,147	45,222
	Not screened	16,508	217	16,725
	Total	49,583	12,364	61,947

Indeed, in 2012, when experts visited the field to assess progress of the screening programs that had just started, it turned out that some aimags and districts did not agree with the figures used to establish the denominator of screening coverage which did raise the question: what is the real size of the target groups? Also, who should be included in the teller was a matter of debate at central level: women not belonging to the target group for PAP smear screening but screened anyway, should they be included in the teller? These questions can be considered as start-up issues that had to be resolved. Matching the data with those of the national population registry would have helped to avoid that different population numbers are circulating.

In conclusion, the screening data from 2012 and also from the first half of 2013 cannot be considered to be precise and reliable.

STEPS survey 2013

The data from the STEPS surveys are population based, not health services based. They may serve as a complement and a check of the health services data.

A total of 6013 people (2719 males and 3294 females) participated in the survey, done 12 months after the start of the AH and DM screening.

4.6 % was diagnosed with raised blood sugar or diabetes in the last 12 months. Recalculated in the target group of 631.960 persons, this would correspond to 29.070, which is a bit off the reported 20.475 in Table 16.

The data show that the coverage of the target groups to date is below what was expected and that there is a wide difference between aimags and districts in results reported. Annex 13 shows a comparison of some of the data between 2010 and 2013. The STEPS survey also provides data on knowledge, awareness and attitude of the population with regards to NCDI's, these data are discussed in Chapter 6.

Facility Based Impact Study 2013

Following the 2012 monitoring during field visits by Health Project staff, a monitoring visit to the NCC was conducted by an international cancer expert on behalf of the IC in April 2013. Also, between February and April 2013 a repeat FBIS study was done. The latter was a comprehensive assessment of the health services resources, activities and challenges and could show changes compared with 2010. Annex 12 shows a table comparing some of the FBIS data from 2010 with those of 2013.

Since the FBIS collected data through questionnaires, structured interviews and 17 Focus Group Discussions, it resulted in quantitative and qualitative data on primary and secondary care. Further, the FBIS interviewed 1179 clients. The FBIS can be considered as a comprehensive and authoritative evaluation of the screening programs for AH / DM respectively CC / BC, 11 respectively 8 months after their start. Its results can be considered as reliable and precise, in view of the numbers surveyed and constitutes a good picture of the capacity of the health system to screen for NCD's and

to provide for follow up. Also, it has assessed in how far health education is being done in or through the health services. The complete English version of FBIS 2013 became available in November 2013.

The FBIS showed that, on the positive side, 90 % of 173 primary care facilities met the requirements for high quality in the capacity for NCD services, 9 % met the level of 'middle quality', 0.6% of facilities the minimum level, defined as low quality and none of the facilities were classified as facilities not meeting basic requirements and categorized as below the minimum quality level. In conclusion, primary health care facilities' capacity for NCD prevention and screening has improved greatly in comparison with the situation before the health project implementation.

Further, 60-70% of primary care doctors and nurses agreed that they have enough materials for NCD prevention and screening, and sufficient level of NCD related skills and knowledge, which was approximately twice higher compared to the baseline. However, this was far short of the objective of 100%. 40% of primary care doctors had attended a training in cervical cancer and screening with . Marked change was observed also among the health care managers. Similar changes were also reported by specialized doctors and nurses working at a secondary level of health care. Also, regarding shortage of equipment and budgets marked improvement was observed in the first two aspects.

Regarding the treatment and diagnosis of breast and cervical cancers, around 60% of obstetricians / gynaecologists / oncologists reported that they did have the necessary drugs, equipment and supplies, which again means that 30-40% have not. The cytologists reported that they examined only half of the Pap smears due to insufficient quality of the smears. A high proportion of abnormal Pap smear tests were read as "inflammation". This is an issue of quality of work at the level of personnel who takes and who reads the test.

Resources for NCD prevention and care were assessed in terms of availability and use of clinical guidelines, and availability of drugs, equipment and supplies needed for implementation of the guidelines. Regarding the clinical guidelines for hypertension and diabetes, and breast and cervical cancers, during the follow-up study, 85.8% of doctors and 75% of nurses/feldchers had all four guidelines compared to 39.8 and 25.7% at baseline. Availability of drugs, equipment and supplies vary depending on the condition but a marked improvement was reported compared to the baseline study. Availability of materials related to the screening and control of hypertension and diabetes was in general slightly better than the availability of materials related to breast and cervical cancer.

Among the further observations and conclusions of the FBIS and the cancer expert, the following deserve mention here:

For CC and BC:

- The population is lacking knowledge and attitudes towards cancer screening are skeptical, in spite of the IEC/BCC campaigns. At the same time, the great majority of women expected this information to be provided by their local health staff. However, the lack of appropriate knowledge among health personnel, exposed also by two KAP studies of MPH students, was discouraging;
- The CC and BC screening programs partially meet the IARC criteria for an organized system: (i) Guidelines are present and approved by the MOH; (ii) The health care professionals invite patients for screening to increase the coverage; (iii) Lists of patients to be screened are produced on a monthly base; (iv) A call and recall system is in place; (v) Patients with abnormal screening results are being followed up; and (vi) A basic information and evaluation system is in place. However, the quality assurance plan for cytology and colposcopy and the management and ownership plans are missing;

- During the Health Project, it was estimated that the time-consumption for implementing the screening would consume 3-5% of the available PHC time, and would increase the workload of the gynaecologists, pathologists, oncologists, and later – the workload of surgeons, radiologists, and other health professionals. In Box 4 a quick assessment of the workload in Bayanzurkh district is described, done during this evaluation. .

Box 4 data collected from Bayanzurkh district health department on November 8, 2013

Do the screening programs constitute too large a workload for the family health centers and the soum hospitals? This was a concern throughout the Health Project. On November 8, 2013, a quick assessment was one in Bayanzurkh district, for the period January-August and January–October 2013. This is the fastest growing and one of the largest districts of UB, due to migration from the rural areas. Currently, its population officially stands at 295.000 but probably is closer to 315.000. The number of health staff is still based on earlier times when the district population was around 100.000, so pressure on health staff is high anyway.

The district has 27 Family Health Centers where the screening takes place. In 8 respectively 10 months of 2013, 10.653 and 16.070 screenings for AH and DM took place which represented approximately 17 and 25 % of the annual proportion of the screening that should have been done, following the program criteria. These screenings were approximately 2,5 % of all consultations performed by family doctors (including home visits) in the district. If the numbers would follow the program criteria, with a 100 % response of the population, the workload for family doctors would constitute 10 % of all consultations. These numbers do not include the screening for CC and BC, which come on top. Allegedly, it is especially the home visits that suffer from the additional workload.

The screening for CC constitutes a certain workload for the family doctors who take a PAP smear, but all the smears are seen by the central laboratory of the district that had to process 2.646 PAP smears in 10 months' time, on top of the other analyses performed. The district had to employ a second cytologist for this reason. If the population's response to invitations for the screening increases, the numbers of PAP smears will be a heavy workload even for two cytologists.

Further, it should be noted that Bayanzurkh district performs between 8 and 9 % of all screenings for AH and DM in the country, which corresponds well with the proportion of the population of the country.

- The coverage rate for CC screening has reached 33.1% during the first eleven months of its implementation. Although this is a good result for a project activity in the startup phase, it is not sufficient for a full-scale screening, which is supposed to cover at least 85% of population. The issue of positive selection should be considered. The screening activities typically reach the most health conscious and literate, who have the lowest risks. Even a 50% coverage rate could not be considered sufficient, because the majority of cases are likely to be found in the 50% of population not covered by the screening;

For AH and DM:

- The quantity of glucose strips was not sufficient in some health care facilities, because the strips were also used to monitor glucose levels in previously diagnosed patients. In the future, a sufficient quantity of strips should be provided to allow monitoring of glucose levels in patients with DM at the level of primary health care institutions;
- A low compliance with antihypertensive treatment was noticed in patients with AH, for the following reasons: (i) The patients believed that it is not necessary to take the drugs daily; (ii) The cost of drugs was not affordable for some of the patients; and (iii) The supply of subsidized drugs in primary health care institutions was insufficient;

- For AH and DM, all screened people must have access to further diagnostic tests and treatment, when needed. Drug treatment should be started only after correct diagnostic procedures, putting emphasis also on non-pharmacological treatment. When pharmacological treatment is started, it needs to be continuous, and usually lifelong. Therefore, availability and use of drugs, drug compensation policies, and prescription practices need to be improved;
- The job descriptions of general practitioners and family doctors should be revised to include care of patients with DM, at least with DM type 2. General practitioners and family doctors should be allowed to prescribe medicines to patients with DM. Consultations of endocrinologists should be required only when serum glucose level could not be properly controlled. In other cases, consultations of endocrinologists should not be used more than 1-2 times per year.

This long list of issues came not as a surprise. From the very start of the screening it was clear that the health system was not fully capable yet to do a full-fledged screening. Preparation time had been short and the screening programs require a high level of performance. In November 2013, it was reported by the NCC that 5 aimags or districts had stopped reporting on the CC screening, allegedly for lack of PAP stain and probably other reasons as well. This shows the vulnerability of the system. What is needed, therefore, is capacity and willingness to work on improvement of the shortcomings. These reside in the key domains, mentioned below.

Conclusions and recommendations

In view of the very short period of preparation and introduction of the screening program, the results to date in terms of numbers screened can be considered as satisfactory. However, the period of investment is not over yet, it takes another few years of investment, before a certain plateau level of maintenance is reached and population demand and health system offer can be expected to stabilize the coverage of the screening above 80 %.

The main investments to be done are listed below. Many of them are recommendations recently done by the NCC, by the April 2013 expert evaluation and by the FBIS study and included in the sustainability plan offered by the Health Project to the MoH, see Chapter 10.

- Further training on screening of primary care staff, gynecologists and oncologists and especially of (newly to appoint) cytologists. The latter group is key, because they are only 1 or 2 per aimag / district and when they leave the position and there is no one else for replacement, the CC screening stops functioning. This threat is imminent.
- Roles and responsibilities should be clearly defined and be logically attributed. As mentioned before, the NCC essentially is a tertiary level hospital; its additional responsibilities need to be legally defined: the National Cancer Registry. Responsibility for the National Cancer Control Program and for screening policies for example needs to be attributed to a separate institution/ authority like the Public Health Division within the Policy Coordination Department of the MoH.
- The reporting and registry systems of the NCC and CHD, including websites, need to be further developed and maintained, which requires some additional budget and human resources. When the recall system in future starts to be tasked with providing feedback information, it needs to be prepared for that task.

- The Departments of Health in the aimags and districts have a key role, that many of them do not yet fully pick up, for lack of resources or skills. Their duties, in which investment is needed are amongst others:
 - The implementation plans for NCDI screening and case management activities should be revised regularly and updated. The local plans should be developed based on the national ones and adapted to the local needs. The Coordination and Professional Committees of the aimags/districts have a role to continuously assist the Department of Health.
 - Sufficient funding from the local budgets should be allocated for the work of both committees and for the screening programs, since the responsibility for funding of primary care is at aimag/district level. The Department of Health in coordination with the soum administrations should find solutions to provide internet access to all FGPs and SHCs.
 - Further, the cooperation between primary health care physicians and specialists from aimag hospitals should be improved, for example for referral feedback, in which the Departments of Health can play a stimulating and coordinating role.
 - Responsibility for the maintenance of screening and case management equipment provided by the Health Project ultimately lies with the Departments of Health as well as the task to allocate sufficient budget for the procurement of supplies (i.e. strips for glucometers etc.). Necessary resources for purchase of additional screening equipment should be planned in the budgets of the local public administration authorities.
- At the level of the FGPs and soum health centers, the organization of work and sharing of responsibilities of PHC team members will allow for a more efficient screening and management of NCD. An increase of the workload of PHC doctors and nurses is expected when screening and follow up are reaching more numbers. Under these conditions, more responsibilities for health education and counselling of patients with NCD should be given to PHC nurses and feldshers, who should have access to a special counselling room and receive the necessary support from doctors.

Integration and sustainability

Essentially, the four screening programs are fully integrated in the health system at the level of service delivery. No parallel system or functions have been introduced for the screening. As was discussed in chapter two, the health system shows a number of weaknesses. The question is if the screening programs are a too heavy burden for the health system. Or did the Health Project strengthen the health system, so that it can cope with the additional tasks and requirements? This matter will be further discussed in the chapter on integration.

The monitoring and supervision of the screening (referring to AH and DM) is tasked by the Ministry of Health to the Center for Health Development. During the project, these activities of the CHD, and its predecessor the DoH, were contracted and financed by the Health Project and in future will be funded from the government budget. A MoH decision to this effect has been taken, so the continuity of this role of the CHD and the required resources are assured.

5.3 Stroke and Acute Myocardial Infarction Units

Introduction

From the start of the Health Project, the development of so called Stroke and Acute Myocardial Infarction (AMI) Units in Hospitals 1 and 3 in UB was on the agenda on request of the MoH, although

these were not mentioned in the NCD National Program. This was going to be a flagship sub-project with high visibility and high commitment from the partners.

In the years 2006-2010, Hospitals 1 and 3 together annually received 970 stroke patients, with an average mortality of 124 or 13%. The statistics on acute myocardial infarction were not kept in a manner that allowed to conclusively establish these data. Stents are being placed in Hospital 3, mostly as non-acute interventions in cardiology.

The objective of the new Units was to offer acute care to patients with an acute infarction or hemorrhage of brain or heart. For that, equipment for a fast diagnosis through a CT scan and appropriate organization is required. A main ambition was to offer thrombolytic treatment, new in Mongolia, to those stroke and AMI patients that have an ischemic event – contrary to a hemorrhagic event. Such thrombolytic treatment needs state of the art equipment, systems (intensive cardiac care unit, catheterization lab and an intermediate care unit) and staff. Further, in these units stents can be placed in blood vessels as well.

An important feature of an adequate set up of both units is the time factor. Patients with a stroke or AMI need very fast thrombolytic or stent treatment to limit the heart muscle or brain damage that an ischaemic event creates. In the case of AMI, the treatment has to be given within 12 hours maximum of the event, although every hour earlier increases chances of survival or reduction of damage. In the case of stroke, the first 3 hours after onset of the event, are critical. So, while the care provided in the units is critical, the time it needs to get a patient from home, or wherever his symptoms developed, to the “needle” is as critical.

With adequate diagnostic & monitoring facilities and medical care, more lives in an acute situation are saved. Existing acute services worked with limited technical resources and only two angiography machines were available in the country: in the Korean hospital in UB, accessible only to the wealthy, and a nearly 20-year-old equipment in Hospital 3.

As part of this component, also a rehabilitation service would be installed, which implied staff training, purchase of equipment and refurbishment of a rehabilitation unit. Its result would be maintaining or restoring functions, allowing people to function optimally after a stroke or AMI. Further, emergency transport would be improved by way of an ambulance for UB.

Planning and implementation

WHO was contracted, as institutional contractor, for technical advice. An early estimation in 2011 for the costs of this component of the Health Project, as expressed in a folder for the general public of Hospital 3, is USD 1.150 million. Based on further estimations of the expected costs, initially, the Health Project made USD 5.1 million available. It requires a high level of skills to indicate when an angiography or CT scan is required and to decide on the right treatment and implement it. A training scheme for neurologists, cardiologists, rehabilitation and other staff was planned, with training periods in advanced hospitals abroad, like in Korea, of three to six months. A list of equipment and medicines was made, featuring angiography machines, MRI machines, plus thrombolytic drugs.

However, during the bidding process, when the offers arrived, it became clear that the budget was by far too low, less than 50%, for the purchase of a complete set of Stroke and Myocardial infarction equipment for both hospitals. MCA strongly recommended to decrease the scope of the procurement and to save on other contracts. Instead of two units for two hospitals it was decided to purchase two units for one hospital, which was Hospital 3. The MoH finally chose this hospital in June 2012 on the basis of a set of criteria, like hospital infrastructure and performance, and existing quality of care. Further, Hospital 3 had more space to accommodate the new equipment. Also, a less expensive CT scan would be purchased instead of the more expensive MRI. CT is generally better at identifying cerebral bleeding, while MRI is considered superior in early identification of ischemia and

non-vessel related causes of stroke like symptoms (i.e. tumors). Even after the reductions, the budget for the complete Units of AMI, Stroke and rehabilitation was going to be more than what had been budgeted for. Economies had to be made on other components of the Health Project, as was mentioned in Chapter 3. The MoH intended to fund itself the Units for Hospital 1 and to search for the necessary funds.

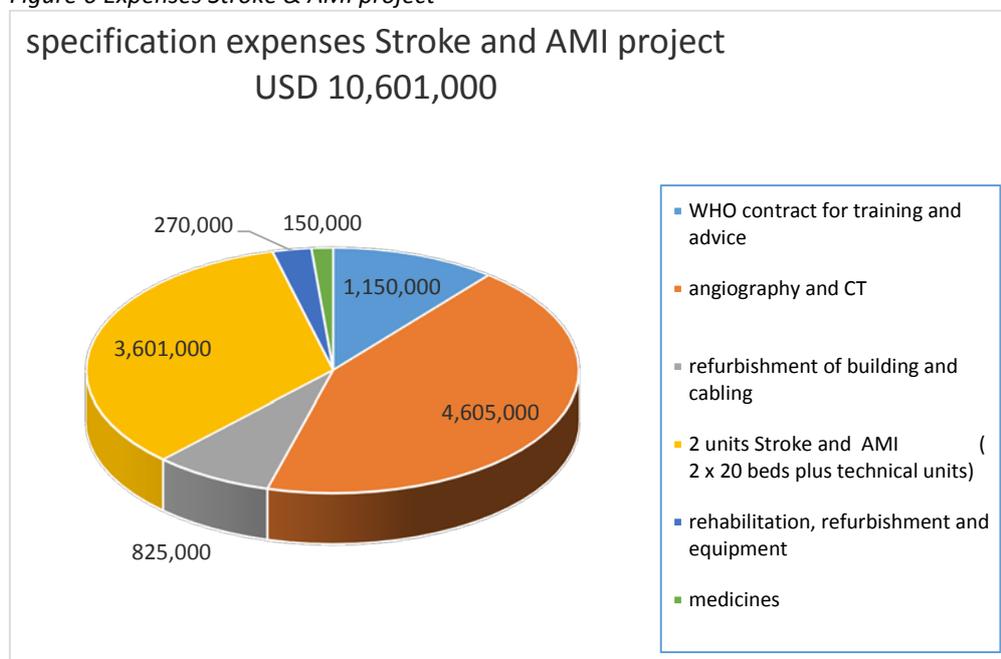
The contract between WHO and the Health Project also was reduced. The expert that was planned for a full 24 months in the country was cancelled and replaced by short term visiting experts. These experts were to help with the planning and set-up of the Units and the training program abroad for specialists from the two Hospitals. Those trainings were to be reduced to three-six months, contrary to the original 12 months, partially due to the delays in this sub-project and partially to contain costs.

Meanwhile, synergy was sought with the Luxemburg project that assisted with the patient registration system for AMI in Hospital 3. It is projected to be ready for use by the end of 2015.

Even after the reductions, a financial shortfall existed. Further, in the beginning of 2013, when the purchased equipment was to be delivered and installed, it turned out that the Hospital 3 building in which the angiography and CT scan were to be installed, was not adequate. Such a building needs special protective walls and roof, to protect against outgoing radiation, incoming electromagnetic fields and static electricity. Also, the equipment requires copper cabling, that had to be installed. Relocation within the hospital and refurbishing of several rooms had to be done. This created delays and also large unexpected costs, in the order of USD 700,000. These costs plus the previously existing shortfall were offset by the additional budget of USD 3 million the Health Project received in February 2013 due to redistribution of budget between the MCA-M projects.

Different sources furnish different information as to the exact timing of the start of the functioning of the Stroke and AMI Units, of the CT scan and angiography machine and of the end of the investments, like training. This paragraph summarizes these elements. The main point to be made here is the pressure that was put on the hospital and individual staff, due to the earlier delays. At the time of closure of the Health Project, mid-September, the rehabilitation department was ready for use, as well as the wards of the Stroke and AMI units, but no patients were being admitted as yet, allegedly because no formal hand-over had been done as yet. Only the O2 supply system for the units still had to be set up, requiring major works in the hospital. The funding of these is a responsibility of the MoH. Parts of the angiography and CT scan equipment were still in their packaging, but the machines were being tested. The refurbishing was going to be finished within a few weeks. A temporary O2 supply system was being improvised. By mid-October 2013 the equipment was completely installed and the technical staff was trained by technicians from the supplier. Training implies making the machines work and making test scans and images of patients. Early November, the wards were receiving patients and most of the staff affected to the Stroke and AMI units had finished their training abroad, some are still in Korea for the purpose. The CT scan and angiography machines were being tested and about to be available for the Stroke Unit, the AMI unit was using them already.

Figure 6 Expenses Stroke & AMI project



The Health Project also supplied medicines for thrombolytic treatment, which is extremely expensive. To date, consumption has been incidental.

Results

Since the Stroke and AMI units were not fully operational at the time of closure of the Health Project, no data are available to assess their results or impact in terms of numbers of patients treated, lives saved and the counterfactual.



Stroke Unit at Hospital 3



According to staff of the Stroke Unit, currently, a reasonable calculation is that the Stroke Unit can expect 1000 stroke patients per year and that, on average, one per day will need thrombolytic treatment. However, the staff affected to the Stroke, AMI and rehabilitation Units is insufficient to offer a 24 hour service: specialised nurses, neurologists and cardiologists. Also, the Stroke Unit needs

intensive care neurologists or doctors specialised in intensive care. The currently affected five neurologists for example are trained in stroke diagnostics and care (thrombolytic treatment) but cannot do an intubation and other intensive care procedures. At the time of planning the Stroke and AMI units the complete skills sets necessary for optimal use of were not considered.

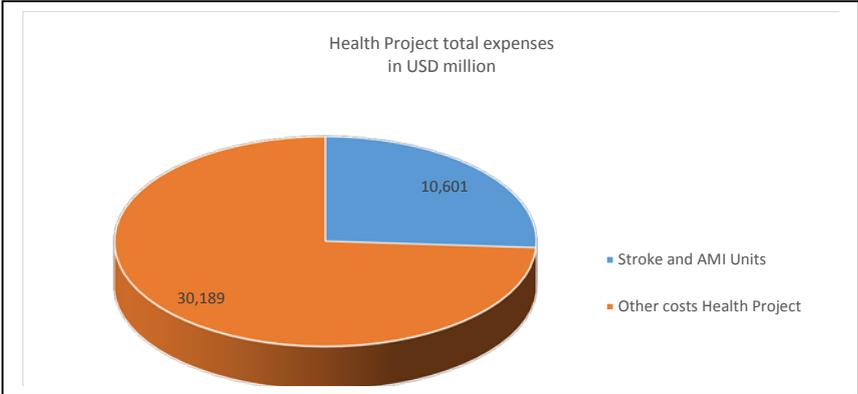
There is an oversupply of some equipment in the Stroke Unit, for example ten machines for artificial ventilation for 20 beds. Compared to the pre-existing and currently functioning IC care unit, that has five beds with two ventilation machines, this must be considered as an oversupply. If myasthenia gravis or Guillain-Barré patients would be cared for, then those machines would be adequate, however, current Stroke Unit staff has not been trained for maintaining patients with these diseases on artificial ventilation.

For AMI these projections have not been made during the evaluation.

Since the current number of available staff for the units does not allow their 100% bed occupation, there is a need to allocate more staff, nurses and specialists, to the Stroke, AMI and rehabilitation Units. Many of them will need training. Hospital 3 leadership indeed does have these plans and is in discussion with the MoH to agree on its contribution. Part of the new staff will be paid for from the hospital’s own budget in 2014.

In general, the functioning costs of the Stroke and AMI Units is a matter of concern. Hospital 3 management is well aware of these (financial) challenges and is actively seeking resources from both the MoH and international donors to sustain the Stroke and AMI Units. For example, on November 5, 2013, a number of ambassadors and other international visitors were invited to Hospital 3 to see the Stroke, AMI and Rehabilitation Units and discuss support.

Figure 7 Health Project total expenses



Conclusions

The Stroke, AMI and rehabilitation Units and associated expenses have cost 25 % of the total project budget but not yet saved any life at the closure of the Health Project.

The planning of the Stroke, AMI and rehabilitation Units must be considered as poor, a qualification the current leadership of Hospital 3 agrees with. Several reasons have been forwarded for this: (i) inexperience of PIU and lack of technical competence among main decision takers (ii) non-communicative and non-participative working style in previous leadership of this sub-project, resulting in lack of engagement of relevant professional hospital staff and lack of joint planning (iii) insufficient coordination in the triangle MoH – Health Project – previous Hospital leadership – (iv) internal feedback from procurement company to leadership of the sub-project, concerning the high prices of equipment, was missing (v) discontinuity of leadership, also in MoH.

The planning weaknesses had several consequences. First, conceptually, the numbers / types of patients and workload to be expected and what Stroke and AMI Units need in terms of recurrent costs, equipment and staff have not been well thought through, even if in 2010 an international consultant had already highlighted these issues. As a result, staffing of both the Stroke and AMI units

is inadequate, in terms of guaranteeing a 24-hour service. Also, currently, there is little clarity on how many patients and how much workload can be expected the coming months / years for these Units.

So, there is no picture of the type of patients and pathologies that the Stroke Unit would best care for. There is no business model for the Units, there is for example no costing plan done.

Further, equipment costs were far higher than initially estimated and understanding of the need to have a well prepared building for equipment like a CT scan and angiography came late, in 2013, after the supplier of the equipment visited the premises. This caused delays and forced the Health Project to cancel other activities. Financially, the Stroke and AMI component was rescued, very late in the Compact, by additional funds coming from other MCA projects.

In itself it is relevant to have Stroke and AMI Units in Mongolia, in view of the NCDI burden. The Health Project’s Stroke, AMI and rehabilitation Units are considered as pilots, with later multiplication elsewhere in UB and in the country. Indeed important lessons learned have been learned, but the learning should not finish as yet.

Recommendation

The optimisation of the functioning of the Stroke and AMI Units is indicated. It would study in detail the components of the *stroke chain of survival*, see Box 5, and a similar one for AMI and take measures for improvement; re-assess number of staff required including nurses; calculate numbers of patients and results to be expected; calculate the costs of medicines and other recurrent supplies; it would include a Quality Assurance of the procedures in Hospital 3. This exercise has been done already internally, but external expertise may help to widen the scope, include Hospital 1 and not limit it to the current resources.

Widening the scope means that this assessment also would address factors outside Hospital 3 and factor in in how far currently the population in general and the staff of family health centers and other hospitals recognise symptoms and are aware of the “time to needle” issue and act accordingly. These were part of the IEC/BCC activities but the KAP studies did not assess the knowledge of the population on this matter. This might lead to additional IEC activities.

In UB, in view of the traffic congestion, the transport of patients to Hospital 3 is a critical issue. While there are no easy solutions, it is imperative to avoid traffic delays, otherwise a large number of the 1000 stroke patients per year (and the uncounted with AMI) will arrive too late in Hospital 3 to benefit from the investments made.

Current Hospital 3 leadership is fully aware of the challenges of installation and optimization of the units and takes them one by one as they come, which is probably the best approach for the short to mid-term.

Box 5 Stroke chain of survival

STROKE CHAIN OF SURVIVAL	
Detection	Recognition of stroke signs and symptoms
Dispatch	Call 1-0-3 and priority EMS dispatch
Delivery	Prompt transport and pre-hospital notification to hospital
Door	Immediate ED triage
Data	ED evaluation, prompt laboratory studies, and CT imaging
Decision	Diagnosis and decision about appropriate therapy
Drug	Administration of appropriate drugs or other interventions

5.4 Emergency Response

As the previous section has discussed, after Stroke and AMI fast transport to a hospital is of the essence, and obviously also after road accidents. In UB, an ambulance system is operational, during the Compact, but not by the Compact, it was extended to 54 ambulances and 35 ambulance teams. During the planning phase of the Health Project, a state of the art ambulance was considered to be a good example for the city. A fully equipped ambulance, a Ford, was purchased, for USD 185,000, including a defibrillator and a suction machine. This equipment was also purchased for other ambulances, as well as material like fixation and bandaging material. Further, the Health Project equipped a training room in the central ambulance station.

The ambulance became operational in September 2012. Its staff, and other city ambulance staff, was trained, see training 22, Table 12. By September 2013, the ambulance had circulated 55,000 km. Expectedly it will do a total of 260,000 km, so it has another four years to go. In the one year, it did about 1700 sorties. The ambulance is stationed close to Hospital 1 and is in near permanent use, with two or three shifts of ambulance teams per 24 hour. During the evaluation, no statistics could be provided on the type of sorties or the results. Allegedly, the defibrillator was used three times in this year. The ambulance has an agreement with Hospital 3 that it will transport suspected Stroke and AMI patients to its emergency services, for immediate transport to the Stroke and AMI Units, in future.

A recent repair of the water pump of the ambulance was covered by the guarantee that expired in September 2013.

According to the directors of the emergency medical service center, the ambulance and equipment were much appreciated, but some of the fixation material was judged to be impractical and the suction device should have been for ambulances, the one delivered is for stationary use. Bags for doctors of the ambulances were promised but never arrived.

Recently, the city purchased 28 other fully equipped Hyundai ambulances at half the price of the Ford. Performance and longevity of the ambulances cannot be ascertained as yet. Presently, no guidelines do exist for ambulance staff and no norms for emergency transport services. This is on the wish list of the emergency services, as well as training especially for rural ambulance services.

In conclusion, the ambulance provided by the Health Project renders good services and has served as an example for the standards to be adopted. The emergency medical services are getting at a higher level of organization and quality. A bottleneck in UB will remain the traffic congestion, that lengthen the "time from incident-to-needle" for a significant amount of hours per week, estimated at 50% of 24/7.

6 Prevention and Public awareness

6.1 Introduction

As was mentioned in Chapter 2, a main reason to start the MCA Health Project was the concern over unhealthy lifestyle of Mongolians, including factors like smoking, alcohol drinking, eating habits and (lack of) physical exercise. The demographic and epidemiological transitions were observed many years ago and the STEPS survey of 2005 and 2009 had provided objective data on the life styles of the urban and rural population. Informing Mongolians about a healthier life style and motivating them to change was a main pillar of the Health Project. This was worked out through different project components: campaigns to inform and motivate the general public and specific target groups like school youth; a grant program for small grants to local initiatives. The sections below will describe these programs. The development of a Network for Workplace Health was a part of the public awareness component of the project but had such a specific own dynamic during implementation that it is reviewed separately in Chapter 7.

The overall results of the campaigns and the grants program will be discussed in chapter 10, results and outcomes.

Key documents on the public awareness program reviewed for this evaluation.

1. STEPS report Mongolia 2009
2. STEPS report Mongolia 2013
3. Supporting Mongolia's fight against non-communicable diseases: A five-year project and its achievements; MCA-Mongolia Health Project Success Stories. FINAL VERSION
4. COMBINED REPORT ON BREAST AND CERVICAL CANCER PREVENTION CAMPAIGNS Behavior Change Communications and Social Marketing Contractor
5. COMBINED REPORT ON CARDIOVASCULAR DISEASE AND DIABETES PREVENTION CAMPAIGNS Behavior Change Communications and Social Marketing Contractor
6. COMBINED REPORT ON HEALTHY DIET AND PHYSICAL ACTIVITY CAMPAIGNS Behavior Change Communications and Social Marketing Contractor
7. Final Evaluation report related to "KAP-study on NCDs for the General Population" Silke Graeser; Monitoring & Evaluation Expert for MCA-Mongolia

6.2 Campaigns

Planning of Campaigns

Information campaigns were developed through very intense collaboration between PIU and the IC, resulting in a comprehensive approach. They developed an Information Education Communication / Behavior Change Communication (IEC/BCC) strategy that was integrated into the National Strategy, officially approved by the MoH in August 2010. This Strategy contained the following key messages

1. Not to start smoking, reduce and stop smoking
2. Eat healthy, nutritionally balanced diet
3. Physical activity (includes sports as well as physical activities like stepping stairs, walking to work etc.)
4. Rational consumption of alcohol
5. Stress Management (availability of coping skills, relaxation methods)
6. Increased health seeking behavior for prevention and early diagnosis, especially behavior toward the use of screening for breast and cervical cancer and breast self-examination
7. Increased compliance of patients toward doctors and nurses advices and prescribed medications

8. Improved skills, knowledge and attitude of health care providers to conduct regular counseling (patient-doctor communication) and related IEC activities.
9. Compliance to traffic rules (i.e. drive without alcohol, use seat belt, drive with permitted speed, no use of cell phone when driving, pedestrians cross over at white line, pedestrians walk through the green light).

For these messages, target groups were defined. In general, the messages are oriented towards persons of working age and children / young people, who will be of working age in future. This is in keeping with the orientation of the Health Project towards economic activity of the population and economic benefit of the Health Project. Obviously, persons who are not of working age (older persons) or have a limited economic contribution (disability) also receive the life style messages.

Healthy Diet

- Primary Target Group: Women (18-45) Women in Western areas will be specifically targeted for salt consumption.
- Secondary Target Group: Men and women who eat out for lunch frequently, owners of restaurants and public/school/work eating establishments, food industry executives

Physical Activity

- Primary target group: Men and women aged over 30 years old in urban settings and in workplaces
- Secondary target group: Workplace directors/administrators (in order affect workplace physical activities/environments)

Road Safety

- Primary target groups: Drivers (UB, Darkhan, Erdenet, intercity drivers) and pedestrians (school children and males 19-49 years old)
- Secondary target group: Parents of school children and owners and instructors of driving courses in selected areas

Tobacco and alcohol

First and Second Campaigns

- Primary Target Group: Youth aged 15-24, particularly high school pupils, university students
- Secondary Target Groups: Parents and family members, law enforcement personnel, local authorities, media organizations, school teachers, social workers and administrators of hospitals, schools and universities, colleges, NGOs, dorm teachers, primary health care providers etc.,

Third Campaign:

- Primary Target Group: General public

Breast and Cervical cancer:

- Primary Target groups: females aged 30-60 years. For the cervical cancer vaccination for girls aged 10-14
- Secondary Target groups: Primary health care providers, parents, volunteers, employees of cosmetic salons, hairdressers, administrators of entities, media, health methodologists, schools, colleges, universities.

The strategy also defined expected results and outcomes:

As results:

- Knowledge and attitude among target group population about risk behaviors of NCDs and RTIs improve and the number of people with risk behaviors declines,
- The number of people with positive healthy behaviors increases, consequently the prevalence of NCDs and incidence of RTIs decrease.

The following outcomes were expected:

At social and public level:

- Intersectoral cooperation will be improved within the behavior change intervention framework at local and national level.
- Increased involvement and support of decision makers on prevention of NCDs and RTIs
- Social and legislative enabling environment for risk behavior change communication will be created.
- Financing for risk behavior change communication will be increased.
- Evidence based behavior change communication, information, education intervention to prevent NCDs and RTIs directed to the target group will be widened.

At health service-providers level:

- Capability of health service providers to organize IEC intervention for prevention of NCDs and RTIs will be improved.

At family and individual level:

- Quality of and access to IEC materials will be improved.
- Knowledge, attitude and skills about risk behaviors of the target groups will be increased. Awareness about healthy behaviors is increased.
- Myths of the risk behaviors i.e. “cancer can’t be prevented or cured” among target group will be decreased.

For implementation of the strategy, key stakeholders were identified through a stakeholders analysis conducted by the PIU with the IC, on the basis of information collected from 79 stakeholders, 6 main categories:

- Government organizations (MoH, MoSC, DoH, Traffic Police Department etc.,)
- Training and research institutions (PHI)
- Medical institutions (Public/Private: HSUM)
- International (Donor) agencies: WHO, ADB, UNICEF, UNFPA
- NGO/INGO: ADRA, World Vision etc.,
- Private companies.
- Media: Police FM Radio 96.3, Daily newspaper, MNTV, MNRS etc.,

These stakeholders groups were going to play a role in one or more of the campaigns.

Implementation

For the concrete implementation of the strategy, a tendering process was launched, resulting in a contract in September 2010 with the Mongolian National Public Radio and Television, MNB, for the price of USD 2,592 million. MNB formed a consortium with several organisations, like Mongol Vision, for the design, development and printing of IEC materials. Another partner, the Mongolian Anti Tuberculosis Association was going to organize outreach activities among secondary schools and workplaces through their volunteers. The Adventist Development and Relief Agency Mongolia, Mongol Urkh, a psychotherapy Association, and the Education Alliance were contracted to conduct trainings for alcohol and tobacco use prevention sessions among school children, through peer educators. Besides MNB, UBS other television and radio station, and FM radio channels and print media organizations collaborated as well through media network.

The MNB consortium was going to launch the campaigns for which it would carry out a series of tasks:

- Promotion of advocacy action plans and events targeting key national, aimag and soum opinion leaders and decision makers; for this it would strengthen inter-sectoral collaboration at the aimag, soum and bag levels.
- Design and implementation of national and local NCDI campaigns and competitions. This task included the organization of competitive events to garner greater community awareness and to sustain interest in NCDI prevention.
- Outreach to bring about changes in household and individual behavior. This activity sought to raise the public’s awareness and demand for new NCDI services and information and

engage the public including households to actively monitor their own health by adopting healthy lifestyles, to detect cancers early, to drive and cross streets more safely.

- The production of mass media audio and visual materials which were pre-tested and cleared by national and local authorities and MCA-Mongolia.
- To print disease-specific public awareness, public relations and behavior change materials. This task involved handling all of the printing and reproduction for all media and campaign related and outreach materials for the tasks above.

15 campaigns were planned, three each for healthy diet and physical activity, CVD's prevention, Road and Traffic Injury prevention, Breast and cervical cancer prevention, prevention of alcohol and tobacco. Each national campaign was to last approximately three months. The implementation of the entire campaign was to take place during the years 2011 and 2012.

By summer 2011, after the first campaigns, the experiences were positive but several changes were then considered desirable for the IEC/BCC program:

- The campaigns were modified to nine three-month campaigns and six two-month campaigns nationwide. The campaign sequence also needs to be changed due to the change in schedule of NCDI screening activity, which previously was expected to start in June 2011.
- In addition, the original BCC contract had contained a detailed media plan, which did not contain a multi serial TV drama on NCDI. On the basis of further assessment of data from KAP surveys and the STEPS 2009 survey, and recommendations of short term international experts, TV drama was introduced as a way to reach the general public and high risk adults. It led to a series on TV called "Ogtsom Ergelt" (U-Turn)².
- The number and types of the print materials were initially defined in the contract, however, lessons learned since the project was launched indicated that the number of handouts should be significantly increased and the amount of flyers and brochures decreased.
- Finally, some personal changes at the contractor's management were agreed. The contract between the Health Project and the MNPRT was amended accordingly in September 2011, to become USD 2,854 million.

Table 18 schematically shows the activities of the IEC/BCC campaign over the years. However, the last two campaigns had to be cancelled early in 2013, when the Stroke and AMI claimed more of the budget. The MNB contract then was reduced by USD 259,000, finally resulting in a total contract of USD 2,595 million.

Each campaign had its specific slogan and a key message tailored for the needs of the target group. The challenges and lessons learnt of the previous campaigns were monitored, analyzed and integrated into the design of subsequent campaigns. Special attention and emphasis was given to the involvement of communities and non-healthcare sectors and to the strengthening of intersectoral collaboration. All the main elements of public campaigns were widely used, including advocacy, the mass media, publications, audio and video recordings, outreach activities and public events. Information was distributed to the target groups through internet chats, question and answer columns, mobile phones, advertisement boards, street LED screens, FM radio, musical channels, cinemas, theaters, shops, markets, public places, public transportation and advertisement boards (at bus stops). Entertainment programs, competitions, art contests, professional consultations, health warnings and recommendations printed on commodities were extensively used.

Also, as part of task 2, thirty-four 'special health days' events were organized at the national and local level covering approximately 38,000 people. Over 41,000 people attended 13 events organized

²Can be watched on youtube: http://www.youtube.com/results?search_query=ogtsom+ergelt+1&sm=1

in the city of Ulaanbaatar. Moreover, information about the organization of screening activities at primary health care facilities was disseminated to 4,100,000 users of cell phone services of UNITEL, MOBINET, SKYTEL and GMOBILE companies (overlapping users included).

Table 18 IEC/BCC Activities

	2011				2012				2013		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Task1.											
Advocacy activity, meetings											
Best practice sharing meetings and trips											
Task2.											
National campaigns (15)											
Healthy diet and physical activity (3)	3 mo		3 mo				3 mo				
CVDs prevention (3)				3 mo		3 mo				3 mo	
Road traffic prevention (3)	2 mo		3 mo				2 mo				
Breast and cervical cancer prevention (3)					2 mo	2 mo		2 mo			
Prevention of alcohol and tobacco (3)		3 mo		3 mo					2 mo		
Aimag level campaigns (21)		6	5			6	4				
National competitions (10)	2		4	1	1	1	1				
Aimag level competitions (30)	1	18	8	2	1						
Task3.											
Social workers' outreach activity											
Workplace outreach activity	300 meetings			100 meetings							

Cooperation with local public authorities in general worked well. An early example was the 2010 "Green Days of Autumn" activities in Ulaanbaatar, organized by the city government and the Ministry of Agriculture to promote exercise and healthy eating habits. This was repeated in 2011 and 2012. These events lent great visibility to the Health Project.

Finally, 13 communication campaigns were conducted: RTI prevention (3); Healthy nutrition and physical activity (3); Tobacco and alcohol prevention (3); CVD prevention and screening (2); CC and BC prevention and screening (2).

The website www.ncdi.mn continues to provide information on healthy lifestyle, screening and other health issues, as a lasting source left behind by the Health Project.

Advocacy

The information and awareness campaigns in a natural manner also resulted in messages, material and activities to advocate for specific objectives. The most cited in the Health Project are the lobbying for the anti-tobacco law that finally was adopted by parliament early in 2013. Information to and discussion with food producers led to the reduction of salt in the bread of Talkh Chiher and fat by 2-2.5% in the milk and sugar in the yoghurt by 3-5% of Monsuu Co. Other companies did similar reductions as well.

Further results

See the end of this chapter.

6.3 Grant program.

Background

A program of small grants for national and local organizations was set up, with the purpose of stimulating local involvement and initiative in studying and preventing NCDs. The intention was to fund short term applied research, special case studies, health promoting workplaces and community initiatives. The research would help to provide information to decision makers and program implementers on the most effective, affordable and sustainable approaches to the major NCDs. Such a grant program had never operated before in the country, hence a thorough preparation and communication were required.

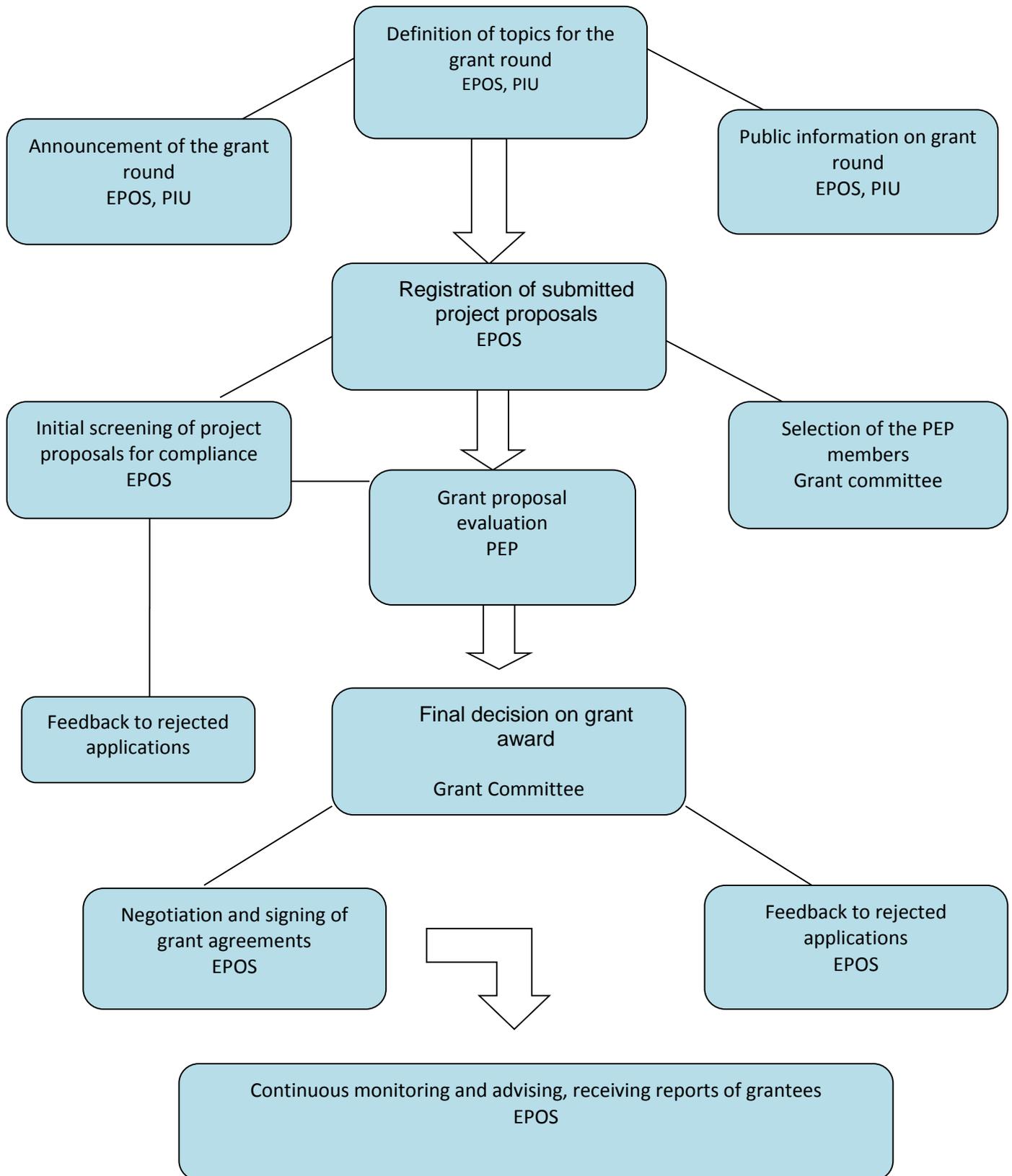
Preparation and implementation

The IC was tasked to run the Grants Program, as the initial contract indicated. The preparation took the second half of 2009. The amount of the grants was set at USD 1,000 – 20,000. Initially, approximately 50 grants were foreseen with a total amount of USD 1,135,000, increasing to 86 grants later on. Late in 2009, MCC authorized an increase from USD 1.5 million to USD 3.0 million for the small grants after the project expansion, leading to budget availability for more than 200 grants in total. The number of grant rounds that was planned varied over time. Initially nine rounds were considered but as time passed it became clear that this would not fit in the projects time frame and the number was reduced to five. Due to budget constraints, described in Chapter 3, the 5th round had to be cancelled and the total amount available had to be reduced from USD 3 million to 2,424 million. For the final figures see Table 20. The IC's Grant Team initially existed of one full time and one part time manager and later evolved in a team of four full time national staff with temporary staff affected when required to deal with the additional workload of incoming proposals.

A Grant Manual for applicants, Grant Rounds agendas, back office documentation like a Grants Management Information System, a grantee monitoring tool, a Grants Score card and templates for financial and narrative reporting by the grantees had to be developed and brought in line with MCC policies. Grant eligibility criteria were set and included in the manual. They did not change over the three years of the grant program. Selection and award criteria were set up, and a grants selection committee, whereby for a while the remuneration of the five members of the Grants Committee, to be established by MCA, was a point of discussion, because MCC regulations do not allow payment to any GoM employees. On the other hand, a high workload was foreseen in view of the expected number of applications. A 10-member Grants Proposal Evaluation Panel, with changing composition for each round, pre-selected proposals for funding. The final authority as to which grants would be approved rested solely with MCA. An Ethics Committee of the MoH also reviewed the applications and rejected two proposals in total. Figure 8 shows the flow diagram of the proposals as they were handled by the Grants Team.

During the preparation phase it became quickly apparent that it would be needed to train applicants and grantees in writing an application and in organizing their own grant management. Courses or workshops on writing research proposals were already planned anyway. Several additional workshops were held for the purpose, integrated in the training program. In January/February 2011, a total of 1625 (potential) applicants participated in workshops for training of proposal writing, including representatives from 20 Workplace Health Promotion pilot companies. A workshop on the subject "How to write a scientific article" was held for 31 grantees of round one and two. The purpose was to provide articles for a special issue of the Mongolian Medical Journal.

Figure 8 Proposals as handled by the grants team



In January 2010 the first call for “concept papers” was launched via newspapers and other channels and resulted in 1300 concept papers. After evaluation 303 applicants were invited to submit grant proposals and a total of 213 proposals were received by the deadline of April 6, 2010. As Table 20 shows, this resulted in 93 projects approved. For later rounds, no concept papers were used, since it lead to issues with future applicants. The general campaigns, conducted from January 2011, disseminated information about the grants program as well.

Outputs

Several tables below show the results of the grant mechanism. Table 19 summarizes the number of grants per round and the average amounts allocated per grant. Table 20 gives some information on applicants and Table 21 outlines the objectives per round.

Table 22 shows an overview of the type of projects and the themes addressed and table 23 and 24 the number of grants implemented in aimags and districts of UB, per round; budgets per aimag and for UB in total.

Table 19 the number of applications received per round, number of grants allocated and average amount per grant. Total amount awarded in each round.

	Number of grant applications	Number of grants awarded	Starting dates projects	Average amount per grant in USD	Total amount awarded in USD
Round 1	213	93	July 1 and October 1, 2010	9,093	845,638
Round 2	167	37	June 1 and September 1, 2011	10,084	373,100
Round 3	253	53	November 1, 2011	14,015	742,795
Round 4	250 (includes 31 proposals from round 3)	36	May 1, - July 1, 2012	12,849	462,566
Total	842	219		11,069	2,424,099

From the number of concept papers and from the table above one can conclude that there were huge numbers of applications for the grant program, which testifies to the effective communication of the grants program and of the strong interest in the country for participation in the program. The larger number of grants for UB includes for organizations that work at national level, so there is no over-participation of UB city or districts.

Table 20 Grantees

Grants allocated to	
Schools	24
Business	16
workplace health	24 (of which 9 by business)

The grants were allocated for the objectives as described in Table 21.

Table 21 Objectives of the grant rounds

Round	Objectives, topics covered.
1	Health promoting initiatives and support activities that will lead to greater involvement of other sectors to increase awareness of, and practical responses to preventable deaths caused by - hypertension, diabetes, breast and cervical cancer and road traffic injuries
2	Research proposals
3	Initiatives that address risk factors causing NCD; support health promoting environment (workplace, school, hospital) by improving health education; increase public mobilization and participation, responsibilities of citizens and local authorities.
4	Health Promotion and NCD prevention

Table 22 Topics of implemented grants, by catchment areas, number and budget, 2010-2013

		Catchment areas					Entire Mongolia
		All budgets in USD	Organizations internally	Sum, khoroo level	Aimag, District level	Ulaanbaatar	
1	Anti-tobacco and alcohol	# of projects	1		7	4	7
	Budget		5,000		32,971	33,500	99,100
2	Cancer	# of projects		2	1		6
	Budget			6,770	5,000		53,591
3	Cardiovascular disease	# of projects	1	1	1	1	8
	Budget		3,000	3,500	12,000	9,000	70,125
4	Diabetes	# of projects	1		5		5
	Budget		13,000		24,200		67,602
5	Health promotion	# of projects	13	4	22	9	27
	Budget		121,014	13,709	199,308	78,402	371,661
6	Healthy environment	# of projects	37	15	15	3	2
	Budget		516,186	185,980	186,990	52,210	38,830
7	Road traffic injuries	# of projects	-	4	5	4	5
	Budget			28,000	50,850	44,600	72,500
8	Other	# of projects			2		1
	Budget				5,500		20,000
Total	# of projects		53 (24.2%)	26 (11.9%)	58 (26.5%)	21 (9.6%)	61 (27.8%)
	Budget		658,200	237,959	516,819	217,712	793,409

Table 23 UB and aimag distribution of grants allocated.

Aimag/ city	Round 1			Round 2			Round 3			Round 4			Total (#, %)		
	UB	Aimag	total	UB	Aimag	total	UB	Aimag	total	UB	Aimag	total	UB	Aimag	total
1 Anti tobacco and alcohol	10	6	16	3	0	3	-	-	-	-	-	-	13	6	19
													10%	6.7%	8.7%
2 Cancer	4	0	4	4	1	5	-	-	-	-	-	-	8	1	9
													6.2%	1.1%	4.1%
3 Cardiovascular disease	4	0	4	7	1	8	-	-	-	-	-	-	11	1	12
													8.5%	1.1%	5.5%
4 Diabetes	1	4	5	3	1	4	-	-	-	2	0	2	6	5	11
													4.6%	5.6%	5.0%
5 Health promotion	25	17	42	10	1	11	1	1	2	11	7	8	47	26	73
													36.2%	29.2%	33.3%
6 Healthy environment	4	2	6	1	1	2	21	30	51	6	9	15	32	42	74
													24.6%	47.2%	33.8%
7 Road traffic injuries	7	6	13	4	0	4	-	-	-	1	0	1	12	6	18
													9.2%	6.7%	8.2%
8 Other	1	2	3	-	-	-	-	-	-	-	-	-	1	2	3
													0.8%	2.2%	1.4%
Total	56	37	93	32	5	37	22	31	53	20	16	36	89	130	219

Map 3 Number of grants per aimag and for UB, 4 rounds in total

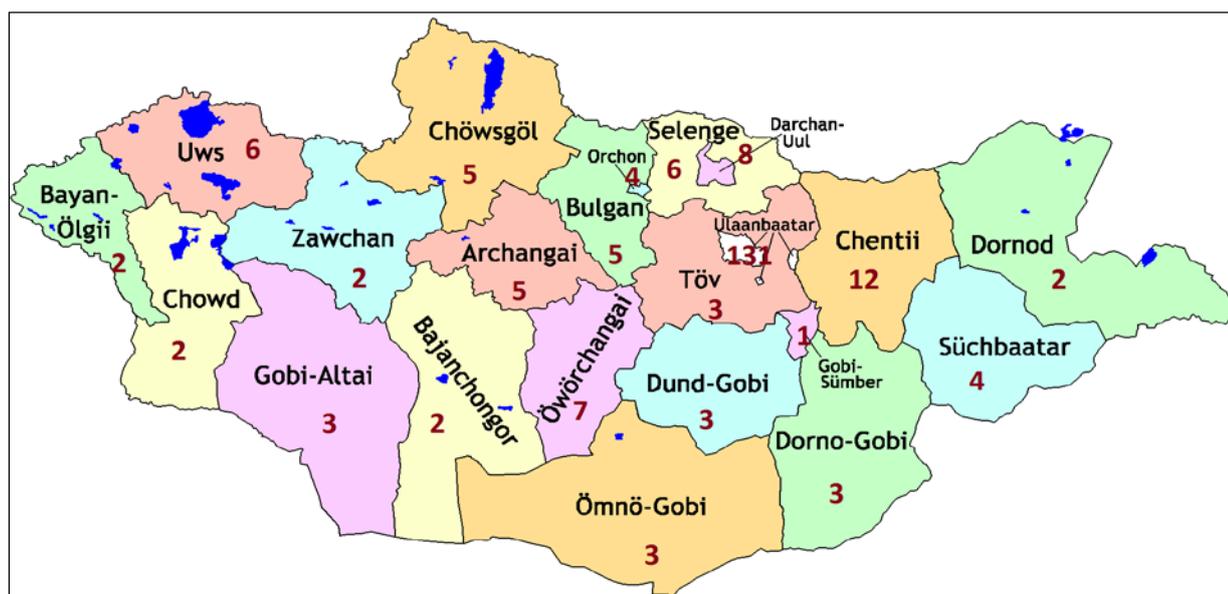


Table 24 Number of grants implemented in aimags and districts of UB, per round; budgets per aimag and for UB in total.

All budgets in USD	Round 1		Round 2		Round 3		Round 4		Total		% of budget
	Number of grants	Budget									
Aimag/ city UB	56	588,787	32	331,800	23	356,125	20	289,862.24	131	1,566,574	64.6%
Arkhangai	2	14,150			3	41,100			5	55,250	2.3%
Bayan-Ulgii	1	4,000					1	7,381	2	11,381	0.5%
Bayankhongor					1	3,600	1	4,680	2	8,280	0.3%
Bulgan			2	19,300	1	7,520	2	19,500	5	46,320	1.9%
Darkhan-Uul	7	22,016			1	20,000			8	42,016	1.7%
Dornogovi	2	39,705	1	12,000					3	51,705	2.1%
Dornod					1	15,900	1	10,000	2	25,900	1.1%
Dundgovi					2	13,000	1	14,000	3	27,000	1.1%
Govi-Altai	2	20,000					1	4,643	3	24,643	1.0%
Govi-Sumber					1	9,950			1	9,950	0.4%
Khentii	3	19,800	1	5,000	8	90,650			12	115,450	4.8%
Khovd	2	11,350							2	11,350	0.5%
Khuvsgul	1	7,455			1	7,900	3	42,000	5	57,355	2.4%
Orkhon	2	8,000			1	15,000	1	15,000	4	38,000	1.6%
Selenge	3	12,490			3	46,950			6	59,440	2.5%
Sukhbaatar	1	4,900	1	5,000			2	22,000	4	31,900	1.3%
Tuv	1	5,000			1	20,000	1	9,000	3	34,000	1.4%
Umnugovi	2	13,850					1	8,000	3	21,850	0.9%
Uvs	4	30,640			2	34,300			6	64,940	2.7%
Uvurkhangai	4	38,495			3	41,000			7	79,495	3.3%
Zavkhan					1	19,800	1	4,500	2	24,300	1.0%
Total	93	845,638	37	373,100	53	742,795	36	462,566	219	2,424,099	100%

In spite of the large amount of grants, nearly 100% of the projects were monitored, meaning that they received a visit of the grant team for verification and support. Of all the projects granted, six were terminated because of non-compliance in terms of activities or reporting or because of internal problems.

Although 60% of grantees are from UB, the coverage of entire UB and UB only, for example by the city health department, is 9.6%, while grants covering entire Mongolia add up to 27.8%. Grants covering aimag/district level are 26.5%, soum/khoroo level 11.9%. 24.2% of grants are implemented at organizational level, often for health at the workplace activities.

6.4 Results of IEC/BCC campaigns and grants program

This section reviews the results of the IEC/BCC campaigns and the grant program, because their aims overlapped largely.

There are several ways to assess these results. The Health Project itself has hardly developed indicators for this, see Annex 10.

The participation in the screening programs is one indicator of the awareness and behavior change generated, but that participation also depends on the health services and their accessibility. This has been discussed in Chapter 5. The participation must be considered as sufficient for a first year of screening.

Another way to assess the results of the IEC/BCC campaigns is through the results of the STEPS survey 2013 compared with those of 2009. Annex 13 briefly shows some comparisons that the STEPS report provides.

A number of behavior changes actually point in the wrong direction, see Table 25 for several risk factors and behavioral factors. There are many minor changes in the direction of increased knowledge and awareness when it comes to healthy food and life style in general. However, for each target group of the IEC/BCC campaigns, one needs to make a specific assessment. One target group was young people from 15 to 24 on the subject of no-smoking. The prevalence of smoking reduced from 35 to 25% for male smokers. For alcohol use also a reduction is seen: from 26.7 to 15.9%. This reduction for smoking is not significant, statistically, but for alcohol use it is.

These data, from STEPS 2013, have become available recently and need further analysis but they may point to a success in terms of effects of the IEC/BCC campaigns. The impact of the IEC/BCC campaigns is not sufficient yet to reverse the worsening trends in the other indicators.

Table 25 Risk and behavioral factors, STEPS outcomes

STEPS surveys	2005	2009	2013
Percentage of daily smokers, 15-64 years	23,3	24,3	24,8
Percentage that drank alcohol in the past 12 months	66,9	58,5	58,4
Percentage that is overweight	32,4	40,7	54,4
Percentage with none of the risk factors	3,4	2,5	1
Percentage with 3 or more risk factors	23,8	27	36,9

While there is synergy between the results of the IEC/BCC campaigns and the grants program, the latter has as additional expected result the engagement and activation of organizations at local level in terms of NCD awareness and prevention. This cannot be quantified and expressed through indicators but especially during the Focus Group Discussions there were many confirmations of these effects, see Annex 4.

7 Special groups.

7.1 School health.

In spite of the focus of MCC on economic productivity of the population, quite some attention to health of young people was given.

Previously, no national program or curriculum did exist for health education at schools. Usually, teachers develop their individual health training plan, if at all. The Health Project intended to address specifically school youth in health education.

An MoU was developed and signed by the MoH, Ministry of Education, Culture and Sports (MoECS) and the Health Project in July 2010. It agreed to develop activities related to revision of health education standard and curricula, training of teachers on health education subjects and promoting health supportive schools/kindergartens.

An inter-ministerial working group was established, in order to implement these tasks.

Prior to that, the revision of the Mongolian State Standard on Primary and Secondary School Health Education in the field of NCDs was conducted by a team of international and local IC experts. The revised version was sent to PIU and MoH in July 2010. However, the Standard was not officially

approved because the MoECS gave priority to the integration of the Cambridge educational standard into Mongolian educational system, and this is still in process.

The national group working on the development of a health education curriculum was trained in a 2-day training-of-trainers course by IC international experts. The NCD health education subjects were presented and discussed with participants. Recommendations for a better integration of the NCDI topics in the 8th grade curriculum were made and a lesson plan on nutrition for the 8th grade was developed. The document was sent to PIU and MoH and discussed with the national working group members in August 2010.

An assessment of necessary IEC materials to be developed for schoolchildren and teachers was conducted. Meetings with schoolchildren and teachers were organized for this purpose. A toolkit for teachers on interactive teaching methods was developed. The working version of the toolkit was pre-tested in another training-of-trainers workshop. All the products of these activities are now awaiting approval of the above mentioned standard for practical use.

The health promoting schools concept was supported from the grants component in year 2011. 20 projects for USD 254,776 were financed on health promoting schools by MCA-Mongolia. In terms of targeting school aged children, the general campaigns as reviewed above did also reach out to them, as did the sports events.

As part of the general training program, 700 teachers from across the country were trained in health education, which is a small percentage of all teachers in the country.

Results

A countrywide school based health survey among secondary school children was done in 2010 and repeated in 2013. The 2010 survey addressed students in grade 7-12, aged 12-18 years old and the 2013 survey assessed students in grades 7-11, which are aged 12-17 years. Also, KAP studies in 2010 and 2013 were done among school teachers and managers. A summary sheet of the latter is included in Annex 11, because it shows surprising results.

According to the survey results, while in the baseline study 26.4 respectively 52.2% of rural and urban teachers had participated in training, in the follow-up study 42.2 and 67.1% of rural and urban teachers had participated in such training. This means that the teachers consider that they did already receive trainings, although the survey did not specify the topics of those trainings. Also, in spite of the Health Project providing training to a small group of teachers country-wide only, the increase in “received health education training” was noticeable.

More importantly, on NCDI matters the level of teachers’ knowledge increased considerably. For all the risk factors as physical inactivity, smoking, alcohol consumption, high salt and sugar consumption, overweight, stress, age over 40 years and genetic factors etc. there was a significant improvement in knowledge. The same pattern applies to the knowledge of prevention and early detection measures as physical activity, not smoking, no alcohol consumption, low fat diet, low salt and sugar diet, taking advantage of screening, regular cholesterol and blood pressure measurements, and breast self-examination which also showed significant differences. Consequently, the M&E indicator ‘Percent of school health education teachers who can list at least two prevention measures for NCD’ improved from 59% (baseline before the project) to 91% (follow-up after the project).

The knowledge about early detection measures also improved for all mentioned options: self-examination as an early detection method for breast cancer (40.7% to 45.4%) and especially taking advantage from screenings (44.9% to 67.1%), the regular control of cholesterol (25.9% to 38.9%) and blood pressure (45.1% to 54.9%) as early detection measures. There was an improvement in regard

to breast and cervical cancer: the knowledge about how to conduct self-examination of breasts increased as well as the knowledge about tests for early detection of breast cancer and cervical cancer improved.

In terms of health behavior the picture is also positive; the physical activity of teachers increased, and the percentage of smoking teachers significantly decreased from 8.4% to 4.4% as well as the consumption of fatty meat and butter. The percentage of heavy drinking significantly decreased from 13% to 1.4% and the percentage of abstinent teachers in the past 30 days significantly increased from 33% to 41.4%. The awareness for health in terms of breast and cervical cancer shows also a positive tendency: more female teachers visited regularly their gynecologist (at least once a year).

In terms of first aid the preparedness of schools improved; according to the responses given to the KAP study among teachers and school managers, the availability of first aid kits in schools increased from the baseline (67%) to the follow-up study (80.6%). Similar results occurred for the ability of school-teachers to provide first aid in the case of an injury; it increased for urban teachers from 70.6% in the baseline study to 81.1% in the follow-up and for rural teachers from 68.7% to 76.9%.

Teachers, who had participated in health educational trainings showed a significant better knowledge than teachers without any training.

The outcomes of this section are very encouraging: apparently there is a rapid increase in knowledge and skills of teachers in terms of NCDI and its prevention and the Health Project contributed significantly to that.

7.2 Health at the workplace

The Health Project included a workplace health promotion (WHP) component. The WHP component focused on guiding employers and employee representatives to create healthier workplaces by three approaches:

- Assistance to the MoH and local authorities in promoting and supporting private companies to enter into partnership for health promotion.
- Support to MoH and public and private organizations in the implementation of a workplace health promotion concept.
- Small grants component related to health promoting workplaces.

Activities

Initially, the Health Project through the IC launched a series of dialogues and discussions between various local business companies, government and non-government organizations on creating a healthy workplace. An assessment of the situation with regards to WHP was conducted among 36 companies and institutions and results were presented to a wider audience comprising the participants and other stakeholders. 18 were designated as pilot companies. The pilot companies received special attention and technical support with regard to their health promotion programming.

As a second step, the group was expanded and provided with information on healthy living tips (physical activity, health nutrition, smoking cessation, responsible drinking) as well as on systematic program planning. As a result, a toolkit for workplace health promotion was created drawing from international best

From a booklet with success-stories of the Health Project:

“Newtel is one of the companies that is acting as a role model by introducing a “Healthy Office”, which was initiated by MCA-Mongolia. The communication sector requires workers to be healthy. Newtel has introduced healthy diet tips, encourages exercise in the office, and has succeeded to generate a tobacco and alcohol free environment.....”

practice tools and the overarching guidance of the WHO Healthy Workplace Framework. Support was given to companies and institutions on an ongoing basis in applying those tools. In addition, a number of training activities (training of trainers [ToT], regional training, workshops and seminars) were held to advance knowledge and skills in workplace health promotion programming. In all of the above activities intersectoral collaboration was encouraged by involving the Ministry of Health, the Mongolian National Chamber of Commerce and Industry, Mongolian Trade Union Confederation, Mongolian Public Health Professionals Association, the Mongolian Employers' Federation and Health Sciences University of Mongolia (HSUM).

Table 20 showed that a number of small grants was used to develop health at the workplace activities. Two non-competitive grants were awarded to the nascent Mongolian National Network for Health Promoting Workplaces and to the National Chamber of Trade and Industry in 2011. At the end of 2011, the National Network conducted a strategic planning workshop to formulate a vision, mission and goal of the network as well as the identification of the strategy in a participatory way. It elected a Steering Committee, three working groups and a Monitoring & Evaluation Group.

The Health Project has been providing support through an advisory group with participation of the PIU, WHO, MoH and the IC. Network members were further trained in workplace health promotion through a regional training program.

Network sub-committees have been established in several provinces (Bulgan, Khentii, Dornod, Sukhbaatar and Bayankhongor aimags), and intentions of the Network are to established them in all aimags. All sub-committees encourage their members to become health-promoting workplaces. By the end of July 2013, a total of 415 members have registered for the Mongolian Network for Workplace Health Promotion: 228 from aimags (administrative subdivision) and 187 from Ulaanbaatar.

The Network issued three newsletters and sent them to its members by e-mail. The newsletters were also uploaded on the project website (www.ncdi.mn), which has a special subsection for network members. In September 2012, a study tour on workplace health promotion was organized by MCA-Mongolia Health Project to the USA for 15 participants. In December 2012, the first National Forum on Workplace Health Promotion was held in Ulaanbaatar hosted by the MNCCI. The participating stakeholders and interested parties discussed how to further advance workplace health promotion in Mongolia and agreed on a set of national and organizational recommendations. In 2013, a National Awards competition was conducted by MCA-Mongolia to recognize employers with good practices in workplace health promotion. Finally, the Network received official status as non-governmental organization.

Results

By September 2013, there are only few activities of the Network, which may be due to the holiday season August/September but also by absence of financial means, after Health Project funding ceased. Further, an alternative network is being initiated by the President of the existing one. This raises questions about the way forward.

Meanwhile, a large number of employers is aware of and has tools for workplace health promotion as a business strategy. Hiking trips for employees, healthy food in canteens, computer-supported physical exercises at the workplace for employees are among the results of the healthy workplace approach. One company has helped set up a quit-smoking program for its employees. This indicates that the health at the workplace approach also has supported other components of the Health Project. All in all, the Health Project helped to kick start the Network and other initiatives, the sustainability of which is going to be tested.

8 RTI

8.1 Introduction

This chapter reviews the activities related to Traffic and Traffic Injuries. The amended Compact does not mention any specific RTI activity. Data collection and awareness concerning Injuries are mentioned in a general fashion. However, during the initial planning, the PIU and MoH quickly agreed to include traffic related activities. These activities reside under all the three categories of capacity building, prevention and service delivery of the Health Project, but they are discussed here in one chapter to show the connection between them, as the traffic experts tirelessly emphasised during the project.

Internationally, injuries are included in NCD analyses and action plans. As such, their inclusion in the Health Project did not require a big leap of imagination. The combination of NCDI is international practice.

In 2009, in order to address the emerging problem of RTI's, the GoM adopted the National Program on Injuries and Violence Prevention. One of the objectives of this program is to "Reduce number of Road and Traffic Accidents and Injuries by reducing risk factors contributing to RTAIs, strengthen traffic safety, improve knowledge and attitudes of road users, and promote safe behavior and strengthening intersectoral collaboration."¹⁴ It is in support of this Strategy that the Health Project undertook to include Injuries in the NCD project.

In 2011 the UN, supported by WHO, launched the "Decade of Action for Road Safety 2011-2020" and Mongolia has subscribed to this challenge which also indicates a high level of interest. However, there is not a "National plan for the Decade of Action for Road Safety 2011-2020" as yet. Recently, the WHO Global Status Report on Road Safety was launched and it serves as a baseline for the Decade of Action for Road Safety. The report provides a methodological guidance for the countries in the implementation of traffic safety measures, and also provides recommendations, particularly with regards to drink-driving, driving under influence of narcotics, use of seat belts, special seats and helmets for children and speeding, improvement of traffic safety management, improvement of services for the vulnerable road users including pedestrians, cyclists and motorcyclists, and improvement of first aid services to the victims of road traffic accidents.

Key documents on the RTI program reviewed for this evaluation.

- ROAD TRAFFIC INJURIES STUDY, February 2010; Institutional Technical Assistance Contractor for the Prevention and Control of Major Non-Communicable Diseases and Injuries
- Analysis of Road Traffic Accidents and Crimes by using investigation forms of Road Traffic Police Department; *J.Demberelsuren- Public Health Institute* ; Millennium Challenge Account Mongolia - Health Project; Ulaanbaatar 2010
- Black Spot study; Millennium Challenge Account-Mongolia Health Project; *J.Demberelsuren Public Health Institute of Mongolia*; 2011
- Campaign Strategy for Road Safety; BCC/Social Marketing Contractor for Mongolia's Prevention and Control of Major Non-Communicable Diseases and Injuries; Ulaanbaatar January 14, 2011.
- COMBINED REPORT ON ROAD AND TRAFFIC INJURY PREVENTION CAMPAIGNS; Behavior Change Communications and Social Marketing Contractor; Ulaanbaatar; 2013
- KNOWLEDGE, ATTITUDES AND PRACTICES OF PEDESTRIANS, DRIVERS AND TRAFFIC POLICEMEN ON TRAFFIC SAFETY RELATED ISSUES; EPOS; Ulaanbaatar 2010.
- TRAFFIC ACCIDENT BLACK SPOT TREATMENT; May 22, 2011; Dr. Matti Roine, THL international expert; Dr. Demberelsuren J., EPOS local expert

- REVIEW OF ROAD TRAFFIC INJURY ACTIONS BY THE MCA-MONGOLIA HEALTH PROJECT; May 30, 2013; author not identified.
- Final Report for Traffic Accident Information System; Empasoft Co., Ltd in association with Singleton LLC; Submitted: Aug 05, 2013;
- Maintenance report of August 13, 2013 on TAIS

8.2 Background

Data on Road and Traffic Injuries

According to the Health Statistics, mortality caused by injuries, intoxications and external forces (homicide, suicide), has been progressively increasing over last years in Mongolia. For instance, in 1990 this category was recognized as the number five cause of population mortality, but starting from 2000 it has taken the third place and remains solid on this position. In 2012, it has increased to 11.25 per 10,000 people.¹⁵ The important component of this mortality category is Road and Traffic Accidents (RTA) related injuries and casualties, which are also increasing. As an example, RTA related mortality rate was 1.8 per 10,000 in 2010, 1.9 in 2011 and 2.1 in 2012. There is an important gender difference: morbidity and mortality among males is much higher than among females. For example, in 2012, 3195 cases of injuries, poisoning and certain other consequences of external causes were registered, which is 18.9% of total deaths: 81.4% were males and 18.6% were females. For gender differences see also Table 27.

Data collection and analysis by the Health Project

Some studies and needs assessments were done at the start of the project, to substantiate needs and as a basis for planning of activities. Among the major reports commissioned by the Health Project was a 2010 study titled "Analysis of Road Traffic Accidents and Crimes by using investigation forms of Road Traffic Police Department". This study states: "... during the past ten years, four national programs aimed at prevention of road traffic accidents and injuries, and improvement of traffic safety were developed and implemented. However, no significant changes have been achieved. This may be caused partly by the lack of intersectoral collaboration and coordination of activities, and the lack of a comprehensive and systematic approach; however, it is also largely due to the current socio-economic situation within our country." This report shows a number of statistical data and correlations in terms of traffic accidents and makes several recommendations in terms of registration and prevention of traffic accidents.

"The Road Traffic Injury Prevention Study" commissioned by the Health Project in 2010 studied policies, strategies and traffic practices in Mongolia. It observed the following problems and needs:

- Insufficient cooperation, commitment, support and funding of traffic regulators.
- Improper traffic culture and traffic behavior
- Non-compliance with rules and regulations
- High accident and injury risks of unprotected road users, especially pedestrians
- High accident and injury risks due to poor road condition and maintenance
- Deficiencies in vehicle technology and vehicle fleet management
- Incomplete data management and information systems
- Missing major competencies and skilled traffic safety experts.
- Male / female differences in terms of mortality risks from car accidents: four percent of people aged between 15-64 years have been involved in RTAs in the last 12 months and males are 2.7 times more likely to be involved than females

The study made a series of recommendations for the GoM. These are listed here because they provide a long lasting roadmap for a traffic related policy approach in the country.

- Use of policy instruments, including funding of the necessary road traffic safety actions because it is one of the key problems in road traffic;
- Multi-sector cooperation and coordination by installing a high level Management Committee with representation from Ministries of Health, Education, Interiors, Transport and Financing ;
- Accident data management and information system development through a National Road Traffic Accident, Injury and Information system oriented to support accident and injury prevention;
- Traffic enforcement strategy, tactics and practices, with a focus on 1) continuous road-user behavior monitoring and control, visible enforcement, 2) drink and driving i.e. random breath-testing 3) speeding and dangerous driving, 4) pedestrian behavior monitoring and control, 5) enforcement of the use of restraint systems especially use of seat-belt and use of child seat and 6) enforcement of vehicle condition in the traffic;
- Traffic management and control, referring to the development of the road network and pedestrian facilities, like round schools;
- Transport and traffic planning, design and maintenance;
- Traffic safety planning;
- Education and information based on the principle of life-long-learning. The key five themes to consider:
 1. Insufficient awareness of road safety problems;
 2. No or insufficient use of strategic safety considerations in traffic choices (vehicle, route);
 3. Intentional violations;
 4. Undesirable or incorrect habits;
 5. Poorly prepared novel traffic users.
- Driver training and licensing;
- Emergency medical services.

A KAP study in 2010 inventoried knowledge, attitudes and practices of pedestrians, drivers and traffic policemen on traffic safety issues, like seatbelt use, crossing at a red traffic light and quality of road signs. “Road safety around schools” was the subject of another study. A major report was the “Black Spot” study of early 2011 with data collected in 2010. The report analysed the severity of accidents and the correlations with the road conditions and made a top list of dangerous locations, “black spots”, in UB and rural areas. For example, in a period of 3½ years, 28 people were killed on a section of a road in Bayanzurkh district which is the most dangerous location in UB. The study showed that 15 % of drivers are female, which pointed to the need for education campaigns on traffic behaviour to address especially males.

One conclusion of these reports was that, in general, major improvements of road safety can only be introduced if many synergic actions are implemented simultaneously, i.e. regulation, enforcement and education. Also, the National Road Safety Strategy should be updated. With these reports, the project went on to plan a series of actions.

8.3 Activities

A synthesis report “REVIEW OF ROAD TRAFFIC INJURY ACTIONS BY THE MCA-MONGOLIA HEALTH PROJECT” of May 2013 summarizes the activities of the Health Project, after the initial studies and assessments.

As part of the capacity building component of the RTI part of the Health Project, the Mongolian stewardship role was addressed firstly by a study tour in 2010 on RTI prevention to Sweden,

organized by the National Institute for Health and Welfare, Finland. 16 participants from different GoM related authorities and institutes took part.

A workshop and a seminar, also in 2010, led to the development of recommendations on the legal aspects of RTI control and prevention, including comments on the new draft Law on Road Traffic Safety. The recommendations included general comments with regard to the approach of RTI prevention and control, the missing objectives and other gaps in the present law. Furthermore, specific suggestions were made on selected articles of the law. The Law on Road Traffic Safety was planned to be submitted to the Parliament for approval, but this issue is still pending. Further, as a result of the National RTI Seminar, the *National Road Traffic Safety Strategy* was developed by an intersectoral group of specialists, with the support of the Health Project. The Strategy was approved by the Government resolution in May 2, 2012. This strategy provides the necessary guidance and support for concrete actions.

In the above mentioned "Road safety around schools" report 70 schools were identified as having high risks for road traffic accidents and injuries. This led to a GoM decision to make funds available in the state budget for improving the safety of school surroundings. A number of schools also started to take their own safety measures, some of them facilitated by a grant from the grant program.

A training manual on systematic investigation of collisions was elaborated, and a ToT for 26 participants was organized. The guideline for road traffic safety management related to road design and maintenance and the checklist for road safety audits and inspections were developed, translated and published.

The emergency care system was analyzed in the beginning of the project. As a result, a list of equipment for Basic Life Support to be used on ambulances and the specifications of mentioned equipment was developed. The emergency care system has been strengthened by training of 810 health and non-medical professionals.

Based on the Black Spot study, 13 Black Spots were treated in 2012 and 2013, leading to reduction of traffic dangers: side fencing to channelize pedestrian flows and to prevent crossing in risky situations; Road markings for pedestrian crossings, lane markings, turning markings and driving direction arrows; painting of road kerbstones (edge support) with black-white striping; non-rigid, flexible reflective poles; reflective road signs. See pictures.

A new Traffic Accident Information System (TAIS) has been developed by a Mongolian company, Singleton, for the Traffic Police, replacing the previous outdated system. After transfer of data from the old to the new system, it has become operational in October 2013. The TAIS system is a countrywide system with access for traffic police in all districts and aimags. The system includes many different system components supporting the Traffic Police operations, not only accident information.

RTI prevention activities essentially existed of three rounds of information campaigns carried out during January 14th - March 14th 2011, September 6th - December 5th 2011, and January 11th - March 12th 2013. The main goal of the campaigns was to promote safe behavior among pedestrians and drivers. As was the case with the other campaigns, a campaign strategy and detailed work plans and guidelines were developed and then approved by the Vice Minister of Health. Each campaign used different channels of communication including media (TV, radio, written media and a press conference at the start of each campaign), bill boards, internet and community outreach to deliver key messages to specific target groups that were selected for each campaign. Each TV and radio campaign was followed by a telephone survey among 50 people to receive feedback, which helped to identify lessons learned.



Treatment of the junction at Peace Avenue/Chingunjav Street.



Treatment of the intersection Peace Avenue/Chinggis Avenue.



Treatment at Bayanchandmani soum, TUV Aimag, Darkhan Road.

8.4 Results

The activities of the Health Project are strikingly identical to those recommended in the aforementioned WHO Global Status Report on Road Safety.

The stewardship role has been strengthened and facilitated by the Health Project, resulting in pending legislation and an improved *National Road Traffic Safety Strategy*. “The Road Traffic Injury Prevention Study” leaves behind a roadmap that will serve several years to come.

The training manual, guidelines and TAIS have all strengthened the capacity of the police to plan, manage and monitor roads and traffic.

Through the Campaigns, reviewed in chapter 6.2, the population was informed on norms of safe traffic and encouraged to adopt behavior accordingly.

Awareness and attitude of the population with regards to RTI were measured. Data from a KAP survey among pedestrians, drivers and traffic policemen on traffic related safety issues done in 2013 after the last of 3 campaigns were compared with those from 2010. Also, data from the STEPS surveys in 2009 and 2013 were compared. They showed some increase in awareness and attitude regarding safe traffic behavior. For example, the 2013 KAP study concludes, on the basis of observations of behavior of pedestrians and drivers: "Pedestrians often violate traffic rules. Every third pedestrian crossed road on red light and 3.1% of drivers violated traffic lights rules. Compared to the previous study (2010, ev), this indicator decreased by 14.8% and number of violations committed by drivers decreased three times". The increase was largest in the age group 30-49, possibly because in this group many people are drivers.

Interestingly, the proportion of persons interviewed in the KAPS of 2010 and 2013 that reported to feel (very) unsafe in the traffic increased from 62 to 72%. The perception of risks posed by the non-use of seatbelts increased from 87% to 92.1%. Less people stated that the non-use of seat belts is related to not knowing the dangers: it decreased from 33% to 19.6%. Disliking seat belts decreased from 40.9% to 29.7%; the perceived lack of seatbelt enforcement from 21.6% to 14.2% and missing seatbelts from 4.5% to 0.7%.

While these shifts in perception are encouraging, the absolute levels of awareness and the attitude displayed still are reason for concern. Continuation of the campaigns is necessary.

At the time of the evaluation, the Traffic Police could not supply data on the number of traffic deaths. The number of traffic deaths, and the reduction as mentioned in the indicator framework of the amended Compact, can therefore not be assessed.

The increase of cars and kilometers of road in the country may make the improvement of traffic safety seem an uphill battle, but international experience shows that the combination of measures certainly can reduce the number of accidents and injuries in spite of increasing traffic intensity.

Conclusion.

Overall, the Health Project delivered a modest but visible contribution to traffic safety and has served as inspiration for policymakers and managers in the Traffic Police and adjacent services. The capacity strengthening cannot be quantified.

In light of the modest Health Project investments, the question is not about their sustainability but about priority setting of the authorities in terms of population education and strategies to control traffic and road conditions.

9 Cross cutting issues

This chapter reviews the Health Project's activities and contribution to four specific domains: quality assurance, people with a disability, gender issues and waste management.

9.1 Quality Assurance

Introduction

According to the amended Compact, the Health Project was going to “testing the impact of the Health Project using total quality assurance methods”. The impact of the Health Project will be reviewed in chapter 10. This section reviews how the Health Project in general approached quality assurance.

Activities

The IC started, in 2010, with an initial exploration of the Quality Management /Quality Assurance / Quality Improvement system and functioning, problems, needs and priorities. This involved a consultation process with the relevant actors in the country at central level. Then, a system-wide integrated approach to provide support in the area of QM/QA/QI was proposed and agreed between the IC, the PIU and MoH under the assumption that improving the QM system as such will lead to improvements in the broader spectrum of service delivery work, including NCDs. An overall plan was made, whereby the Health Project was going to stimulate QA development and lead a number of activities in this field.

The first was the strengthening of QA capacity in the country by training and development of standard tools and guidelines.

Ten guides and instruments to enhance and upgrade QM/QA/QI practice were developed in 2010. These were discussed by the National Health Care Quality Council of the MoH in December 2011. During 2012 four of them, new to Mongolia QM/QA/QI, got adopted officially:

- Policy and Guide on incident reporting in the health care facilities (with incident registration reporting and analytical forms)
- Guide on Peer Chart Review in health care facilities (with specific peer review forms for outpatient and inpatient facilities)
- A template for reporting a quality assessment activity
- Annual work plan for Quality Unit - model plan.

The documents were uploaded on the MoH official website and are available for users. Later, five others were accepted by the MoH.

Meanwhile, the Health Project developed training material and then trained a cohort of 51 national trainers in QM/QA/QI in 2010 through three rounds of a five day ToT. These trainers then worked to update and upgrade QM/QA/QI knowledge and skills of over 600 health managers, quality managers and other staff of health facilities (all levels) across the country in 2011-2012.

A study tour on Quality of Health Care to Germany was organized in October 2011 for 16 participants from the MoH, CHD, health administrators and quality managers of the secondary and tertiary health care facilities of aimags and UB.

In the course of the activities above, 187 health care quality-related terms were listed and defined and the terminology was subsequently approved by the Medical Terminology Committee of the HSUM on June 30, 2012. This activity contributed to the establishment of a common professional

language on QA. The full terminological package was published in the Mongolian Journal for Medical Practitioners.

Second, a draft action plan on QM/QA/QI was proposed to stakeholders at the national level in 2011. This Plan was incorporated into the annual 2012 action plan of the CHD and also included in the 2012-2016 strategic plan of the CHD. However, due to reorganization of the CHD's pre-decessor GIA-DoH, the adopted plans remained without proper execution.

As part of that action plan, Health Project experts assisted a working group of the MoH that had as main task to carry out a rapid assessment of the health care quality and to develop a proposal/methodology to improve quality and patient safety. A "Preliminary Assessment of Quality Management Activities in the Mongolian Health Sector Including Major Non-Communicable Diseases and Injuries (NCDIs)" was done by international consultants hired by the Health Project. After this assessment, they took part in the National Forum on Quality and Safety of Health Care in October 2012 to address and discuss the issues and proposals for a way forward.

Third, in order to strengthen the QM system's governance and structure, Health Project experts advised the MoH and CHD to update the statute of the QM/QA/QI units of the health facilities, to offer greater clarification on concrete responsibilities and concrete tasks as well as to include incentives and coordination mechanisms. The updated "Statute of Quality Units" was approved by the MoH in January 2012. It includes development of an annual plan on quality improvement; and regular work in the format of peer chart reviews, building an incident data base using incident reporting mechanism; support to the implementation of clinical guidelines and standards; allocation of a budget for incentives and staff promotion mechanism based on quality of care indicators; close work with regional level quality officers, and interface and work with National Health Care Quality Council at the MoH level.

Fourth, on advice of IC experts, the rationale and opportunities to create an aimag (regional) level Quality Committee was tried out. The main idea is that this allows addressing cross-cutting quality issues, involving opportunities and advantages of direct collaboration and communication between health facilities active in the region (aimag or UB city). In one aimag, Tuvs, such a committee has been established.

The original QA task described in the amended compact "testing the impact of the Health Project using total quality assurance methods" was not picked up in the sense that impact measurement was a part of the QA/QM/QI activities. Impact measurement was dealt with separately, as the next Chapter will show.

Results

The Health Project upheld high standards of quality and in that way was serving as an example for the rest of the health system. Part of the QA work of the Health Project was incorporated in the other components of the Project and therefore less visible. The Health Project's approach certainly has helped to promote thoroughness of planning and implementation and stimulated a culture of quality. Another part was the capacity building in the country, which shows concretely in the availability of a number of tools. For example, the Mongolian Association of Quality Managers utilized training materials developed by the Project team to publish several manuals/guides for quality managers in the country.

While the Health Project cannot claim ownership for the MoH decisions, it certainly has contributed to the MoH initiative to make 2012 a year dedicated to health care quality with the action plan, which resulted in an increased attention for quality of health care and mobilized greater involvement

of various health system players in addressing the matters of managing and improving quality of health care

9.2 People with special needs.

Introduction

Amended Compact and ToR do not mention a focus on people with special needs but it is proper in this evaluation to assess in how far special needs did receive special attention. It actually refers to people with a disability, the elderly, the poor, prison population and very remote population.

Activities

The Health Project took special needs into account through a series of approaches. First of all, it included in its training and communication in general the importance of addressing the special needs, it was a form of advocacy. For example, the screening programs should be accessible for people with a problem to displace themselves and the aimags/districts were encouraged to find solutions for that.

A key approach was the grant program, because it allows local organization, especially NGO's and other civil society organizations, to reach out in their community. From UB and aimags there are testimonies on this effect of the Health Project on local policy to reach the elderly, disabled or remote population.

Further, the Grants program allocated 13 grants, which is 6% of all, specifically for disabled people.

"...Through a grant, braille books, books with enlarged letters and a talking book on NCD were published and distributed to blind people. It was the first time making NCD information available for them. Within the framework of the project we trained 200 blind people from all aimags"

Grantee D.Gerel, General Secretary, Mongolian National Federation of the Blind

During the initial months of the screening programs, disabled people were found to be facing accessibility and transportation challenges, like waiting in long lines for a screening and lack of physical accessibility of medical facilities (i.e. stairs instead of ramps). Their participation was low. Therefore, the Health Project initiated a campaign, carried out jointly with the National Committee of Gender Equality, the Social Welfare and Service Department, and the Health Department of Ulaanbaatar city to ensure the coverage of the four screening programs of people with disabilities.

Under the campaign a number of activities were conducted as follows:

- 1) Data on current actual numbers of people with disabilities was collected from all sub-districts of the nine districts of Ulaanbaatar capital city.
- 2) 172 social welfare and service officers of 102 sub-districts of UB city were trained as outreach workers. With their assistance, 12,976 invitations were delivered door to door to the targeted disadvantaged and vulnerable groups. From discussions with the disabled it was learned that they found the individualized invitations especially encouraging, as they made them feel dignified and important.
- 3) Three NGOs that have experience in providing services to people with disabilities were engaged for transportation services. With financial support of the Health Project, approximately 800 persons were physically assisted with transportation to clinics and when necessary transportation was provided for practitioners to attend bed-ridden persons.

The Health Project had estimated that 10% of the population would not be able to pay for the medicines of AH or DM, if they would be diagnosed with these. Therefore, the medicines were supplied to the health facilities with the assignment to provide them for free for the indigent population.

The screening for BC and CC is also offered to women in prisons.

Results

Thanks to the specific actions, the project reached nearly 80% coverage for the disabled population in UB in 2012, which is more than the general population.

Further, the results in reaching disabled or remote population cannot be assessed for all aimags. Since the screening stops at age 60, elderly are not addressed.

9.3 Gender issues

Introduction

The amended Compact and ToR of this evaluation do not mention specifically gender issues as a point of attention for the Health Project. Nevertheless, gender equality is a MCC concern, using tools like MCC Gender Milestones Tracker. In August 2013, a report on gender issues in the MCA-M projects was issued¹⁶, which includes a chapter on the Health Project. Hence, this short section on gender issues in the Health Project.

Some gender differences in terms of risk, morbidity and mortality have been mentioned throughout this report, especially in Chapter 2 (Health status) and 8 (RTI) and some are shown in Tables 3 and 26.

These are the major ones but many indicators show a significant male/female difference. How the different risk factors play out on morbidity and mortality is a matter of much research internationally, there is no quantitative model as yet. Life expectancy of females is much higher than for males, in spite of the higher percentage of overweight and obesity. Apparently, the other risk factors, like driving, drinking and smoking among males, or genetic factors, play out more strongly. This gender difference in life expectancy is a nearly global phenomenon. Further, the time factor needs to be taken into account: the risk factors of today may determine morbidity and mortality in 5 to 20 years, not next year. So, life expectancy among females may approach that of males more closely in future, as is being seen in various countries.

Staff in the health system is predominantly female, but this has not led to specific consequences in the Health Project, it is just acknowledged.

Activities undertaken in the Health Project

The Health Project had three components that were exclusively addressing females: the two screening programs for Cervical and Breast Cancer and the HPV vaccination pilot. All other components were for both genders, although in terms of content attention was paid to the specifics. For example messages on life style in the IEC/BCC campaigns had to be gender adjusted, like the ones on alcohol consumption and traffic behavior.

*Table 26
Outcomes STEPS survey on non-communicable disease risk factors*

Data from STEPS 2013, all in %	male	female
daily smoking	49	5,3
binge drinking	37,5	9,7
3 or more risk factors at age 15-44	35,2	21,6
overweight	49	59,9
obese	15,2	24,2
Raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg) currently not on medication for raised BP	77	65,6
Data from MoH 2012		
suicide, per 10.000	2,94	0,52
mortality rate, traffic accidents per 10.000	3,46	0,79

A Gender Integration Plan was made in 2011 and 2012 for the Health Project (like for the other MCA projects) taking into account these specifics. In 2011, the list was as follows:

- Issues of access and awareness of preventative health practices across groups, rural/urban disparities
- Differences in men and women's knowledge, attitude and practice with regard to health
- Women's primary role in healthcare, both in the home and in staffing of health care systems
- Advocacy: BCC/IEC strategies to target men and women through differentiated messages and channels (already underway)
- Ensure that materials do not reinforce the stereotype of women as the de facto health care provider and in fact present an image of men as equally responsible for their own and their families' health
- Data Collection / M&E: Adjustment to KAP follow up studies, including road traffic study, to ensure that they can include gender analysis.

In 2012, the list had to be adjusted somewhat, because meanwhile the screening for AH and DM had started and male were participating less than females. In Bayanzurkh district, in the period January-August 2013, 37 % of participants in AH and DM screening were male and 63 % were female, according to the district health department. A survey and focus group discussions were held to find out the reasons and as a result it was decided to make the information better available through television and advertisement materials because that is a better way to reach men. Another point was to ensure that the information/educational materials reach the target group and that they are really available. A series of trainings was offered at male dominated workplaces, like mines, a thermal power plant and an emergency management agency. Training topics included NCD risk factors and gender disparity and key concerns in different fields like economy, health and education sector, and in family relations.

Results

Gender differences are of particular concern because males are at higher risk of NCDI's than females, while females have very specific risks like BC and CC. The differences have been addressed with sufficient attention through specific content of IEC/BCC campaigns and the BC and CC components of the project and the HPV vaccination campaign..

9.4 Waste Management

Introduction

The amended compact states that "To ensure that environmental and social safeguards and mitigation measures are implemented for the Program by MCA-Mongolia, MCC Funding will be used to engage an environmental and social oversight consultant to enhance the capacity of MCA-Mongolia."

For the Health Project specifically, the amended compact states, under Early Detection Activity: "identification and management of environmental, social, health, and safety impacts associated with the implementation of this activity, consistent with Section 2.6(c) of the compact.

Later it says, referring to the Health Project: "A framework Environmental Management Plan (EMP) will be developed for addressing health and safety issues and for assessing compliance with existing waste management regulations in all project related services and facilities. The EMP will include procedures for support of remedial actions to insure compliance with the MCC Environmental Guidelines, environmental regulations and access needs for all potential beneficiaries."

For the Health Project the practical translation was a concern with waste management. Waste

consists mainly of expired and unwanted pharmaceuticals and used consumables like needles, bandages and packaging. Safety of staff, avoiding prick incidents and contamination (blood spills) are also considered as important policy matters.

In general in the health sector in Mongolia, issues with waste and safety of personnel are acknowledged as a priority. Waste management is included in one of six priorities of the WHO in Mongolia in the period 2010-2015.

Activities

In the early days of the Health Project, December 2010, a MCC funded consultancy concluded that the Health project is classified as a *Category C* project according to the MCC Environmental Guidelines (and MCC’s Due Diligence report) and thus likely to have minimal or no adverse environmental impacts¹⁷. This resulted in a MCA decision to limit the Health Project’s activities for waste management, in order not to lose focus from NCDIs. A plan was made, taking into account the simultaneous development of a waste management plan by the ADB and WHO that was going to address waste management in 11 aimags. This resulted in a choice for the 10 other aimags and, within them, for 35 soum hospitals. Since there are many more soum hospitals, a list of criteria was developed for the selection. They include age of the hospital building (built after 1980; older buildings mostly have a lead-paint problem) and availability of electricity. This reduced the number of candidate hospitals to 40 and a physical inspection brought that number down to 35. With the help of WHO advice, a list of equipment was developed and technical specifications described. The MoH has adopted this list as national standard. Since equipment needs not to be dumped in the health facilities but staff needs to be trained, this was planned as well.

Trainings on healthcare waste management were organized for staff of primary and secondary healthcare facilities as part of the training program reviewed in Chapter 4.2. One ToT training and four regional trainings for 35 soum hospitals were given in June-August 2011. Equipment and disposables to deal with waste and physical protection of staff were provided to 35 soum hospitals of 10 aimags in August 2011

In August 2011, the Health Project has supplied 35 autoclaves, needle crushers and water sterilizers for as many soum hospitals in 10 aimags. These equipments came with operational manuals in Mongolian for major equipment. The supplier also provided on-site training for hospital staff during installation.

Over the years three monitoring visits were done to almost all sites to assess the use of the equipment. Initially, most sites had problems with the utilization of the equipment. Some trained people changed their job or duties and did not properly hand over the information. For this reason an instruction DVD was made and distributed in 2012. Later it was observed that some hospitals were really good with the usage of provided equipment but not all of them. So, this led to a refresher training in September / October 2012. These trainings were organized at the three best sites and attended by representatives from all the other sites. A Handbook on healthcare waste management was developed, printed and distributed to the same soums hospitals in January 2013. A final assessment in February 2013 showed that handling the equipment was no more a problem. Minor technical issues in some hospitals did still occur.

In August 2013, The MCA-M Environment and Social Oversight consultant issued a report: “Healthcare Waste Management Mongolia *Strategies for legacy healthcare waste and historical waste storages at healthcare facilities*”.

Total expenses of the waste management component were USD 285,145 for 35 autoclaves, needle crushers, sets of waste disposal containers and personal protective clothing. Consultants were paid from a central MCA budget.

Results

The collaboration between the Health Project, WHO and the MoH on

waste management can be considered as a good practice, which is why this relatively small component is worked out in detail. There is now one standard of equipment for the country. The other good practice is the comprehensive approach by the health project: supply of equipment and training, monitoring and observation of deficiencies followed by re-training.

The Health Project delivered a modest but relevant contribution in the field of waste management, strengthening staff skills and providing equipment in about 10% of all soum health hospitals / health centers. In the process it helped to establish a standard for the country. This complements the actions taken by the MoH and other actors. Through the report “Healthcare Waste Management Mongolia *Strategies for legacy healthcare waste and historical waste storages at healthcare facilities*” the Health Project complied with its commitment to provide an EMP.



HCW segregation in the hospital, including sharps box. pictures: courtesy of Armando Balloffet, PhD, MCC MBO Consultant, from “Healthcare Waste Management Mongolia *Strategies for legacy healthcare waste and historical waste storages at healthcare facilities.*”



Needle crusher and autoclave supplied by MCA

10 Results and Outcomes

10.1 Introduction

The individual chapters above describe specific strategies, activities and concrete results. This chapter synthesizes the achievements of the Health Project and, through its respective sections, works towards final conclusions in Chapter 11.

The assessment of the results and outcomes and the final conclusions are the evaluator's. Main observations and conclusions have been discussed with a number of stakeholders in the country, including PIU staff, between November 5 and 13, 2013. Their comments are separately described in Annex 5 and further are referred to throughout the text of this and the next Chapter.

MCC has a strong focus on assessing outcomes and results, including the Economic Rate of Return, and this is visible in the MCA Health Project as well. The Chapter 1 Introduction referred to the objectives of this evaluation as described in the (amended) compact and they include "(i) to estimate quantitatively and in a statistically valid way, the causal relationship between the Compact Goals (to the extent possible), the Project Objectives and Outcomes; (ii) determine if and analyzes the reasons why the Compact Goals, project Objectives and Outcomes were or were not achieved". The ToR of this evaluation describes the same in more detail, see Annex 1.

Throughout the Health Project, the M&E function has constantly worked to determine and monitor the results of the project and develop indicators for that. Also, it performed interim evaluations or ex-post evaluations of specific activities. Their data and assessments have been used for the specific chapters above. Information needs to be considered in context, and that is what the M&E function also has provided during this evaluation. The sections below try to profile the clean data by adding this context.

Section 10.2 highlights two major context issues that need to be taken into account when assessing the Health Project's results.

There are several ways to assess results and outcomes of the Health Project. One approach is to take the Health Project's formal objectives and consider the expected and realized results or outcomes. This is done in section 10.3. Another approach is to assess in how far the Health Project has strengthened or weakened the existing health system and other systems in the country, under the title of Integration. This is the subject of section 10.4. Consideration of the sustainability of the activities and results of the Health Project brings us close to the final judgment on the achievements, in section 10.5.

Economic Rate of Return, a tool of MCC, will be discussed in section 10.6.

10.2 Results in context

When considering the results in the sections below, major context and other factors that impacted on the results need to be taken into account. There are two such factors for the Health Project that deserve mention here. Many other factors internal to the Health Project have been dealt with separately in the Chapters above.

- First, the duration of the implementation phase of the Health Project for most activities is 30 months or less. The Health Project's budget extension, welcome as it was, also created the need for re-planning and shortened the time for implementation.

So, there is no 5 year period in which the Health Project exerted its influence on the (health of the) population or on the health system. Consequently, fewer changes can be expected. See Table 27 for an overview of the time tables.

- Second, at all levels of the administrative and health systems, there is a high degree of discontinuity. Four ministers in the five year period of the Compact means as many changes of technical staff at the level of the MoH and other (health) authorities, in the aimags as well as in the districts. This also occurs in hospitals. While occasionally change may be refreshing, this massive and frequent change challenged the Health Project to each time and again re-start to explain and motivate new counterparts. This created additional workload, many delays in decision making and also at times affected its quality. This issue has been emphasized by a large number of interlocutors during this evaluation.

Table 27 Time tables of the Health Project

	2007 2 nd half	2008 1 st half	2008 2 nd half	2009 1 st half	2009 2 nd half	2010 1 st half	2010 2 nd half	2011 1 st half	2011 2 nd half	2012 1 st half	2012 2 nd half	2013 1 st half	2013 2 nd half
Phases according to original PIU – IC contract					inception	preparation	implementation					assessment	
Study tours, conferences						p r e p	Implementation						
MPH program						preparation			Implementation				
General training						preparation	Implementation						
HPV pilot vaccination	NB starting date of preparation is date of PIU contract with NCCD for this component							preparation	Impl				
Screening BC and CC						preparation					Implementation		
Screening AH and DM						preparation				Implementation			
Campaigns						preparation	Implementation						
Grants program						preparation	Implementation						
Stroke and AMI	NB starting date of preparation is date of PIU contract with IC (WHO) for this component							preparation	Implementation				
RTI						preparation					Implementation		

↑
Compact signed
Oct 22, 2007

↑
Compact enters into force
Sept 17, 2008

↑
Contract signed with EPOS/TLH May 25, 2009

↑
STEPS 2009

↑
amended Compact signed
Febr 2010

↑
STEPS 2013

↑
end of Compact
Sept 17, 2013

10.3 Achievement of the amended Compact.

Introduction

As was discussed in Chapter 3.3 on project logic, the project goal was an increase in life expectancy of the general population through a reduced risk of premature death and disability from chronic NCDs and traffic accidents. This would be achieved through three intermediary results: population awareness, strengthening of the health capacity and improvement of health system functioning. These, in turn, would be achieved through a number of strategies and activities, all with their own expected results and outcomes. These activities and their results have been reviewed in previous chapters. This section addresses the project goal and the intermediary results.

Life expectancy

The ultimate goal of the project, increase in life expectancy of the general population, cannot be measured because life expectancy of the existing population is in the future but it can be extrapolated on the basis of data that are routinely collected through the civil registry. Changes in life expectancy are slow and when they are extrapolated annually, there is a wide margin of error. Rather, the identification of trends in life expectancy in periods of half decades or longer provides relevant information. In view of the implementation period of 30 months of the project, the targeted increase in life expectancy cannot be assessed within the project period. Further, the counterfactual should be observed, which means the development of life expectancy in Mongolia without the project: it has been slightly increasing over the past decades, see Table ,¹⁸ especially in the age groups on which the Health Project has focused, in spite of the demonstrable increase of NCDs. So, whether a future increase in life expectancy of the general population can be attributed to the Health Project remains an unanswered question.

Table 28

Life expectancy of Mongolian population, male and female, in years	1990	2000	2011
At birth	63	64	68
At age 60	17	16	17

In conclusion, assessing the achievement of the ultimate goal of the Health Project, increase of life expectancy of the Mongolian population, is not possible within the time frame of the project or immediately afterwards.

Assessing results of the Health Project: what do the indicators tell us.

Table 8 is the indicator framework included in the amended Compact it was shown in Chapter 3.3 as well. These indicators were going to be completed during the project, as the amended Compact stated. Indeed, the five indicators of this framework are too few to measure results. Also, three out of five have no baseline; one out of five addresses life expectancy, see above. The one on mortality due to traffic in UB in itself can be relevant, but it addresses a relatively small component of the Health Project. Further, a project as large and complex as the Health Project deserves a more complete and subtle set of indicators, if they are to help draw meaningful conclusions.

Table 8 repeated Health project indicators

Indicators: Health Project				
Objective-level result	Objective Indicator	Definition of Indicator	Baseline	Year 5 Target
Reduced risk and incidence of premature death and disability from NCDs	Increased productive years of workforce	Disability adjusted life years (DALY) related to NCD's.	TBD	TBD
	Increased productive years of workforce	Increased life expectancy, mean at birth	67.2	67.4
	Mortality due to traffic road injuries reduced	Number of road deaths in UB	562	495
	Treatment of diabetes increased	Percent of cases of diabetes treated by medication or life-style advice (e.g. healthy diet)	TBD	TBD
	Treatment of hypertension increased	Percent of cases of hypertension treated by medication or life-style advice (e.g. healthy diet)	TBD	TBD

Indeed, Chapter 3.3 has briefly mentioned that further indicators were developed by the Health Project, see Annexes 9. The final list of indicators was issued in May 2013, just before the end of the project. This list contains 39 indicators: 12 addressing output, 12 addressing outcome and 15 to monitor the processes of the Health Project.

From this, an Indicator Tracking Tool (ITT) had been derived, with quarterly reporting during the 20 quarters of the project.

The indicators tell us the following.

Outcome indicators: for 4 out of 12 outcome indicators, the target has been achieved; for one there are no data and the other seven targets have not been achieved.

Output indicators: for 8 out of 12 output indicators, the target has been achieved; for one there are no data and for three the target has not been achieved.

Process indicators: for all the 13 process indicators, the target has been achieved. Obviously, they were especially intended for monitoring progress during the project implementation. The process indicators will not be considered here further, because they are not of relevance anymore for the outputs and outcomes.

There is a number of comments to be made on the indicators and the achievement or non-achievement of the targets.

- The development of parameters and indicators plus targets to measure outcomes is a challenging task, because making SMART indicators requires intimate knowledge of the context, implementation strategies, opportunities, constraints and resources, see Box 6. In the Health Project just a few indicators and targets were developed ex ante in the original and amended Compact; some of the indicator targets were modified during the Compact. Ideally, the indicators and targets are set before the project and the stakeholders that are responsible for certain components or tasks are asked to agree with them when contracts or

tasks are established. When targets are set during the project with stakeholder involvement, stakeholders have an interest to propose/endorse targets that they think they can achieve and not what MoH, MCC or MCA think should be achieved. When targets are set without stakeholder involvement during the project, these may feel confronted with an obligation that they had not agreed with upfront. In both these cases, setting the targets and feeling compelled to achieve them is a subjective exercise that makes the conclusion, achievement or non-achievement of targets, vulnerable to criticism on their validity.

Box 6 SMART indicators

- Secondly, defining relevant parameters, indicators and targets is a complex task and requires intimate knowledge of the field of work. Without that, one risks setting unrealistic targets or forget indicators. Therefore, mostly in the health and social sectors, developing indicators is an exercise that involves a group of knowledgeable stakeholders and dedicated group work. The ITT indicators are equal to the reporting framework, but many of the ITT indicators make a gender distinction. Also for cervical cancer screening and HPV vaccination a distinction between male and female is made. This is one signal of the immaturity of this ITT framework.

Useful indicators are:

- Specific – describe a specific area for improvement.
- Measurable – able to quantify the changes.
- Attainable - state what results can realistically be achieved, given available resources.
- Relevant – point to results that matter
- Time-related

- Thirdly, there is a difference between outcomes of the Health Project and the outcomes of the health system or services. The Health Project cannot be held accountable for the outcomes of the health system because it has only little influence on it. The massive investment in the training and screening programs still does not make the Health Project responsible for their final outcome because there are many factors not under control of the Health Project that influence these; rather they are under control of the MoH or other authorities and institutes. The evaluation framework however makes no distinction between these two outcome categories. Responsibilities for the outcomes and some of the outputs therefore are unclear. Also, the output indicators are a mixture of outputs of the health project like the number of teachers trained and of other outputs, that cannot be attributed directly to the Health Project, like “National budget allocated to Non-Communicable Diseases (NCDs)” and “Local government spending towards Non-Communicable Diseases (NCDs)”.

In the Health Project, by the time the M&E function was operational and worked on the indicators and targets, more than one year in the project, according to the M&E officer there was little interest among the relevant stakeholders to engage in such an exercise. The development of parameters, targets and indicators largely then became an obligatory MCA or MCC desk exercise that delivered several versions before the final one was accepted formally by MCA in May 2013. The ultimate framework and achievement or non-achievement of the targets raised little interest in the PIU or among other stakeholders. This is not to say that PIU, IC or other staff involved were not interested in the results of their work. To the contrary, but the evaluation framework did not play a role.

Possibly because of the three factors above, within the Health Project the function of the evaluation framework was not really clear, nor who actually would bear ownership of the framework and for the results. Some of the indicators were not really SMART, see Box 6, or there was no relevant target to indicate. For example, among the output indicators is included the number of health staff to be trained. The initial target was set at 5,000, but the actual achievement was more than 17,000, which shows a disconnect between initial target setting and actual implementation. The indicator “local government spending on NCDs” has no target so no measure for its achievement, but it also would not indicate a project achievement. Also, indicators need to cover the project sufficiently. The indicators as they have been developed do not contain anything that refers to the Stroke and AMI Units component, even if that component spent 25% of the Health Project budget. Also, there is no indicator referring to issues like results of anti-smoking or -alcohol campaigning, to the RTI

component and to cross cutting issues (although the latter could be acceptable because they are not the main objectives of the Health Project). All in all, the indicator framework of the Health Project portrays only a partial picture of the Health Project's achievements and non-achievements.

During the feedback workshops for this report one example of lack of a specific indicator was forwarded by one participant:

The IEC / BCC campaigns had specific target groups. For example, the anti-smoking and -alcohol campaigns addressed especially young people, 15-24. It requires an indicator at that level to assess the results.

Actually, against all trends in smoking and drinking in other age groups, the proportion of smokers and drinkers in this age group, compared with 2009 as measured by STEPS 2013, *decreased*. This may be considered as non-conclusive evidence that IEC/BCC campaigns can work and as an enormous achievement of the Health Project but it is not captured by the indicator framework for lack of its specificity.

To conclude on indicators, the framework developed by the Health Project does not carry much weight when evaluating the Health Project. The indicators are not sufficiently smart and they do not address important components of the Health Project. So, achievement or non-achievement of the targets does not say much.

Assessing the activities of the Health Project.

Another approach to assess what the Health Project did is to take the list of activities planned in the amended Compact and check if they have been implemented. This box ticking just helps to understand if all activities indeed have been addressed and thereby summarizes Chapters 3 through 9. However, it does not give any indication of the quality of the work and of the results or outcomes.

Table 30 shows that virtually all activities mentioned have been implemented. In this respect the Health Project achieved close to 100%. The one activity that was not literary done, *testing the impact of the Health Project using total quality assurance practices*, was replaced by an assessment of the QA in the health services, as Chapter 9.1 has reported.

Table 29 Implemented NCDI capacity building activity

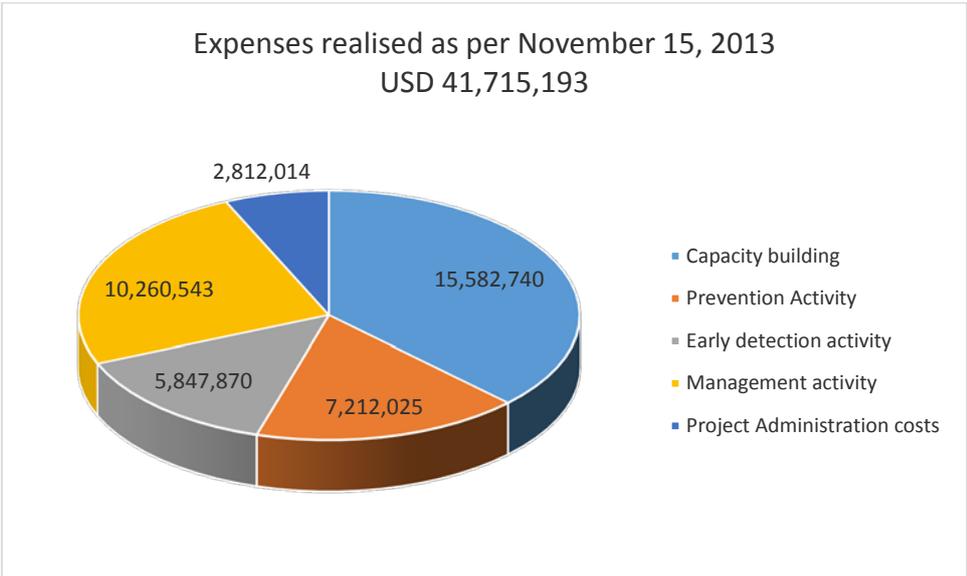
ACTIVITY	IMPLEMENTATION	COMMENTS
NCDI Capacity Building Activity.		
<ul style="list-style-type: none"> establishment of senior NCDI advisory boards and expert panels; 	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> In the beginning of project MoH Board was involved, later was abolished for lack of impact. Throughout project technical working groups including experts have contributed.
<ul style="list-style-type: none"> assessment of current NCDI practices, personnel, equipment and supplies, and review of relevant protocols, guidelines, and job descriptions for NCDI detection, management and treatment; 	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> Initial Rapid Needs Assessment was done (second half of 2009) Review of protocols and guidelines was done through screening program;
<ul style="list-style-type: none"> aimag and district support for building NCDI capacities and implementing NCDI activities; 	<ul style="list-style-type: none"> √ 	<ul style="list-style-type: none"> Through training and screening programs and direct support to health departments of aimags and districts, on the basis of MoU with each aimag/district.
<ul style="list-style-type: none"> provision of mammography machines, vehicles and other NCDI equipment and supplies; 	<ul style="list-style-type: none"> √ √ √ 	<ul style="list-style-type: none"> 3 mammography machines; 21 vehicles to aimags and 1 to UB Through screening programs and IEC/BCC campaigns, aimags and districts received supplies
<ul style="list-style-type: none"> improved data collection on cancer, stroke and accidents; 	<ul style="list-style-type: none"> √ √ √ 	<ul style="list-style-type: none"> Cancer data collection: in association with screening program; Stroke data collection: as part of Stroke and AMI sub-project Accidents data collection: as part of RTI, through TAIS
<ul style="list-style-type: none"> improved capacities in the non-government organization sector and private work places to address and reduce NCDIs; 	<ul style="list-style-type: none"> √ √ 	<ul style="list-style-type: none"> Through Grant Program Through Healthy Work Place program
<ul style="list-style-type: none"> improved outreach to youth and school-aged children to understand healthy life choices; 	<ul style="list-style-type: none"> √ - 	<ul style="list-style-type: none"> Outreach done through IEC/BCC campaigns School curriculum was developed but not implemented due to low priority of Ministry of Education
<ul style="list-style-type: none"> testing the impact of the Health Project using total quality assurance practices 	<ul style="list-style-type: none"> - 	<ul style="list-style-type: none"> A QA study was done of the health services delivery in general, but no impact assessment of Health Project was done
<ul style="list-style-type: none"> finalization of baseline data and indicators for monitoring and evaluation of the Health Project. 	<ul style="list-style-type: none"> √ 	<ul style="list-style-type: none"> Done by May 2013
NCDI prevention activity		
<ul style="list-style-type: none"> development of national and regional NCDI communications campaigns, such as mass media, health fairs, work sites and mobile units promoting healthy lifestyles; 	<ul style="list-style-type: none"> √ 	<ul style="list-style-type: none"> Done through the 13 IEC/BCC campaigns
<ul style="list-style-type: none"> development and implementation of interventions to promote behavior change among youth and high risk 	<ul style="list-style-type: none"> √ 	<ul style="list-style-type: none"> Done through the 13 IEC/BCC campaigns

individuals to prevent NCDIs.		
NCDI early detection activity		
<ul style="list-style-type: none"> • implementation of new national NCDI screening procedures; 	√	Procedures developed from 2010 onwards; Implementation of the procedures from April 2012 for AH and DM; Implementation of procedures from August 2013 for CC and BC.
<ul style="list-style-type: none"> • national implementation of improved cervical cancer screening methodologies for women aged 35 - 50; 	√	See above; age group was adjusted to 30-60 years
<ul style="list-style-type: none"> • program trial for the human papilloma virus (HPV) vaccine against cervical cancer to determine costs of delivery and to assist the Government in developing a national HPV vaccine policy and implementation strategy; 	√	Trial was done and subsequent report with recommendations was delivered
<ul style="list-style-type: none"> • improvement of breast cancer detection methodologies; 	√	Done through development of guideline for screening of breast cancer
<ul style="list-style-type: none"> • identification and management of environmental, social, health, and safety impacts associated with the implementation of this activity, consistent with Section 2.6(c) of the Compact.³ 	√	Done through cross cutting activity: waste management report, including recommendations for dealing with waste; minor supplies for waste disposal
NCDI Management activity		
<ul style="list-style-type: none"> • development of community-based disease management program and systems 	√	Done through screening programs and strengthening of aimag/district and central capacities, ao by MPH program
<ul style="list-style-type: none"> • national implementation of new public health NCDI management services; 	√	Done through support to national institutes that have responsibility for screening, notably NCC and NCHD
<ul style="list-style-type: none"> • implementation of intensified heart attack, stroke and accident response services in selected sites. 	√	Done through Stroke and AMI Units sub-project

Expenses

The complete and exact expenses of the Health Project have been difficult to assess, because the so-called Tracking Tool was not updated at the end of the project and for some minor activities it was unclear to which category the expenses should be allocated. The overview in Figure 9 is the latest update of November 15, 2013, by the financial department of the MCA administration. It shows that, compared to the planning, especially the category of management, that refers to *disease management*, has increased from 15% expected in 2009 to 25% in 2013. This is linked to the Stroke and AMI Units as discussed above. Expenses then were 99 % of the budget of the Health Project as it was established after the last change in February 2013: USD 41,972,427.

Figure 9 Health Project expenses realized

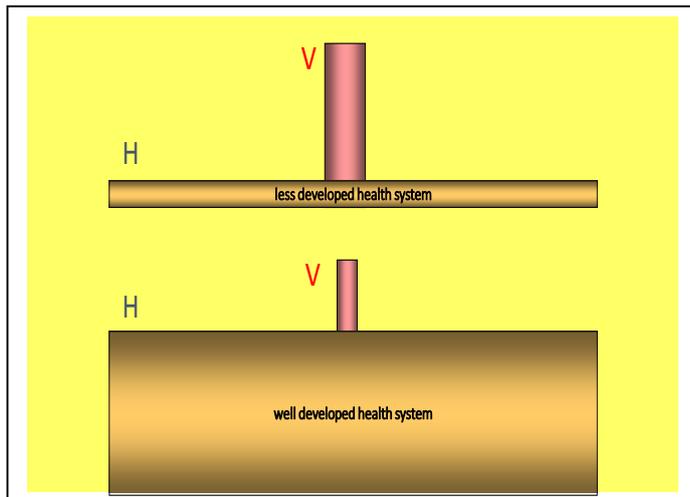


10.4 Integration

Introduction

There is a large amount of theoretical literature on what integration means, when health systems and services are discussed, but here is a short way to review this. In the context of the Health Project evaluation the main question under the heading of “integration” is whether the health system has been strengthened or weakened by the Health Project. Mutatis mutandis, the same goes for public health activities like the IEC/BCC campaigns: did they strengthen or weaken the national capacity.

Figure 10 Developed health systems



Background to this is that disease programs are feared for their destabilizing effect on health systems, especially in countries with a less developed system where a major disease oriented program may claim attention, management time and resources, at the expense of other services. This has been the case with HIV programs, with immunization campaigns and many other programs, worldwide. Therefore this question gets attention in this report. Figure 10 visualizes the issue: a heavy vertical program, any disease oriented program, may make the health system bend, especially when it is not well

developed

There are no quantitative models yet to assess this for short term projects, so the analysis here is qualitative.

Below follows a list of pros and cons when considering whether the Health Project has strengthened or weakened the health system and health services in Mongolia. All these pros and cons have been forwarded by stakeholders in the country, including during the workshops to review the draft evaluation.

Health Project approaches, strategies or activities that have helped to strengthen the Mongolian health system:

- The Health Project has helped to implement an already-planned national program, so this project is no foreign priority setting. Of the 81 activities mentioned in the National Program on NCDs, the Health Project has supported 61.
- The Health Project has, over the years helped the MoH, as principle steward in the system, with know-how and recommendations for a number of ministerial orders.
- There was equal attention for the rural and urban parts of the health system.
- The Health Project has used a participatory approach for virtually all the steps in planning and implementation of the activities, resulting in detailed knowledge of (local) needs and enabling relevant local stakeholders to bring forward suggestions and take responsibility for decisions.
- The Health Project has strengthened the culture and know-how in the health system on quality and organization much beyond NCDs; this refers both to managerial and to medical-clinical staff. Example: the methodology of developing guidelines that has now a consensus approach, resulting in authoritative guidelines.

- The Health Project has created few new jobs that need to be (financially) sustained although it did introduce many new tasks for new activities like screening and health education. These new tasks are carried out by the staff already working in the health system, mostly the health services themselves.
- When introducing the screening programs, the Health Project has used a comprehensive approach, taking into account all aspects of development of guidelines, training, equipment and organization at the level of health facilities.

Health Project approaches, strategies or activities that potentially have weakened the Mongolian health system:

- The Health Project had its own purchasing system for equipment and medicines; as a result the capacity (technical knowledge) to purchase items in the country was not developed along with the project.
- The haste to finish all activities within the five year time frame of the Compact has affected quality of several of the activities and limited the time for (local) Mongolian authorities to adjust their planning when they take over the activities and their funding.
- The screening programs were started while only a part of the relevant staff at primary and secondary care level was trained in the subjects, leaving a large amount of work in the hands of unqualified staff.
- “Cytologists” in the aimags and districts is a new function created by the Health Project for Pap smear reading. Selection, training and working conditions do not favor stability of these professionals. To some extent this is part of the haste.
- The screening programs have increased the workload of the Family Health Centers and Soum hospitals by 2.5 to 10% (the latter in case of 100% participation by the target population) which is burdening already overloaded health services.
- Poor planning of the Stroke and AMI Units obliged the MoH to allocate unexpectedly funds to Hospital 1 and 3 and divert them from other programs, amongst other from a program for rural areas.

On balance, all stakeholders argue that the Health Project has strengthened the health system much more than that it has weakened it. Several of the elements that have weakened the health system are priorities for action in future.

10.5 Sustainability

Sustainability of the project results has been a concern from the very start of the Health Project.

The condition precedent phrased this as follows:

“The implementation by the Government of the policy, legal and regulatory reforms described below, satisfactory to MCC, shall be conditions precedent to certain disbursements.

- a). The government shall have committed to funding the recurrent costs of the NCDI program following the expiration of the compact term.
- b). The government shall have committed to taking necessary steps to ensure that the recurrent costs for screening and disease management activities for low-income people are covered by the government following the expiration of the compact term”.

The Health Project leaves behind a sustainability plan, a spread sheet describing the activities that need to continue and some investments to be made, in the field of NCDs. This is made by a large group of stakeholders, for which a special workshop at the end of the project was organized, ensuring a nearly 360 degree view on needs and priorities. However, the plan is rather general, not offering many specific points. For example, there is no costing exercise done, to describe the

resources required for continuation of investments and activities. The plan has been informally offered to the MoH. See Annex 11.

Currently, the MoH is preparing a follow up of the National Program for NCDs. The current program 2008-2013 expires this year. This is an opportunity to use all the achievements and lessons learned of the Health Project. It is recommended to take into account the sustainability plan offered.

A repository of Health Project documents has not been but should be created, because the wealth of information and observations can be used the coming years for further planning, implementation and evaluation.

Essentially, virtually all activities of the Health Project should continue because sustained NCDI activities need permanent investment: training, supplies, review of policies and technical documents. For example, the many guidelines so carefully developed need to be revised regularly, the first ones are due in 2014.

Because the PIU and IC have been dissolved, it is imperative that another unit or group takes over the stewardship of NCDI activities. This may well be the MoH in combination with CHD or another construct, but if it is left open without clear attribution of responsibilities, not just for policy setting (a task of the MoH) but also for implementation, the complete series of activities that needs to take place risks not to be established.

One factor that certainly has enhanced the sustainability of the Health Project is the visibility of the project in the country, at least for the issues it has raised among the population in terms of lifestyle. Also in the health system the visibility and intense activities without doubt have led to a lasting understanding of the importance of NCDI's and the role that health providers need to play. The project explicitly did many efforts to raise the visibility. The Health promotion in the Workplace, the grants program and all the trainings are examples. Separate posters and publications like a booklet on the project's success stories may be rather self-congratulating but also serve to disseminate information on the project and its messages in a manner that is attractive for lay public.¹⁹

Financial sustainability

The condition precedent of the Health Project, laid down in a variation to the amended Compact, stipulated that a fund of USD 1 million would be created for continuation of the Health Project activities. It did help to modify the State law of the Special fund. The Health Promotion Fund has quite a large number of goals to achieve, including mental health activities, so its resources need to be significant if it is really to sustain the NCDI activities of the Health Project.

Since 2010 the Health promotion fund started to collect 1% of alcohol excise tax and 2% excise tax on drug registration: USD 316,357 in 2010, 1,576,600 in 2011 and 2,049,732 in 2012. Moreover, later the excise tax was increased by another law amendment in July 2012. In the first six months of 2012, USD 256,489 was spent on local prevention and outreach events.

The Health Promotion Fund is a modest but relevant element of the sustainability of the Health Project.

10.6 Economic Rate of Return, ERR

Introduction

Consideration of the Economic Rate of Return (ERR) of the project is not mentioned in the ToR for this evaluation, but this section responds to a verbal request to include ERR specifically, done in

September 2013, by MCA-M. This section is based on review of the following documents received from MCA-M.

- 1) Factsheet-042808-err.pdf
- 2) mcc-err-mongolia-health.xls *last updated 8/16/2007*
- 3) MCA Health Project ERR 081513.pptx
- 4) Mongolia_health_revised_ERR-v2 09082013.xslx.

Feedback from MCC on a draft of this report shows that the evaluator had been provided with at least one report that should not be analysed and with a draft of which the status in MCC is unknown to the evaluator. Attempts to discuss the ERR with experts from MCC were not successful.

Background to ERR

MCC has developed an ERR methodology. This is described as follows on the MCC website.

“MCC takes into consideration a number of factors when making its decisions to approve program proposals. For each program its sustainability is determined and its likely economic impact, as reflected in its economic rate of return. MCC expects programs will generate adequate benefits to justify the specific investments. MCC also conducts beneficiary analysis to ensure that investments will deliver tangible benefits to the poor. Indeed, ERR is only one among several parameters used for decision taking. At its core, the ERR is a comparison of the monetary costs and benefits of a public investment. In MCC’s analysis, the costs of a project reflect the necessary financial expenses, including those covered by other parties. The benefits include the increased income of a country’s population or value added by its firms due specifically to the proposed project. Estimating the ERR of a proposed project before the investment is made offers MCC a forecast of the project’s likely economic impact.”²⁰

“MCC’s methodology for ERR analysis is best described as *micro-economic growth analysis*, which measures the expected increases in household incomes or the value-added of individual firms. These ERRs also include income or value added that is expected to be generated through environmental and social improvements, but do not attempt to quantify and incorporate the broader social value of these improvements. Every ERR calculation considers two scenarios:

- the expected outcome with the project investment;
- the expected outcome without the project investment.

and then calculates the difference in terms of economic benefits, while subtracting the costs made.”

For application to a health program or project, MCC devised a specific methodology for the calculation of the economic benefits. Basically, the Cost Benefit Analysis calculates the number of deaths of persons of working age avoided or postponed by the project, multiplied by the supposed annual productivity of these persons. The period over which these deaths avoided are calculated is 20 years from the start of the project. This calculation results in the economic benefits, expressed in MNT’s or USD’s. Subsequently, costs for the project plus incremental operations and maintenance costs during the ensuing 15 years are subtracted. The final balance, discounted at 10%, is expressed as an economic rate of return or percentage.

ERR for the Health Project in Mongolia

The objective of this ERR review is to assess the ERR calculated by MCC and also to assess in how far the ERR calculated for this Health Project needs to be considered when expressing an opinion on the outcomes of the project.

Table 30 presents the ERR at the beginning, mid-term and at the end of the project as determined by MCC experts.

Table 30 ERR calculations before, during and at the end of the project

ERR 2007 ²¹	ERR 2013 ³	ERR 2013 ²²
21 %	10 to over 11 %	22,5 %
Distribution of estimated ERR given uncertainties in key parameter values		
13-28 %		

The figures of 21% and 22.5% for 2007 and 2013 respectively have been calculated and provided in documents 2 and 4. Document 4 was produced in August 2013 and used the results of screening and other data until and including June 2013. The figure of 13.5% for mid-term and 10 to over 11% are derived from document 3.

Document 3 does not show the methodology, as do documents 2 and 4. Since the basis for the 2013 ERR of 10 to over 11% is unknown, these figures are not further considered below.

The methodology used for ERR

The ERR calculation in 2007 did calculate benefits as a result of the reduction of productive life years lost due to AH, DM, BC and CC. HPV immunization and the effects of the Stroke and AMI units could not be included because they were not planned at the time.

For the ERR calculation in 2013, the benefits come from prevention and treatment of the CVD, DM, BC and CC. The HPV immunization was included in the calculations, but the benefits of the Stroke and AMI Units supposedly are included in the category of CVD but this is not clear.

So, the methodology between 2007 and 2013 changed from a calculation of benefits of reduction of AH, in terms of productive life years saved and costs of treatment reduced, to a calculation of benefits of reduction of deaths due to CVD.

Higher productivity as a result of reduced morbidity, which is a major benefit, is not included in the ERR calculations. Also, reduced morbidity and mortality due to the population adopting a healthier life style is not included in the analysis. The absence from the analysis of some of the benefits limits the value of the ERR.

While it is standard practice to use a 20 year period for this type of forecasting, in specific cases this may be too short or too long. HPV vaccination provides a life-long relative protection against CC, and the 15 year period after the project ends to calculate benefits is too short. On the other hand, assuming that the Health Project leads to an annual reduction of 3.5% of CVD deaths during 15 years once the project has ended is over-optimistic. This leads to a consideration of the assumptions on which the methodology is built.

Assumption I

Necessarily, the ERR methodology works on the basis of a number of assumptions. At the start of the project in 2007, a major assumption was that all project activities are carried out as planned and that they have the impact as planned, over a period of 20 years. At the end of the project, the assumption on the project implementation can be replaced by actual implementation. This was not correctly done, for this project. The clinical activities like screening started in 2012 and IEC/BCC for a healthier lifestyle started in 2011, but benefits have already been calculated from 2010 onwards, see Table 31.

Table 31 Reduction of mortality, assumptions at the start of the project

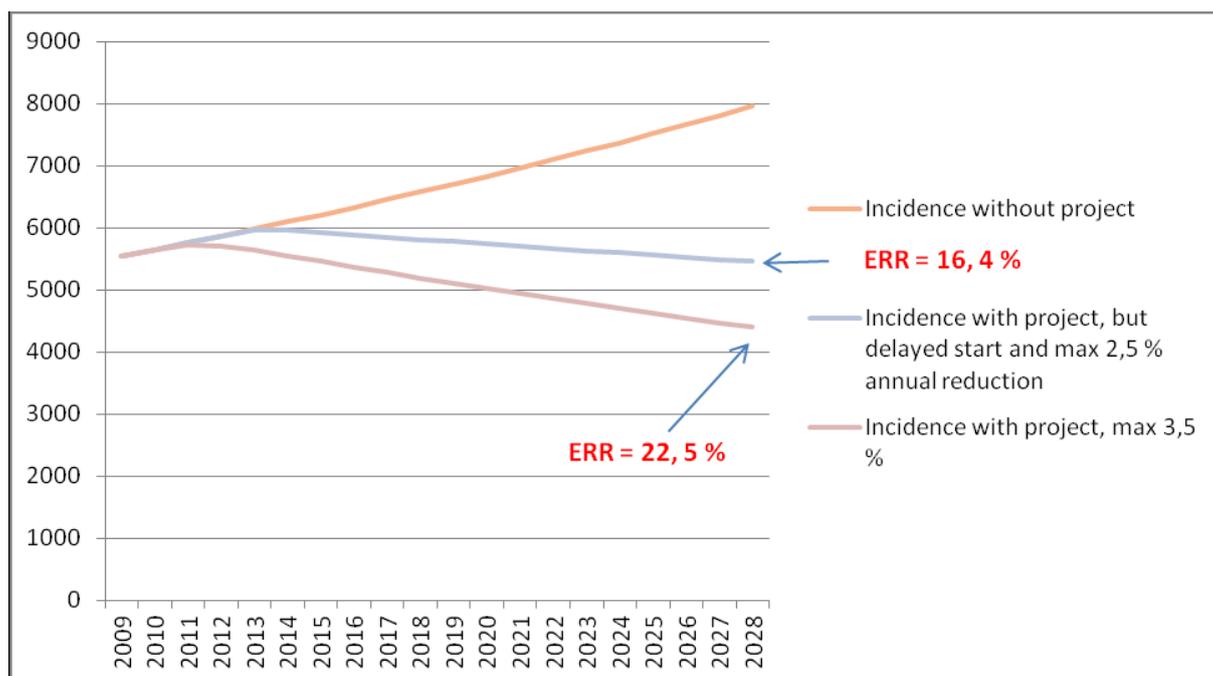
	2009	2010	2011	2012	2013	2014-2028
Annual reduction of mortality	%	%	%	%	%	%
CVD	0,0	0,3	0,5	2,0	3,0	3,5
DM	0,0	0,3	0,5	2,0	3,0	3,5
BC	0,0	0,3	0,5	2,0	3,0	3,5
CC	0,0	0,3	0,5	2,0	3,0	3,5

Source: data from "Mongolia_health_revised_ERR-v2 09082013.xlsx"

For all four diseases it is not plausible that any reduction takes place before 2013. Further, the assumption of an annual reduction of deaths that is identical for the 4 diseases is completely hypothetical. A broad variation around 3.5% needs to be considered.

Figure 11 shows the end result (1) if the intervention did start reducing CVD deaths in 2012. If we assume that the number of deaths starts reducing in 2012 with 0.25%, then 0.5% in 2013, then 2% in 2014 and with 3.5% from 2015 onwards and (2) if the reduction in CVD deaths from 2015 onwards remains at 2.5% per year, the ERR would drop to 16.4%. If the number of CVD deaths does not reduce more than 2% per year the ERR drops further to 14%.

Figure 11 Effect of CVD project on number of people with CVD and on ERR; two scenarios



Assumption 2

The initial ERR calculation, from 2007, assumed that 42% of Mongolian citizens are covered by the project. That number was based on the assumption that 60% of the national population is covered by the programs of which supposedly 70% is actually reached ($0.6 * 0.7 = 0.42$). The 60% did not correspond with the population targeted by the project: 6 aimags and 3 districts. It would have been 30-40%.

If not 60% but only 50% of the population is covered by the project, then the ERR from 2007 changes from 21% to 12%, ceteris paribus. If the coverage within the 60% population reached is 50% and not 70%, then the actual coverage is 30% (i.e. $0.6 * 0.5 = 0.3$) and the ERR would be only 6%.

Assumption 3

For a number of the assumptions at the start of the project there was little or no historical basis nor relevant international material for comparison, so the assumptions were an educated guess. Table 32 shows the estimation of the range benefits that was made in 2007, to allow for a calculation of the impact of the uncertainties.

Table 32 Ranges of costs and benefits, provided in the ERR calculations in 2007; 2013 added for comparison

Key parameter	MCC estimate in 2007	'Plausible Range' in 2007	Estimates 2013
Annual Reduction in Incidence of Hypertension After Year 3	2%	0 - 5%	Not used in 2013 calculations
Among the new patients receiving treatment for hypertension as a result of the project, the share who will suffer from stage I hypertension (as opposed to stage II, III or IV) in year 3 of the project	45%	40 - 50%	Not used in 2013 calculations
Annual CVD deaths reduction after year 5			3,5 %
Annual Reduction in Incidence of Diabetes After Year 3	2%	0 - 5%	3,5 %
Among the new patients receiving treatment for diabetes as a result of the project, the share who will suffer from stage I diabetes (as opposed to stage II or III) in year 3 of the project	80%	70 - 90%	Not used in 2013 calculations
Annual DM deaths reduction after year 5			3,5
Cervical Cancer Survival Rate in Year 5 and Later	60%	45 - 75%	Not used in 2013 calculations
Annual CC deaths reduction after year 5			3,5

The range of each of the 5 parameters is plausible, i.e. 0 to 5%, 40 to 50%, 0 to 5%, 70 to 90% and 45 to 75% respectively. When the lower bounds of these plausible ranges are jointly taken, then the ERR in 2007 becomes - 4%. When the upper bounds of these plausible ranges are taken simultaneously, then the ERR would have become 39%. There is no reason to believe that all parameter values would simultaneously be at the lower or upper end, but since they are all within the 'plausible' range it would well be possible. For example, if the activities of the project are not sustainable because there is no continued investment, all parameters might end up at the lower end. Alternatively, if the follow up of the project would be taken at hand enthusiastically, all the parameters might end up at the upper end. The connection between these five specific parameter ranges and the plausible ranges of the overall benefits is unclear.

Assumption 4

As indicated above, an ERR of – 4% would be reached if all five key parameters have an input value equal to their 'plausible' lower bound. However, referring to Table 33, to obtain the same ERR of – 4% by changing the input values of the overall costs, one would have to set the overall costs at 175% (instead of 100%, or 120% which is the 'plausible' upper bound) and the overall benefits at 25% (instead of 100%, or 80% as the 'plausible' lower bound). In other words, the 'plausible' lower and upper bounds of the five specific parameters are not in line with the 'plausible' ranges of the overall costs and benefits.

Table 33 Ranges of costs and general benefits provided in the ERR calculations in 2007

Key parameter	MCC estimate in 2007	'Plausible Range	2013 estimates
Actual costs as a percentage of estimated costs	100 %	80 - 120 %	Not provided in 2013 calculations
Actual benefits as a percentage of estimated benefits	100 %	80 - 120 %	Not provided in 2013 calculations

Assumption 5

In order to show the sensitivity of the ERR calculation for assumptions, Table 34 lists the major assumptions used for the calculation and indicates for a number of them the effect on the outcome of the ERR calculation. From this table one can conclude that the ERR calculation is very sensitive for some assumptions, like the exchange rate and the GDP growth per capita and not sensitive at all for others. Further, some assumptions can be challenged, like the assumption that the reduction of annual deaths by CVD still is 3.5% 15 years after the project ended. In general, to assume that an intervention in health has effect until 15 years after it ends requires a great leap of imagination.

Table 34 Major assumptions for ERR calculation

Assumptions for the ERR calculation before the project started (2007) and at the time the project was completed (summer 2013).					
assumptions	2007	comments	2013	comments	ERR is sensitive to a change in the assumption
Project coverage of the country's population	42 %		100 %		Yes, very high sensitivity in the 2007 and 2013 calculations
Annual Reduction in Incidence of Hypertension after Year 3	2 %		3,5 %	Reduction of CVD mortality	For 2007 calculations, there is little sensitivity. If annual reduction would be 5 %, then the ERR would rise from 21 to 22 %. In the 2013 calculations, there is some sensitivity: if the annual reduction in CVD is 2% instead of 3.5 % (from 2011 onwards), then the ERR drops from 22% to 19%.
Estimated composition of new Hypertension patients per stage, without Compact;	Stage I: 10 % Stage II: 30% Stage III: 50 % Stage IV: 10 %	A strong assumption regarding the counterfactual is: those that get sick would necessarily get treatment, also in absence of Compact.	There is no mention of stage 1, 2, 3 or 4 in the ERR calculations for 2013.		The 2007 calculations are very sensitive to changes in these assumptions. For example, if not 10 % but 5 % of new hypertension patients would progress to stage IV treatment, then the 2007 ERR would drop from 21 % to 10 %. Yes, if the treatment costs are higher in the 2007 calculations, then the ERR will be higher (because these costs are partly avoided). On the other hand, if the treatment costs per hypertension patient in stage IV would not be 25000 USD but, for example, 20000 USD, then the 2007 ERR would drop from 21 % to 19%.
Cost of treatment of hypertension, per stage	Stage I: 3 USD Stage II: 200 USD Stage III: 1000 USD Stage IV: 25000 USD		There is no mention of stage 1, 2, 3 or 4 in the ERR calculations for 2013.		

<p>Additional survival years for CVD patients, because of project</p>			<p>2013 age groups and expected additional life years (on average):</p> <table border="1"> <tr><td>15-19:</td><td>10</td></tr> <tr><td>20-24:</td><td>10</td></tr> <tr><td>25-29:</td><td>9</td></tr> <tr><td>30-34:</td><td>9</td></tr> <tr><td>35-39:</td><td>8</td></tr> <tr><td>40-44:</td><td>8</td></tr> <tr><td>45-49:</td><td>7</td></tr> <tr><td>50-54:</td><td>7</td></tr> <tr><td>55-59:</td><td>6</td></tr> <tr><td>60-64:</td><td>6</td></tr> <tr><td>65+:</td><td>5</td></tr> </table>	15-19:	10	20-24:	10	25-29:	9	30-34:	9	35-39:	8	40-44:	8	45-49:	7	50-54:	7	55-59:	6	60-64:	6	65+:	5	<p>There is some sensitivity in the 2013 calculations. The ERR would drop from 22,5 % to 19,6 % with the following distribution:</p> <table border="1"> <tr><td>15-19</td><td>10</td></tr> <tr><td>20-24</td><td>9</td></tr> <tr><td>25-29</td><td>8</td></tr> <tr><td>30-34</td><td>7</td></tr> <tr><td>35-39</td><td>6</td></tr> <tr><td>40-44</td><td>5</td></tr> <tr><td>45-49</td><td>4</td></tr> <tr><td>50-54</td><td>3</td></tr> <tr><td>55-59</td><td>2</td></tr> <tr><td>60-64</td><td>1</td></tr> <tr><td>65+</td><td>0</td></tr> </table>	15-19	10	20-24	9	25-29	8	30-34	7	35-39	6	40-44	5	45-49	4	50-54	3	55-59	2	60-64	1	65+	0
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<p>Annual reduction of hypertension mortality due to project</p>	<p>Stage IV death rate (untreated):0,33</p> <p>Stage IV death rate (treated) 0,2</p>			<p>For 2007, the ERR would drop from 21 to 20 % if the stage IV death rate from hypertension, when untreated, is not 0,33 but 0,3 and if the death rate of treated stage IV hypertension patients would be 0,25 instead of 0,2. What is realistic?</p>																																												
<p>The share of new patients that are in stage 1 to 3 of diabetes, without Compact; stage 3 means death after 5 years.</p>	<p>In the 2007 calculations 5 % is in stage I, 15 % in stage II and 80 % in stage III</p>			<p>The 2007 calculations are very sensitive to this assumption: If not 80 % but 70 % progresses to stage III, and not 15 % but 25 % progresses until stage II, then the ERR would drop from 21 % to 15 %.</p>																																												
<p>Estimated composition of new diabetes patients in stage I, II and III, without Compact</p>	<p>Stage I: 5 % Stage II: 15% Stage III: 80 %</p>			<p>Yes, the 2007 calculations are sensitive to these changes. If not 80% but 70 % of new diabetes patients would progress to stage III (and cost 25000 USD p.a.), then the ERR would drop from 21 % to 16 %.</p>																																												
<p>Treatment costs are assumed to be:</p>	<p>80 % of new diabetes patients would cost</p>																																															

3 USD for stage I, 500 USD for stage II and 25000 USD for stage III patients, per year.	25000 USD per year, in case of no Compact?				
Range of 80 % and 120 % of the overall costs and benefits			Sensitivity test is not conducted in the 2013 Excel-sheet		Yes
Population growth	1,5 %		1,92 %		No. The WB Development Indicators report a growth of 1.5 % that has been stable for the five most recent years. The ERR 2013 decreases from 22.5 to 21.8% if the World Bank figure is used.
GDP growth per capita	5 % real		14 % in 2013	8,5 % for the years 2015-2020	Yes, the higher the GDP growth, the higher the ERR.
USD exchange rate	1221 MNT		1560 MNT	1642 (October 2013)	Somewhat. The higher the exchange rate, the lower the ERR

Assumption 6

The ERR calculations of 2007 and 2013 assume that the productive life years saved all can be multiplied by the average GDP per person. However, there is ample evidence from many countries that NCDs affect the lower socio-economic strata of society more than the wealthier ones. Although this has not been assessed in Mongolia, the assumption that the productive years saved return less than the average GDP seems justified.

Finally, on the ERR methodology: in the 2013 ERR Excel file provided by MCC, the ERR calculations use the market exchange rate for some calculations (assumed to be 1560 MNT: 1 USD), but the PPP rate for other calculations (assumed to be 753 MNT: USD). On the 'ERR Summary' tab, field C201 divides the Net Present Value in MNT (i.e. B201) by the value from field B21 under tab 'Notes and Assumptions Scratch'. Field B21 under that tab gives the 'PPP rate (USD/MNT)'. Two rows above, the exchange rate is given. It doubles/halves the Net Present Value in US Dollar terms.

In the above paragraphs, a number of assumptions have been reviewed. While using assumptions is inevitable for a forecasting exercise, the comments show that the calculations of the ERR for this health project are not built on solid ground.

What intervention does contribute to a high ERR?

In spite of the uncertainties around the assumptions, the ERR calculations provide insight in some striking features of the economic effects of the Health Project. Using the 2013 calculations, Table 35 shows what each intervention contributes to the final ERR.

Table 35 Contributions to final ERR by disease targeted for prevention and early diagnosis/treatment

When the benefits of all four disease prevention / treatments are included:	22,5%
When benefits of DM intervention are excluded but the benefits of CVD and BC/CC intervention are included:	22,3%
When the benefits of BC/CC intervention are excluded but the benefits of CVD and DM interventions are included:	22,3%
When the benefits of CVD intervention are excluded but the benefits of BC/CC and DM interventions are included	No ERR (i.e. less than zero)

It can thus be concluded that approximately 22.1 of the 22.5% ERR comes exclusively from the benefits due to the CVD prevention and treatment. If only the benefits of BC/CC and DM prevention /treatment are included then the net benefits are so low that it is not sufficient to see a positive return on the investments, i.e. the total costs are greater than the total benefits and thus there is no positive ERR.

Ethical questions on the use of ERR

ERR does not include immaterial benefits, such as improved quality of life of people who suffer less from NCDs. This non-consideration of non-monetary benefits itself should be a reason to limit the role of ERR. Further, ERR values the results of the project in terms of economic productivity and does not consider at all the value of life of people who are not directly economically productive. In the planning phase, there is a risk that projects that invest in health of older people or people with limited abilities to be economically productive get lower priority. Therefore, the role of ERR should be limited when health projects are being considered.

In the Health Project in Mongolia, people of working age are prioritized for the IEC/BCC campaigns and for screening. To a large extent that is actually not a result of prioritization of economically active persons but because the age groups (30-49 years for AH and diabetes, 30-60 years for CC and BC) are

the groups most at risk, for whom interventions may have a significant impact on their life expectation. The project did pay attention to economically non-active persons. For example, palliative care was included, albeit as a minor activity. The screening program made an effort to include persons with a disability who could not displace themselves, see Chapter 9.2.

Conclusions

The number of uncertainties in terms of assumptions in the ERR calculation of the Health Project is high, with the outcome being a very soft assessment of the economic results of the project. Therefore, the 21% ERR of the Health Project in Mongolia cannot be considered as a meaningful figure and should not play a role in its evaluation.

In general, the ERR methodology cannot be considered to be sufficiently tested and mature for use as a major contribution to decision taking upfront or evaluation of a health project as complex and dynamic as the MCA NCDI project in Mongolia.

Apart from the technical limitations, the role of ERR in assessing the value of a Health Project should be minor, since it does not value life or life years of people, but the productivity of their years, which potentially leads to discrimination (age, disability) and major inequity when investments in health are considered.

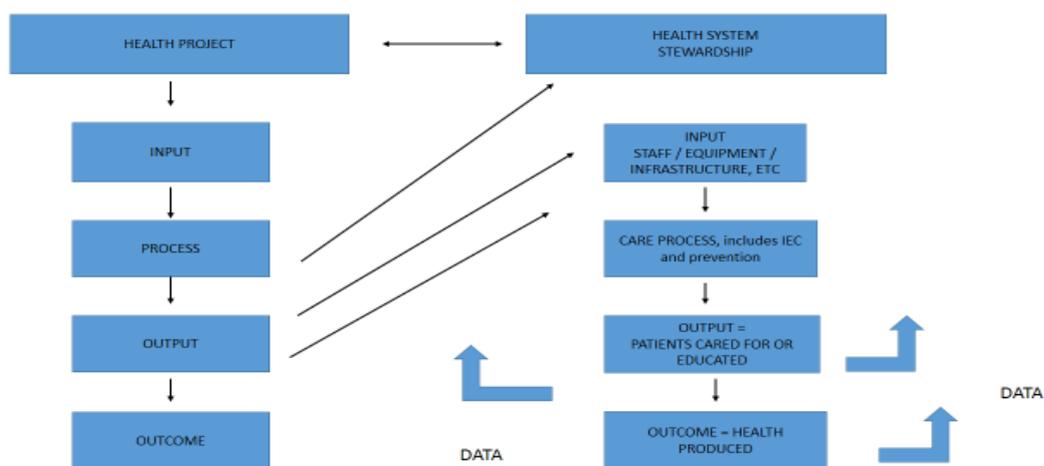
Alternative ways to assess the economic contribution of health activities do exist and could be useful for assessments a priori and ex-post of MCC health projects.

11 Overall conclusions and good practices

11.1 Conclusions

1. When considering the results and outcomes of the Health Project, the distinction between the results and outcomes of the Health Project need to be separated from the results and outcomes of the health system and other systems, like Education and Traffic. Figure 12 shows the relationship. The message of this figure is that the Health Project ultimately cannot be held accountable for the results and outcomes of the health system, since many other factors aside from the Health Project influence the latter.

Figure 12 Relationship between Health Project & other health system outcomes



2. To emphasize the previous point: Mongolia spends approximately USD 250 per year per inhabitant on health, all financial sources combined: state, insurance, out-of-pocket, international; through the private and public sectors. The USD 13 to 14 in total over five years per inhabitant the Health Project has invested cannot immediately change the health of the Mongolians significantly and very visibly.
3. The Health Project has delivered a major contribution to Mongolia. Its courageous design that favored primary care and adopted a very population oriented approach – in contrast to a health system and hospitals first approach – has meant that the project had and still has ramifications in the most far away soums and khoroos.
4. Strategies and activities of the Health Project were comprehensive and well chosen, some of them can be considered as good practice, see below. The expected impact of the NCDI strategies on the health of the population is long-term; effects of the Health Project on the Health System are short- and mid-term.
5. The Health Project has implemented all the activities of the amended Compact, and more than that. In spite of serious obstacles, most activities were well planned and implemented. Exception to be made for the planning of the Stroke and AMI Units.

6. The extension from a pilot to a country wide project was a mixed blessing: now it could offer the project to the whole country, but there was no opportunity to learn from early mistakes or to adjust from wrong assumptions. One of the most striking examples of this was reported in chapter 5.1 on the (non) use of data from the National Statistics Office, which came as a surprise.
7. The Health Project has strengthened the health system rather than weakened it, although there are areas for improvement. See chapter 10.3.
8. Beyond NCDIs, the Health Project has strengthened a culture of quality and thoroughness of planning and analysis in the Health System. It also has stimulated a culture of efficiency and accountability in the health sector.
9. The period of actual implementation of the Health Project was between 24 and 30 months. This is far too short for a complex program that is so deeply embedded in the health system. Many components of the Health Project are half-finished, like training and the establishment of smooth running screening programs.
10. In terms of sustainability, the Health Project missed a few opportunities, like leaving behind a costing plan for further investment and activities on NCDI's and a repository of relevant documents. Bits and pieces have been left behind but no complete repository.
11. The intention to develop a follow up to the 2008-2013 national NCDI program get shape by the end of 2013, which fulfils a basic condition for the sustainability of what the Health Project has invested and achieved.
12. Development and use of frameworks for evaluation, including the use of indicators, need to be improved and done timely, in early phases of the project, if they are really to be helpful for M&E.

11.2 Good practices

1. The PIU and IC have developed a very participatory approach to planning and decision taking in the Health Project, that in itself has set an example. Evidence based working is becoming a standard.
2. The development of an MPH course that delivered 35 health researchers / planners / managers for NCDs. See Chapter 4.
3. A pilot of HPV vaccination that highlighted the capacities needed for a regular HPV vaccination program. See Chapter 5.
4. The involvement of local authorities in aimags and districts, who are capacitated to take further initiatives and create further resources for NCDIs, amongst others through the grant program.
5. The collaboration between the Health Project, WHO and the MoH on waste management: there is now one standard of equipment for the country and there was a geographical division of tasks between the Health Project, WHO and ADB.

6. The flexible approach by the health project: supply of training, monitoring and observation of gaps and further needs, followed by re-training and new ad-hoc trainings.

12. Annexes

Annex 1 Terms of Reference of this evaluation, extract.

I. Introduction

The Millennium Challenge Account of Mongolia (MCA-Mongolia) requires an evaluation of the health project. The Compact is in its final year and will terminate on September 17, 2013. The Compact closure period is from September 18, 2013 thru December 18, 2013.

The Consultant hired to implement an evaluation of the health project will be responsible for analyzing survey data, conducting a desk review of project documents and conducting interviews with stakeholders in MCA, the Government of Mongolia, and beyond to understand implementation processes. The evaluation will seek to understand the degree to which planned activities were implemented, if and why activities were adjusted, output and early outcome results, and lessons learned from project implementation. Due to the national scope of the project, and the resulting lack of a counterfactual, the evaluation must be cautious in the discussion of results and the ability to attribute changes over time to the project.

The Consultant should possess extensive experience with analyzing survey data and qualitative data collection. The Consultant should also have experience in communication and cooperation with local stakeholders (including local government officials), and an understanding of the health sector, in particular activities targeting non-communicable diseases.

The Terms of Reference (TOR) outlines the requirements and aims of the evaluation, a brief description of the program, key evaluations questions, and required qualifications. The contract duration is three and a half months with an option to extend by one month.

II. MCC and MCA-Mongolia Implementation Structure

The Millennium Challenge Corporation (MCC) was established in January 2004 as the United States government corporation to implement the Millennium Challenge Account (MCA). The mission of MCC is to reduce poverty by supporting sustainable, economic growth in developing countries which create and maintain sound policy environments. MCC is designed to support innovative strategies and to ensure accountability for results that can be measured. The government of Mongolia (GoM) has received a grant of USUSD 285 million from the MCC.²³ This Compact was signed on October 22, 2007. The GoM established MCA-Mongolia, an independent, legal entity empowered to carry out the government's obligations and to implement the Compact over five years. The MCA-Mongolia is the entity responsible for overall management of the Compact's implementation. The program is legally governed by the Compact and its supplemental agreements (available on www.mcc.gov and www.mca.mn).

III. Objectives and Scope of Work

A. Objectives

The following factors must be explored in this evaluation. See Annex One for more details on the process-related questions and Annex Two for descriptions of the project surveys conducted.

1. Program Logic: Analyze the original and existing logical framework for each project and the assumed link between the inputs, outputs, and expected outcomes. This should include a discussion of the assumptions, risks and any external factors that affect the program logic and a description of any missing elements of the program logic.

2. **Implementation and program results:** Identifying the extent to which:
 1. Planned activities were undertaken;
 2. activities were not undertaken or were de-scoped;
 3. new activities were introduced;
 4. activities were partially or fully implemented;
 5. where feasible, implemented activities led to outcomes, or meaningful changes in knowledge, attitudes and practices for some or all the intended beneficiaries (relying on survey data clearly framing the results and inability to attribute changes due to the lack of a counterfactual);
 6. implemented activities and outcomes have been sustained (for those activities which are ended); or the prospects for sustainability for uncompleted activities over the short- and long-term (where feasible).

Lessons learned: What lessons can MCC or the Government of Mongolia apply in future programs related to program design, implementation, and sustaining results?

Key Evaluation Questions

General/Each Activity:

- Did each activity reach its goal?
- Was each activity implemented as planned?
- How well was each particular activity implemented?
- Did each activity reach the intended beneficiaries / target population?
- What were the strengths and weaknesses in implementation?
- How can the project ensure sustainability of each activity?
- Are there any serious discrepancies or differences between project implementation in different geographic regions?
- Were the targets and choice of beneficiaries appropriate for each activity?

Activity	Questions
Project administration	<p>Were the activities implemented per initial plans? If changes occurred, what was the reason?</p> <p>Were the staffing, resources, funds appropriate for the scope of this project?</p> <p>How has the project reduced duplication with other similar projects or government initiatives?</p> <p>How has the project coordinated with donors and government agencies?</p> <p>What are the prospects for this activity to be sustained beyond the project?</p>
Capacity building	
Training	<p>Are trainings considered useful by health workers and others?</p> <p>Were there any obstacles for people to participate to trainings?</p> <p>How were participants selected by implementers for training and why was that selection process used?</p> <p>Do participants use the knowledge gained in their work, private life?</p> <p>What initiatives/new techniques could be used as a best practice for other training providers?</p>

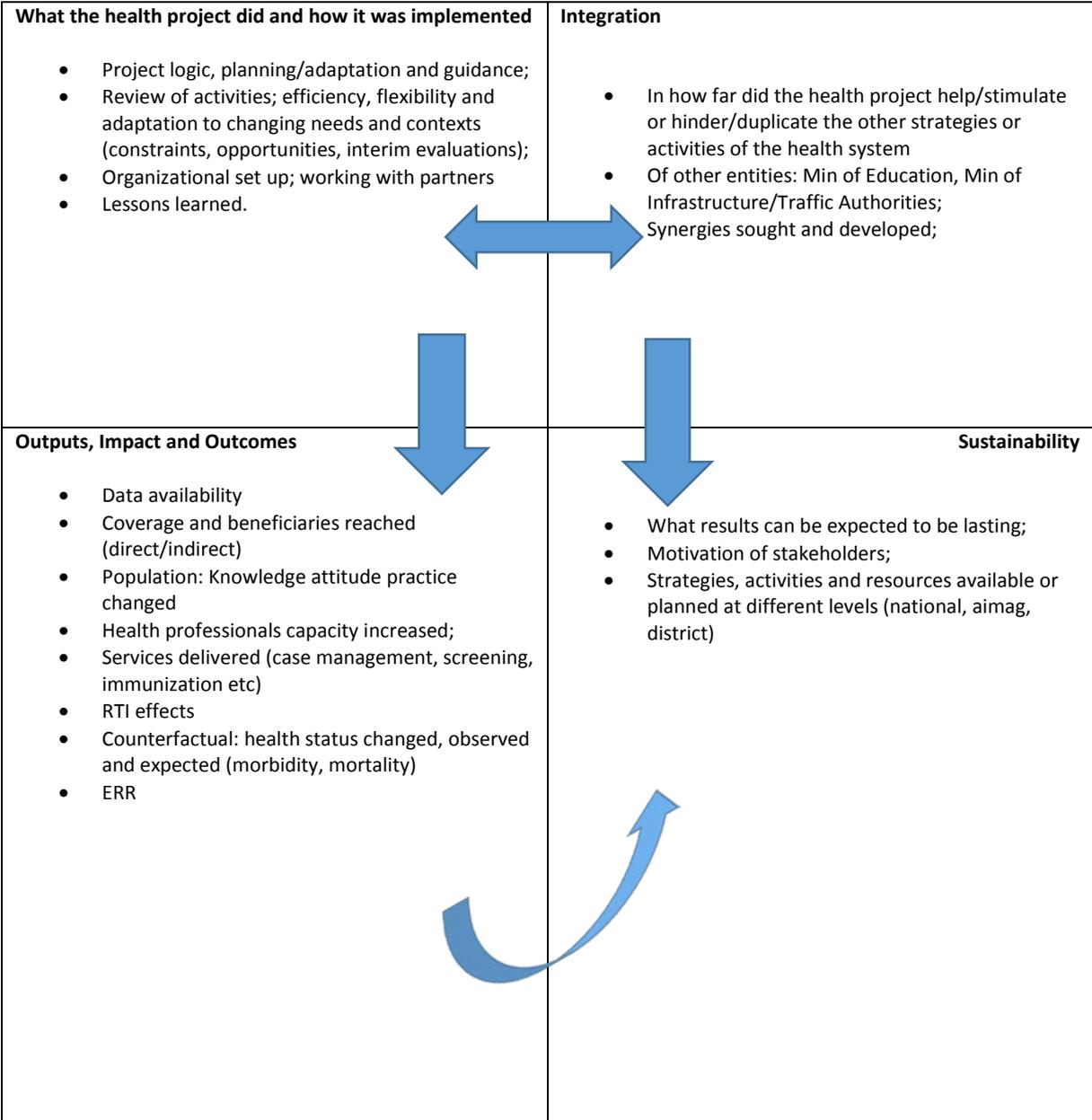
Master of Public Health program	What advantages and disadvantages of this joint training program are seen by main stakeholders (lecturers, students, health institutions)?
NCD prevention	
Grants	What best practices are considered most significant in the administration of the grants program? Did grantees extend their initiatives beyond the allocated funds?
Public campaigns	What concepts on public campaign strategies seen as a best practices for the main stakeholders (project staff, contractor, relevant organizations) Were these campaigns effective based on findings from the KAP surveys?
Health Promoting Workplace program	Was this program necessary as part of the behavior change communication (BCC) activities? What are the prospects for this activity to be sustained beyond the project?
Nationwide / local competitions	Did this part of project activity reached its goal?
Advocacy activities	What do stakeholders consider the major achievements to be? Was this component necessary as a part of overall BCC activities?
Development and implementation of clinical guidelines	(How) was it ensured that best practices of other countries, especially developed countries, were adopted in the Mongolian health system?
NCD screening	How was the screening implemented? Did the screening cause any additional financial or workload burden to the system/providers? What was seen differently in the implementation of this program by beneficiaries and health providers? What best practices are considered useful for the broader health system? What are the prospects for this activity to be sustained beyond the project?
RTI prevention interventions	Were the appropriate activities chosen for this component according to GOM stakeholders?
Stroke and AMI component	Were the needs of beneficiaries reflected in this project? What best practices are considered useful from these components? What are the lessons learned?

Deliverable: Final Evaluation Report

- Executive Summary
- Evaluation Methods, Questions, Data Sources, Limitations
- Project Background
- Project Logic
- Implementation Structure: create an organizational chart that identifies the relevant GOM office, PIU, Consultants and/or grantees hired to implement project activities; each entity should be accompanied by a brief description of the corresponding task and the timeline of their work
- Findings

- Changes to Planned Activities – if activities were removed discuss the reasons; if activities were added discuss the reasons
- Summary of project implementation, in particular how internal and external factors affected the quality of project implementation
- Summary of inputs and outputs and discussion of shortcomings
- Description of outcomes based on survey data and a clear discussion of the lack of a counterfactual
- Description of sustainability plans, prospects and risks
- Quality of implementation – discussion of implementation, including how internal and external factors affected the quality of project implementation and the degree to which the project was or was not able to react to external factors affecting its performance.
- Lessons Learned
- Annexes: questionnaires used for focus groups and interviews; list of documents reviewed; list of meetings, interviews and focus group discussions

Annex 2 Evaluation framework



Annex 3 List of stakeholders spoken with during the evaluation.

MCA / MCC	Mr Uuganbayar	MCA-M M&E officer
	Mr Jonathan Brooks	MCC Managing Director
PIU	Mr Munkhtaivan	Health Project Director
	Mr Dr Mukhbat	Deputy Health Project Director
	Mrs Dr Gerelmaa	M&E Officer Health Project
	Mrs Altanzagas	financial officer
	Mrs Odgerel	procurement manager
	Mrs Dr Oyunbileg	teamleader health services
	Mrs Dr Tsetsegee	teamleader IEC/BCC
	Mrs Dr Enkhzul	NCDI Cancer Specialiaist
MoH	Mrs Kihsgée	PH division (at the time)
	Mrs Unurjanggal	RTI, medical service department
	Mrs Khandarmaa	HTA Unit
	Mrs Bayarmaa	Medical Care Policy Implementation/Coordination Division
WHO	Dr Soe Nyunt-U	WHO representative
	Dr Salik Ram Govind	PH specialist
	Mrs Tsogzolmaa	National Professional Officer NCD's
EPOS / IC	Mr Patrick Krause	Deputy Managing Director
	Mrs Elena Maximenko	Teamleader
	Mrs Mashbadrakh	Senior Grants Manager
	Mrs Oyunchimeg	IEC/BCC expert
	Mrs Dr Tsetsegary	
Bayan Ulgii aimag	Dr Khuangan	Deputy Head of health department
Arkhangai aimag	Mrs Ariunaa Jadambaa	director of Central Hospital
	Mrs Mandakh Gurjav	health department deputy director
	Dr Ganzorig	Director inter-soum hospital in Tairik soum
	Mrs Dr Buyankhishig	PH officer, ex MPH student
	Mrs Dr Erdenechimeg	TB specialist
Bayanzurkh District	Mrs Davaakhuu and staff	Deputy Director Health Department
Uvs aimag, Davst soum	various staff of soum hospital	
Uvs aimag, Ulaangom	Dr	PH officer, ex MPH student
CHD	Mr Bat-Erdene	Director
	Mrs Nomin	Head of NCDI working group
HSUM	Dr Amarsaikhan	Vice-president
NCC	Dr Purevsuren	Vice-Director
	Mrs Dr Badamsuren	Head of Department of Research, Training and Information
Hospital 3	Mrs Dr. Ariunaa-	Head of Stroke Unit
	Mrs Dr. Lkhamtsoo-	Neurologist Stroke Unit
	Mrs Dr. Urangerel-	Head of rehabilitation Unit
	Dr. Mungun-Ulzii	Head of Cardiology
	Mrs Dr. Gereltuya	Head of CICU
	Dr Bayartsetseg	Vice Director
	Dr Tumur-Ochir	General Director
MPPHA	Mrs Naranchimeg	Teamleader of BCC/IEC program
Network WHP	Mrs Tsendsuren	Chair of Network
Emergency Medical Service of UB	Mr Purebdash,	Director
City Traffic Police	Mr Ariunbold	Deputy Director
Ass of Private Sector's Health Organisations	Mr Munkhbayar	Head of Department
	Mrs Dorjgunsmaa	General Manager

UB Education Department	Mrs Mukhjargal	Health specialist
NCPH	Mrs Ganchimeg	Deputy Director
ADB	Mr W Bannenberg	Teamleader DRA and drug regulation function
	Mr Bodard	Senior health specialist
	Mrs Altantuya Jigjidsuren	social sector officer
UNFPA	Mrs Oyuntsetseg Chuluundorj	Assistant representative
SIMED	Mr Sander Blase	Project Engineer
Singleton	Mr Bayarsaikhan	Director
MCC	Mr Armando Ballofet	Waste Management specialist

Annex 4 Compiled report of Focus Group discussions

Introduction

Focus group discussions for health staff and non-health people were carried out in September 2013 in Arkhangai and Uvs aimags and Bayanzurkh district. Initially it was planned to take place in 2 aimags and 2 districts, but one district was cancelled due to time constraint. The FGD's were held in Mongolian and chaired and facilitated by the national consultant.

Place	Arkhangai aimag	Bayanzurkh district	Uvs aimag
Date	17 September, 2013	19 September, 2013	24 September, 2013
Number of participants for FGD with health staff	12	10	9
Number of participants for FGD with non-health people	5	5	10

Participants for focus group discussions (FGD) with health staff were staff involved in project activities. Local Health Departments organized the logistics. For FGD the facilitator used questionnaires developed by External Consultant.

Findings

Health staff's role in the project.

It can be seen the clear linkages established by the project to control non-communicable diseases. The role of physicians and nurses from Family Health Centers is crucial in early detection screening. They created list of target group for each screening (cervical, breast cancer, high blood hypertension and diabetes Type 2), sent invitations to target group, made first examination following the guideline, sent PAP smear to laboratory on scheduled day (every Friday); refer the suspected people to upper level according to guideline. The Family health center staff have assigned tasks for the screening based on received training, also they have trained staff as back-up. Some is responsible to enter screening data to the software.

At Aimag General Hospital and district Health Department level, the cervical cancer screening has been performing for non-target group and pregnant women.

Family health centers and soum hospitals sent PAP smear to Aimag General Hospital/ District Health Department.

Benefits of screening:

- The ordinary people appreciated the screening is taking place at family and soum health centers.“This is good opportunity to be screened free of charge and at close located health centers, especially for poor people who do not have money even for transportation” (FGD with non-health people, Bayanzurh district)
- The early detection screening revealed the number of new cases of diabetes, arterial hypertension, breast and cervical cancers, pre-cancer diseases saved lifes
- Training provided to health physicians at all level of health care.

Challenges faced due to screening:

At family/ soum clinics:

- Inviting people for screening many times created additional workload. In the beginning of screening program most people did not come even received the invitation. The nurses and doctors had to call again and again. But now the situation is improving. People's attitude is changing; people are started actively involved in screening. The participants commented that change is a result of outreach mass media, campaign, doctors' consultations and interview by local TV stations.
- The doctors and nurses stated that to call people for screening and inform the test result, to enter screening data to the software they must buy internet modem, to pay monthly fee for modem, all related to screening expenses they paid from their own pocket.
- List of target population entered to software differ in reality. For example as nurse from district says, according to software data, total number of people should be screened for this month is 3306, but in reality 288 out of total moved out, 150 rented their houses and do not live on their address, 71 are temporary residents, died 29, 61 are new residents, which means 2384 people should undergo screening.
- The participants mentioned the challenge related to data entry to the software. For example, if women screened last year and also came for this year for screening, then to enter the screening result to software, the previous visit's information should be deleted. Another problem is if temporary resident originally from other soum is screened, the software has not receiving this data, because her name is not in the initial list. They informed the National Cancer Center about this problem; they said they are working to upgrade the software, but still no progress noticed.
- For cervical cancer screening, the doctors and nurses have to fill 5 different forms, which also imposed burden to them.
- The rapid test for fasting glucose and cholesterol with expiration date in 3 months are distributed to family/soum health centers and had to return back to project after expiry. They did not receive the promised by the project new supply of tests.

....Before the screening program no one visited the hospital complaining to breast discomfort. Now women came and asked to check...(FGD with Health professionals, Arkhangai province).

At Aimag General hospital/ District Health Department

- The cytologists have excessive workload. PAP smears are sent from soum and family health centers to secondary health care facility. The project created the new vacancy for Cytologist and trained one health personnel from every secondary facility. Bayanzurkh District Health department trained the second cytologist by their resources due to huge population. For example, in this district total 6500 PAP smears are collected from 27 family health centers. 2 cytologists finished analysis for 5000 PAP smears. All trained cytologists have dual duties: in Arkhangai aimag, the cytologist works as gynecologist in ward; in Uvs and Bayanzurkh the cytologists are responsible for other lab test and analysis.
- The test result delayed for 2-3 months due to cytologist workload and annual vacation. If result is positive, they inform the respected soum/ family health centers. When women receive the call from health center, they go to panic and prefer to travel directly to UB for further analysis. Poor people usually come to aimag/district hospital for analysis. Here, the health staff explains the test result and calming the women.
- The project supplied the lidocaine, diabetes and hypertension medicines with strong criteria for distribution. For example, lidocaine should be used only for LEEP and biopsy, but Arkhangai province has no LEEP apparatus, maybe 2-3 flacons were used for biopsy, but many flacons are close to expiration and kept in stock. The same situation with diabetes and hypertension medicine. These can be distributed to only new cases from poor family. But in reality many old cases who are poor, but we cannot distribute them.

Generally:

- Turnover of trained staff

Recommendations from participants for further project if any

- The screening should be continued, involvement of target population and understanding the importance of screening getting improved. If continued, then after several years the mortality due to cervical cancer could be eliminated.
- Now three health personals are responsible for breast cancer screening: surgeon, cytologist and oncologist. Better management is needed, from patient perspective is it convenient to visit three different professionals, or assigned one specialist.
- To provide with mammography for all secondary level health care facilities. The project provided only to Regional Diagnostic and Treatment Center, for example one is located in Uvurkhangai aimag. Women from Arkhangai instead of going to Uvurkhangai for breast cancer screening prefer to travel to UB. Because of no mammography at aimag hospital, the specialists only rely on physical examination and perform more painful and less informative puncture.

The single most important risk factor for good health at population level.

Since the invited non-health background people were mostly health volunteers who support family health centers or district health department, their definition of healthy lifestyle was the same: healthy diet, more physical examination, less consumption of fatty meat and salt intake; no smoking and drinking alcohol. Especially, the ordinary people emphasized the alcohol addiction.

Risk factor from health professionals' perspectives is lack of health education of population, bad habits and improper use of medicine. Health staff also concerned about effectiveness of health education to adults. They proposed to let the public health specialist to teach Health subject at secondary school.

The main risk factor in Uvs aimag is high consumption of salt. Health staff advised that instead of talking the risk factors as a complex, for example lack of physical exercise, avoid salty and fatty food, stay away from bad habits, we need a survey to determine what is the main risk factor for health in Uvs aimag. For example, we noticed in mountain areas arterial hypertension is prevalent, while people live near the fast stream river suffer from iodine and other microelements' deficiency. The cancer is prevalent in Uvs aimag, maybe it's because of cold weather. People like to have hot drink right after getting in from very cold outside. It could be influenced to high prevalence of esophagus cancer here. So, risk factor is likely to be diverse from soum to soum. We need a special in-depth survey to access what nature factors influencing to some diseases.

The main risk factor in Bayanzurkh district is also different in apartment and ger areas. In ger area due to lack of access to safe drinking water and sanitation facilities, there are high prevalence of communicable diseases. In apartment area health personnel noticed several new cases of diabetes whilst in ger area fewer cases are detected.

Factors in society that more stimulate or inhibit a healthy life style

Most of FGD participants agree that the health project contributed to increase stimulating factors. However, there is lack of supportive environment for people to follow the physician's recommendations. For example, price of imported fruits is very expensive and many people cannot afford this cost every day; there is lack of fitness facilities; no supportive environment to walk. Uvs aimag has good practice of outreach health services named mobile screening "Bag 83". It started 3 years ago and initiated by UNFPA reproductive project with "Bag 63". Even the project is finished; the Uvs Aimag has been continuing this practice and reaching 83 bags.

Bayanzurkh district population is increasing from day to day. There is problem with providing appropriate health care due to fewer staff comparing to population number. Because of overloading, the health personnel does not have enough time for counseling.

Some participants stated the poverty is also factor inhibiting healthy lifestyle. They cannot afford their basic needs, what we can say about healthy food. But others argue on opposite. ..” We cannot say that poverty is only factor. Now in supermarket lean meat is not more expensive than fatty meat. Also, even poor can manage the amount of salt in their food. They also can walk, it is good for health and will save transportation fee”....Now the people are knowledgeable about bad effects of smoking and drinking, but they do not practice. And also there are not supportive environment to practice: no pedestrian sidewalk, there is also risk to be injured by car, no fitness club in ger area,

All three places mentioned food safety is the inhibiting factor. Most of foods are imported; there is no guarantee that shipping followed all the standards for transportation.

In addition, people mentioned TV ads which hinder the health awareness activities: for example ads on candies, chips, coke and hidden ads on alcohol. The famous actors play in ads of various medicine, which also increase the improper use of medicine. The health staff is concerned about ads of slimming biologically active additives; these caused to develop the complications. Even though the anti-tobacco law took effect in last March; the implementation is weak in rural areas.

The government role in stimulating a healthy life style

- Most participants would recommend to Government to systematically support the health volunteerism in Mongolia. This approach will help patients or visitors to receive good consultation from trained volunteer and make the health services more effective. The participants mentioned there is an existing Ministerial order to support volunteerism at primary level, but there is no technical and financial support to implement this order.
- To set one TV channel which broadcast only health education
- To establish in aimag center wholesale food market, this can increase food diversity of population. Now the main vegetable in most families’ diet is potato. The access to green leafy vegetables is low in most places.
- The government should initiate the open discussion with District Health department about how to decrease the prevalence of diseases in Bayanzurkh district, should visit, observe the situation and act quickly whether to split the district or build another health department.
- To build the secondary schools; now the pupil study by three shift, crowded classes increase the risk of communicable diseases, for example hepatitis. This will increase future cases of cirrhosis and liver cancer. We need to work on prevention rather than treatment.
- The Government should carry out situational assessment of health professional’s workload.
- To focus on health education of younger children, instead of teaching the letters and numbers, the children should be provided with training on personal hygiene, how to brush teeth and wash hands. The health subject should be taught by public health specialists.
- The Government should increase financial support for family health centers. There are many initiatives are raised from target population, but there is lack of room and capacity of those.

What activity to improve management of NCD’s or their risk factors do they consider as most useful to continue or repeat in future?

All four screening programs should be continued. But we need to calculate how many people should come for screening, how many new cases could be estimated and how much needed for treatment and allocate all these costs to the budget.

Now the population has a good understanding of these screening, we should continue this otherwise when the people come for screening and if we do not have the necessary materials, then it will be

failure. Especially, the budget allocation for screening is uncertain for family health centers. They have fixed budget, if Ministry of Health does not increase their budget, it will be impossible to continue the screening.

Annex 5 Evaluation MCA Health Project - Feedback on evaluator's findings and views.

On November 5, 6 and 12, 2013 three workshops were held to present and discuss preliminary conclusions of this evaluation. The draft evaluation report was not discussed in its entirety because participants had not read it. All had received the executive summary. Of the approximately 25 invitees, in total 12 stakeholders participated, including previous and present PIU staff. A separate visit was paid to Hospital 3 on November 13 to discuss feedback with medical staff and leadership and on the way forward.

The workshops consisted of a presentation of the main conclusions and a follow up discussion. The evaluator asked to suggest points that were missing in the report.

1. All participants agreed with the overall conclusions of the evaluation. Appreciation was expressed for the invitation to challenge the conclusions.
2. One of the overall conclusions that were explicitly supported was that the Health Project had implemented an enormous amount of activities in a participatory way and that, on balance, the health system had been strengthened.
3. Agreement with the statement that NCDs are definitively on the agenda in Mongolia, quite different from before.
4. The evaluator was asked to mention that, in some respects, the project was not transparent and not sharing information. For example, after the initial sessions on (financial) planning, no more updates on the financial progress were shared with stakeholders. Many project documents were not systematically shared. There was not sufficient institutionalization of the project. It needs more time also.
Evaluator: this point has been raised by other stakeholders earlier and therefore will be included in the report.
5. Request from participants to emphasize that a number of training activities had little effect because the individuals who had been trained often were replaced and the new functionaries did not have the required knowledge. Example: the evaluation report states that in some aimags/districts the stain for PAP smears had already run out, but that would not have happened if the persons in charge who were originally trained, still would be in place.
Evaluator: agrees, was raised by other stakeholders as well, will be emphasized in report.
6. Behavior change among business leaders does occur but takes time; we have seen concrete examples of that. Please mention this in report.
Evaluator: agreed, will be mentioned.
7. Lack of behavior change among the general population in spite of the campaigns should not be commented on in a critical manner because behavior change takes time.
Evaluator agrees but emphasizes that in some cases behavior change occurs in a short period of time when a combination of measures is taken simultaneously.
All agree that the government needs to lead and combine processes to stimulate behavior change, like legislation (examples: tobacco, alcohol) and funding of IEC/BCC campaigns.
Evaluator: agrees to emphasize this in report.
8. Request to include recommendation that research funds at local level should be made available for MPH graduates, because now sometimes they cannot apply the skills learned.
Evaluator: agrees, fits in sustainability suggestions.
9. On the cervical cancer screening, there was agreement on the range of the coverage, which is 30-40% of intended coverage, with a maximum of 51%. The several reasons for the lower-than-expected coverage that were forwarded by the evaluator also were agreed upon. The evaluator's view on the too high ambition level for the screening in year 1 was accepted.

Workload of health staff was calculated upfront and considered do-able. It was suggested by participants that with further investments, especially training, results gradually can improve. Evaluator: these comments confirm the views proposed, thank you.

10. The conclusions on the results of the IEC/BCC campaigns should also be based on the results among the specific target groups. For example, young people 16-25 were targeted by the non-smoking campaigns, then also the changes in that age group should be assessed and commented upon and not only changes in the population at large.

Evaluator: fair point, will be included in the evaluation report. The M&E framework of the Health Project should have included indicators that correspond more precisely with the target groups.

11. Agreement with evaluator's views on poor planning of the Stroke and AMI units in Hospitals 1 and 3 (and later only Hospital 3). Reasons: (i) inexperience of PIU and lack of technical competence among main decision takers (ii) non-communicative and non-participative working style in leadership of this sub-project (iii) internal feedback from procurement company to leadership of the sub-project was missing (iv) discontinuity of leadership (similar to point 4 above).

Hospital 3 leadership is quite aware of all the issues at present and has changed the leadership style. Optimization is being done and will be taken step by step, including expansion and training of specialized staff, infrastructure and equipment. No need to formulate this as a recommendation.

Evaluator: specific points will be mentioned in report, not as a recommendation.

12. Sustainability plan that was given to MoH was quite general, no specifics.

Evaluator: will be mentioned in report.

Annex 6 Amended Compact

Activities of the Health Project as described in the amended compact.

(a) NCDI Capacity Building Activity. MCC Funding will be used to ensure that the program is built on best international experience with NCDI. Specifically, MCC Funding will support:

- (i) establishment of senior NCDI advisory boards and expert panels;
- (ii) assessment of current NCDI practices, personnel, equipment and supplies and review of relevant protocols, guidelines, and job descriptions for NCDI detection, management and treatment;
- (iii) *aimag* and district support for building NCDI capacities and implementing NCDI activities;
- (iv) provision of mammography machines, vehicles and other NCDI equipment and supplies;
- (v) improved data collection on cancer stroke and accidents;
- (vi) improved capacities in the non-government organization sector and private work places to address and reduce NCDIs;
- (vii) improved outreach to youth and school-aged children to understand healthy life choices.
- (viii) testing the impact of the Health Project, using total quality assurance practices; and
- (ix) finalization of baseline data and indicators for monitoring and evaluation of the Health Project.

(b) NCDI Prevention Activity. MCC Funding will be used to reduce factors for NCDIs through such behavior change communications as public awareness campaigns and education outreach.

Specifically, MCC Funding will support:

- (i) development of national and regional NCDI communications campaigns, such as mass media, health fairs, work sites and mobile units promoting healthy lifestyles; and
- (ii) development and implementation of interventions to promote behavior change among youth and high risk individuals to prevent NCDIs.

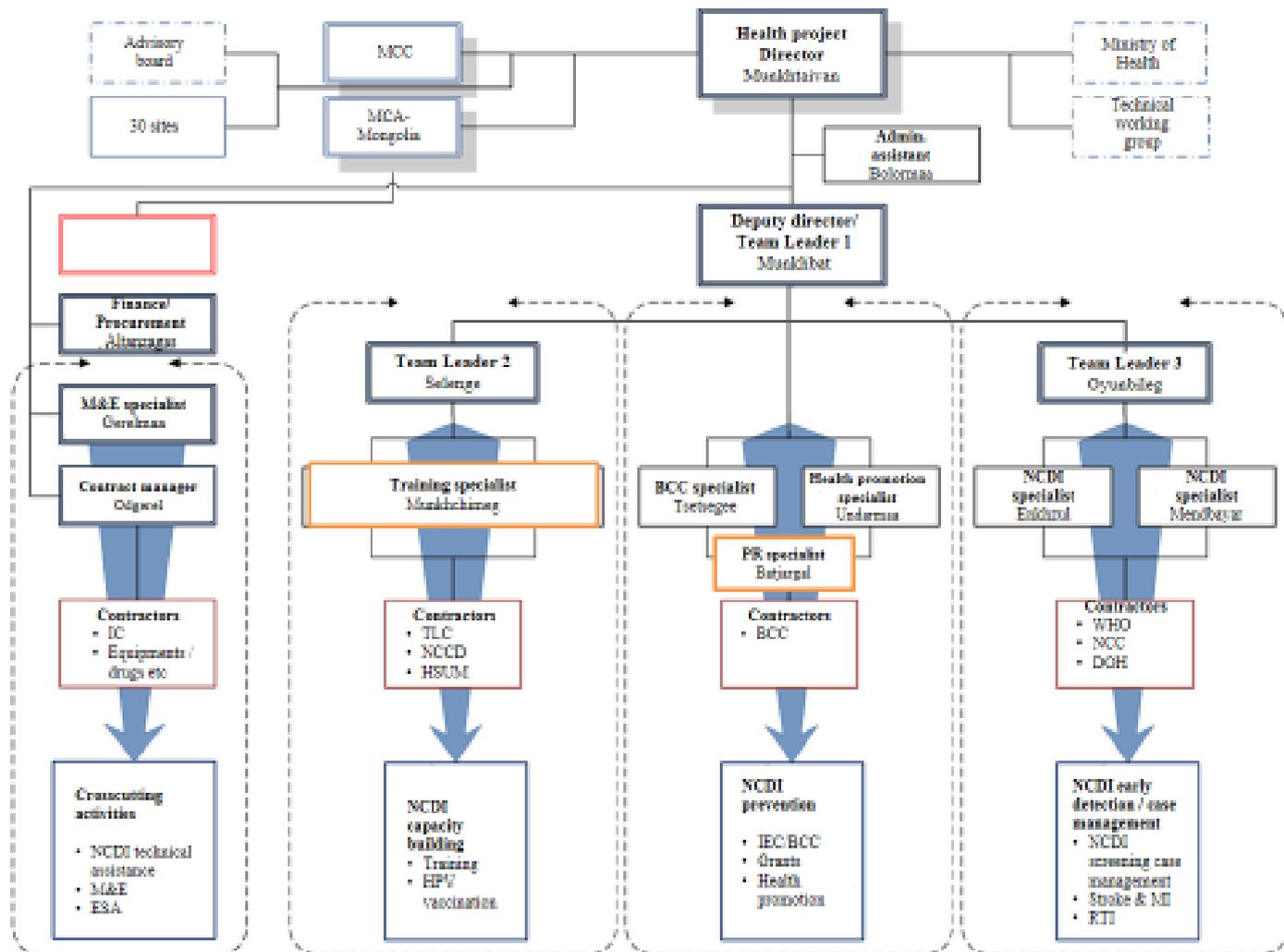
(c) NCDI Early Detection Activity. MCC Funding will be used to mobilize client demand for screening, introduce modern cost effective procedures, and provide key equipment. Specifically, MCC Funding will support:

- (i) implementation of new national NCDI screening procedures;
- (ii) national implementation of improved cervical cancer screening methodologies for women aged 35-50 years;
- (iii) program trial for the human papilloma virus (HPV) vaccine against cervical cancer to determine costs of delivery operations and to assist the Government in developing a national HPV vaccine policy and implementation strategy;
- (iv) improvement of breast cancer detection methodologies; and
- (v) identification and management of environmental, social, health, and safety impacts associated with the implementation of this activity, consistent with section 2.6 (c) of the Compact.

(d) NCDI Management Activity. MCC funding will be used to improve protocols and update training for medical professionals. Specifically, MCC will support:

- (i) development of community based disease management program and systems;
- (ii) national implementation of new public health NCDI management services;
- (iii) implementation of intensified heart attack, stroke and accident response services in selected sites;

Annex 7 PIU organigram



Annex 8 International presentations

Nr.	Authors	Abstract		Conference	
		Name	Status	Name	Please and dates
1	K.Altaisakhan	NCD situation in Mongolia and some response actions	oral presentation	WHO-IMSP Seminar on Public Health Aspects of NCD	August 10-18, 2010 Lausanne, Switzerland
2	L.Undram	„Knowledge, Attitudes and Practices of Non-Communicable Diseases among School Teachers in Mongolia”	oral presentation	42 nd Asia-Pacific Academic Consortium for Public Health	November 23-27, 2010 Bali/Indonesia
3	D.Otgontuya et al.	"Prevalence of non- communicable diseases risk factors and their trends from 2005 to 2009 among the Mongolian population"	poster presentation	American Heart Association Conference	USA, Atlanta Mar 22-25, 2011
4	D.Otgontuya et al.	"A simple diabetes risk score for detection of undiagnosed diabetes in Mongolian population"	poster presentation		
5	D.Narantuya et al.	"Trends of the prevalence and treatment of Hypertension among Mongolian population in 2005-2009"	poster presentation		
6	M. Oyunbolor	"RTI in Mongolia"	poster presentation	the 3rd European International Conference on Injury Prevention and Safety Promotion	Budapest, Jun 16-17, 2011
7	D.Enkhmyagmar et al.	"Youth health behavior among secondary schoolchildren of Mongolia"	poster presentation	"Public health and welfare – welfare development and public health" conference	Copenhagen, Denmark: Nov 10-12, 2011
8	D.Enkhmyagmar et al.	"Sexual behavior and condom use among schoolchildren in Mongolia"	poster presentation		
9	D.Enkhmyagmar et al.	"Mental health and suicidal behaviour of school children in Mongolia"	poster presentation		
10	J.Oyunbileg et al.	"Behavioral NCD risk factors among Mongolians: knowledge, attitudes, and practices"	oral presentation		
11	P.Enkhtuya et al.	"Prevention and control of raised blood pressure in Mongolia: problems and solutions"	poster presentation		

12	P.Enkhtuya et al.	"Constrains for fruit and vegetable consumption among Mongolian population".	oral presentation	the 43 rd Asia Pacific Academic Consortium for Public Health Conference	Seoul, South Korea Oct 18-22, 2011
13	E. Erdenechimeg et al.	"Quality survey of women's health seeking behaviour with regard to cervical cancer study"	oral presentation	the 43 rd Asia Pacific Academic Consortium for Public Health Conference	Seoul, South Korea Oct 18-22, 2011
14	Pekka J et al	„Smoking behaviour among Mongolians: knowledge, attitudes and practices“;	poster presentation	the World Conference on Tobacco and Health (WCTOH)	Singapore Mar 20-24, 2012
15	Pekka J et al	"Prevalence of smoking among Mongolians and its trends from 2005- 2009: problems and solutions"	poster presentation	the World Conference on Tobacco and Health (WCTOH)	Singapore Mar 20-24, 2012
16	Annefried Mueller et al.	"Creating a health promotion workplace network in Mongolia"	oral presentation	9 th European IUHPE Health Promotion Conference	Tallinn Sep 27-29, 2012
17	O.Chimedsuren et al.	"Availability and quality of NCD related services provided by primary health care facilities in Mongolia"	oral presentation	9 th European IUHPE Health Promotion Conference	Tallinn Sep 27-29, 2012
18	Silke Graeser et al.	"Evaluation of health professionals attitudes towards NCD prevention and health promotion in Mongolia"	oral presentation	9 th European IUHPE Health Promotion Conference	Tallinn Sep 27-29, 2012
19	O.Chimedsuren et al.	"Human resources for health promotion and NCD prevention in Mongolian health care facilities: staff, training and level of knowledge"	oral presentation	9 th European IUHPE Health Promotion Conference	Tallinn Sep 27-29, 2012
20	B.Munkhbat et al.	"Cardiovascular disease prevention and control in a country with rapid social, economic and epidemiological transition: experience from Mongolia"	Rejected	American Heart Association Scientific Session	Los Angeles, USA Nov 3-7 2012
21	Ts.Enkhjargal et al.	"Salt intake and sources of salt in the diet in Ulaanbaatar city, Mongolia",	oral presentation	the "Hypertension Sydney	Sydney, Australia Sept 30 - Oct 4, 2012
22	Ts.Enkhjargal et al.	"24 hours urinary excretion of salt in Mongolians"	oral presentation		

23	Ts.Enkhjargal et al.	"A survey of fasting lipids and lipoproteins in the Mongolian population"	oral presentation	2012" International Conference"	
24	D.Dundendorj et al.	"Study on availability, allocation and price of essential diabetes medicine in Mongolia"	poster presentation	International Pharmaceutical Federation (FIP) Centennial Congress	Amsterdam, Oct 3-8, 2012
25	Ch.Munkhdelger et al.	"Initiative to combat counterfeit and substandard medicines in Mongolia"	oral presentation	First Meeting on Substandard Spurious Falsely- labeled or Falsified Counterfeit Medical Products (SSFFC)	Buenos Aires, Argentina Nov 19-21 2012
26	N.Sumberzul et al.	"Health promotion and NCD prevention in Mongolian primary health care facilities"	poster presentation	21 st IUHPE World Conf. on Health Promotion	August 25-29 2013 in Pattaya, Thailand
27	S.Sonin et al.	"To improve attitude and counseling skills of family doctors"	poster presentation	WONCA World conference	June 25-29, 2013 Prague, Czech Republic
28	Z.Orgil et al.	"Survey on the prevalence of tobacco use and risk factors among female students of secondary school from 6-11th grades"	poster presentation	International Conference in Medicine and Public Health "Health Society beyond Frontiers"	June 24-28 2013 in Bangkok, Thailand
29	N.Sumberzul et al.	"Constraints for clinical guideline implementation in Mongolian primary health care facilities"	poster presentation	GIN 2013 (Guideline International Network) conference	August 18-21, 2013 San Francisco USA

Annex 9.1 Indicators: Outcome

Mongolia												
Annex II: Table of Indicator Baselines and Targets												
Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (year)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target	situation per November 2013 or as indicated	target reached
					Oct-08 to Oct-09	Oct-09 to Oct-10	Oct-10 to Oct-11	Oct-11 to Oct-12	Oct-12 to Oct-13			
Health												
Outcome	Prevalence of reduced sodium	Percentage	Level	11.05 (2011)					11	11	no data	no data
Outcome	Prevalence of high blood sugar	Percentage	Level	8.4 (2009)					8	8	8,3	no
Outcome	Prevalence of high blood pressure	Percentage	Level	44.6 (2009)					44	44	49	no
Outcome	Exposure to second-hand smoke	Percentage	Level	35.6 (2009)					33	33	49	no
Outcome	Screening for diabetes	Percentage	Level	0					66	66	53 after one year	no
Outcome	Screening for hypertension	Percentage	Level	0					66	66	45 after one year	no
Outcome	Vaccinations against cervical cancer	Percentage	Level	0					10	10	6,5	no
Outcome	At high risk for Non-Communicable	Percentage	Level	26.4 (2009)					25	25	36,9	no
Outcome	Working population's awareness of Non-	Percentage	Level	25.3 (2010)					32	32	93	yes
Outcome	Cervical cancer cases detected early	Percentage	Level	38.4 (2009)					47	47	51 of those identified	yes
Outcome	Primary healthcare facilities with NCD	Percentage	Level	10.3 (2010)					70	70	90	yes
Outcome	Screening for cervical cancer	Percentage	Level	18.8 (2009)					27	27	40.7 in last 3 years	yes

Annex 9.2 Indicators: Output

Mongolia											
Annex II: Table of Indicator Baselines and Targets											
Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (year)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target	situation per November 2013 or as indicated
					Oct-08 to Oct-09	Oct-09 to Oct-10	Oct-10 to Oct-11	Oct-11 to Oct-12	Oct-12 to Oct-13		
Health											
Output	National budget allocated to NCDs	US Dollars	Level	345,000 (2009)					1,000,000	1,000,000	1,000,000
Output	Local government spending NCDs	US Dollars	Cumulative								no data
Output	Grantees for establishing smoke free locations	Number	Cumulative						40	40	> 40
Output	Health staff trained	Number	Cumulative	179 (2009)					5,000	5,000	> 17.000
Output	School teachers trained	Number	Cumulative	0 (2009)					565	565	565
Output	Staff trained on stroke response	Number	Cumulative	0 (2009)					15	15	15
Output	Amount of civil society grants	US Dollars	Cumulative	0 (2009)					2,300,000	2,300,000	2,300,000
Output	Grants to workplaces for NCDI prevention	Number	Cumulative	0 (2009)					50	50	33
Output	Non-medical staff trained in response to traffic accidents	Number	Cumulative	0 (2009)					400	400	310
Output	Hospitals that treat cervical cancer	Percentage	Level	12.9 (2010)					100	100	34 inferred from other data
Output	Health education materials disseminated	Number	Cumulative	0 (2009)					1,000,000	1,000,000	> 1.000.000
Output	Facilities with health education materials available	Percentage	Level	9.5 (2010)					95	95	~ 100

Annex 9.3 Indicators: Process

Mongolia											
Annex II: Table of Indicator Baselines and Targets											
Indicator Level	Indicator Name	Unit of Measure	Indicator Classification	Baseline (year)	Year 1	Year 2	Year 3	Year 4	Year 5	End of Compact Target	situation per November 2013 or as
					Oct-08 to Oct-09	Oct-09 to Oct-10	Oct-10 to Oct-11	Oct-11 to Oct-12	Oct-12 to Oct-13		
Health											
Process	First wave of FBIS data collection conducted	Date					1-Jan-11				√
Process	Recommendations on road safety interventions	Date				1-Mar-10					√
Process	National NCDI communication strategy revised and	Date				1-May-10					√
Process	Curriculum for in-service and pre-service trainings	Date				1-Sep-10					√
Process	Training of trainers completed	Date						1-Nov-11			√
Process	Grants awarded (first round)	Date				1-Jun-10					√
Process	Grants awarded (second round)	Date					1-Jun-11				√
Process	Grants awarded (third round)	Date						1-Jun-12			√
Process	Rapid Needs Assessment completed	Date				1-Mar-10					√
Process	Training contract awarded	Date				1-Aug-10					√
Process	IEC/BCC contract awarded	Date				1-Sep-10					√
Process	NCD screening started	Date						1-Apr-12			√
Process	Study tours completed	Date							1-May-13		√
Process	IC Contract awarded	Date			1-Jun-09						√
Process	Recommendation on National strategy for salt reduction	Date					1-Jun-11				√

Annex 10 Sustainability plan

on national level NCD prevention, detection and control implemented within the framework of MCA Health Project.

Goal: Identify resources to ensure sustainability of NCD prevention, detection and control measures implemented by the MCA Health Project

Implemented activities	Currently responsible organization	Main organizations are responsible in future				Needed budget		Risks
		Name of organization	Capacity of organization /human resources, financial capacity, equipment etc./	Capacity building needs of organization /training etc./	Direction/focus to ensure the sustainability in future	Budget /₮/	Possible sources	
To organize ongoing on-job trainings for doctors and medical professionals on NCD								
I team – Facilitators / M. Khishgee, MoH/								
Distance trainings on NCD	City Health Department	Center for Health Development National Center for Public Health	<ul style="list-style-type: none"> - Currently can be connected with 9 aimags - Distance diagnostic equipments, especially camera with high resolution to communicate with aimags are installed - Capacity of IT engineers is built. 	<ul style="list-style-type: none"> - To include in Health Insurance budget for 2014 and get approved - Train IT engineers, information/ communication staff, doctors and professionals who will operate the equipments for telemedicine in every aimag & district 	<ul style="list-style-type: none"> - To equip the aimag, district with necessary equipments, such as medical camera, computer, etc. to ensure the same quality as provided to the center, to provide a specially equipped room for distance communication, to develop and implement a plan for telemedicine, to approve the budget and afford the opportunity to stabilize the activities - To assign Technical and Technology Unit of General Hospital to be in charge of telemedicine and appoint responsible staff to operate this. 	-	WHO, local budget	<ul style="list-style-type: none"> - Inadequate speed, capacity and capability of the internet and also specifications of computers and medical camera used at aimag, district and primary care level could create limitations to operate normally.
To organize regional refresher training on detection, diagnosis, treatment of Arterial	MCA-Health project	Center for Health development? ?	<ul style="list-style-type: none"> - Has Postgraduate Training Office 	<ul style="list-style-type: none"> - To train-the- trainers from National Cancer Center, National 	<ul style="list-style-type: none"> - To conduct assessment on training needs 		To allocate appropriate funds in Center's for	<ul style="list-style-type: none"> - Without retaining of the trained staff by aimag, district the

Hypertension, Diabetes Type 2, cervical and breast cancer		National Center for Public Health?? University of Health Sciences Specialized professional centers	- Has specialized training policy and curriculum for professionals - Has capacity to organize postgraduate trainings - Capacity building of staff and set up of telemedicine equipment have been developing	Center for Maternal & Child Health, Center for Health Development on clinical guidance	- To develop and implement a plan for refresher training - To upload the clinical guidance to official websites of MoH, Center for Health Development, National Cancer Center, and National Center for Maternal & Child Health, making them available for practitioners of aimag, district, soum and family health centers		Health Development budget in each year Health Promotion Foundation	implementation of clinical guidance and standard will be insufficient - If training budget not approved
To organize training for public health staff of soum health centers	National Center for Public Health (NCPH)	NCPH in collaboration with relevant organizations	Equipment: Trainers' team is equipped with vehicle and training equipments		To print training booklet, leaflet, poster, training package; copy CDs		Health Promotion Foundation, local budget	-
To provide professional management and guidance on NCD to the nutritionists from District, Health Centers and clinical hospitals	National Center for Public Health	National Center for Public Health University of Health Sciences						
To organize training for storehouse keepers of food industry, sanatoria and hospitals	National Center for Public Health	NCPH City Health Department Aimag Health Department						
To manage and follow-up the implementation of clinical guidance for commonly occurred NCD								
To manage detection, diagnosis and treatment	City Health	MoH- Dept of Policy implementati	• Implement this activity as part of	-	- To include in residenture module / curriculum		State budget	- Changes/ turnover of specialists

for high blood pressure and Diabetes Type 2	Department	on and Coordination NCPH	responsibilities/ duties <ul style="list-style-type: none"> • Capacity of Referral center is built • Telemedicine is on development stage 		<ul style="list-style-type: none"> - To include in exam test for Professional license - To specialize physicians in endocrinology & cardiology - To provide Regional Diagnosis and Treatment center, General hospitals with necessary equipments according to standards 		Health Promotion Foundation	<ul style="list-style-type: none"> - Changes in structure and responsibilities of MoH
To provide technical assistance in screening, diagnosis and treatment for Diabetes Type 2	MCA-Health project EPOS	Center for Diabetes??	<p>Has 4 staff: 2 doctors Methodologist -1 1 Nutritionist.</p> <p>Diagnosing by rapid test, providing counseling service</p>	<ul style="list-style-type: none"> - To create website - Human resources? - Needs office and training room equipment/ electronic devices 	<ul style="list-style-type: none"> - To organize ongoing refresher training on screening, diagnosis, treatment of Diabetes Type 2 for doctors and medical personnel - To set up in aimag and district a branch of Diabetes center and support its activities - To increase number of members with people suffering from diabetes, their family members, businessmen, state and NGO employers) - To expand the foreign relationship, to cooperate with international associations and consultants 		<p>State budget</p> <p>Assistance and support of International organizations</p> <p>To collaborate with pharmaceutical companies</p>	Lack of finance
To manage and provide professional guidance the high blood pressure screening, diagnosis and treatment	MCA-Health project EPOS	Cardiology Center??	<p>Human resources: Cardiologists -10</p> <p>Equipments: 24-hour blood pressure monitor- 2 qty</p>	<ul style="list-style-type: none"> - Additional needs regarding to human resources: Doctors – 7, Nurses – 15 - To allocate in budget the salary of additionally required staff 			State budget	Lack of finance

To manage and coordinate the detection, diagnosis and treatment of cervical and breast cancer	MCA-Health project State Implementing Agency-City Health Department	MoH- Dept of Policy implementation and Coordination National Cancer Center	To continue the activities as part of organization's duties Has legal authority to control the policy implementation Responsible for management and coordination of medical services and Technical sub-committee NCC capacity on provision of technical assistance is built	<ul style="list-style-type: none"> - To differentiate responsibilities for NCC, National Center for Pathology and National Center for Maternal and Child Health - To assign the management team to be responsible for ongoing implementation of clinical guidance for diagnosis and treatment of cervical and breast cancer 	<ul style="list-style-type: none"> - To coordinate the update/ revision of the clinical guidance on diagnosis and treatment for cervical and breast cancer and provision of technical assistance, recommendation and support involving specialized centers, such as NCC - To control the retaining the permanent vacancies and allocate in budget salaries for cytologist, lab technician, technician for cancer registry, gynecologic oncologist at Aimag General hospital, Aimag and District Health Department - To include in aimag and capital city health organizations' annual budget and get approved the required finance for screening - To control/ supervise the guidance implementation on yearly basis and develop a plan to introduce the findings on the meeting with authority and members of professional team and make decision to overcome the obstacles 	2,000,000 8,000,000 10,000,000	State budget MoH, allocate funds in Aimag, District General Hospitals budget	Changes/ turnover of specialists - Without retaining of the trained staff by aimag, district, it will create challenges Without training schedule and approved budget for that, it will be difficult to keep the gained capacity level.
To provide professional guidance on detection, diagnosis and treatment of cervical and breast cancer	MCA-Health project EPOS NCC	NCC National Center for Maternal and Child Health	During the project implementation NCC was in charge for this part, therefore human resources capacity including advisors to provide technical guide is built	<ul style="list-style-type: none"> - To form the technical and medical services quality team which is responsible for provision of technical assistance and guide 	<ul style="list-style-type: none"> - To involve professional monitoring organizations for monitoring, auditing and evaluating and provide them the technical assistance - To carry out the study on guidance and standard implementation and to organize conference involving 	6,000,000 12,000,000 6,650,000	State budget, WHO	Changes/ turnover of trained specialists No one specialist from any level of Quality assurance control has trained on clinical guidance, thus it will influence to weak control of guidance

			<p>The following counsels have authority for making joint decision</p> <ul style="list-style-type: none"> - Management counsel of MoH, - Technical Counsel Health Science, - Counsel for ЭМУМ-ийн зөвлөл - Professional counsel on oncology 	on detection, diagnosis and treatment	<p>authority, specialists, medical services quality staff, discuss, make decision and implement</p> <ul style="list-style-type: none"> - To include diagnosis and treatment of cervical and breast cancer in curriculum of state and private medical university and ensure its implementation - To organize in-country study tour to share best practices on implementing clinical guidance in aimag/ districts 	50,000,000		implementation and its insufficient accomplishment.
To develop/ update clinical guidance for NCD (develop and use a check list)	State Implementing Agency-City Health Department	MoH- Dept of Policy implementation and Coordination Professional sub-working group	<ul style="list-style-type: none"> - MoH works according to diagnosis, treatment and healthcare principles - Scientists and specialists have competencies to develop clinical guidance 	Allocation of funding required for developing/ updating standard and guidance is now on decision process	<ul style="list-style-type: none"> - To increase access to guidance and standard (e-book) - Refresher training - To evaluate the implementation of clinical guidance - To work with International and internal consultants 		Technical and financial assistance from WHO	<ul style="list-style-type: none"> - Change in structure - Lack of incentives for Professional sub-working group - Shortage of guidance and standards
To supply materials and apparatus required for diagnosis and treatment of Hypertension, Diabetes Type 2, cervical and breast cancer, to monitor/ supervise the utilization	MCA-Health project	MoH- Dept of Policy implementation and Coordination NC for Public Health??	MoH- Division Pharmaceuticals and Medical Devices; Division of Finance and Economic Affairs	<ul style="list-style-type: none"> - Maintenance Unit is established at Central Hospital and Specialized centers; increasing vacancies for medical equipment repairer engineers 	<ul style="list-style-type: none"> - To include the list of required equipments for operational standards of FHC, Soum HC and Intersoum Hospitals. - Annually collect and consolidate the list of required diagnostic equipments, drugs and reagents from provincial 	18,568,700	MoH budget WHO	<ul style="list-style-type: none"> - Obstacles as a result of misallocated funds in the budget. - Limited or inadequacy of diagnostic tools and

		\City Health Department, Aimag Health Dept, General Hospital, Regional Diagnostic and Treatment Center\	Have competencies and capacity for policy development and coordination the procurement	- To request supplier company to be responsible for maintenance and repair for first 3-5 years	<p>general hospitals, Health Departments and take measures to supply with.</p> <p>- Each province, districts to allocate funds for repair and maintenance.</p> <p>- To include the list of required equipments into Regional Diagnostic and Treatment Center, General Hospital and Specialized Professional Centers' structure and operational standards.</p> <p>- To train equipment engineers and repairmen.</p> <p>- Conduct necessary trainings (operator, maintenance) on newly acquired equipments.</p>			<p>equipments due to limited budget.</p> <p>- Malfunction and crash during lifecycle.</p>
To maintain Cancer recall system								
<ul style="list-style-type: none"> IV group- Facilitator /G. Purevsuren National Cancer Center/ 								
To manage Cancer recall system at National level	NCC	MoH, NCC	<p>Specialists are trained on Cancer recall system and cancer registry (screening monitoring tools)</p> <p>Software created.</p> <p>Guidance on cancer recall system & cancer registry developed and approved (supportive legal environment)</p>	- Needs to evaluate Cancer recall system	<p>- To develop refresher training plan and implement</p> <p>- To update/ improve the software</p> <p>- To fulfill the protection/ security (to purchase antivirus software, install)</p> <p>- Following the Ministerial Order #192 in 2010, to maintain full-time vacancy for cancer registration staff (salary of 30 staff)</p> <p>- To include the responsibility for maintaining cancer recall and cancer</p>	<p>50,000,000</p> <p>20,000,000</p> <p>8,000,000</p> <p>224,000,000</p>	<p>MoH</p> <p>Aimag, District Health organizations' budget</p> <p>WHO</p>	<p>- Training budget</p> <p>- Supply of IT devices, internet speed of Local Area Network (LAN), strengthening of local IT staff capacity will challenge the normal process</p>

					registry system in job description of IT specialists of Information Technology sub-division of aimag, district health department			
To collect data for cancer recall system, analyze data	NCC	NCC	<ul style="list-style-type: none"> - Specialists to compile and analyze the screening data are trained on - Provides feedback and support to aimag and district based on screening data analysis from www.screening.mn - Equipped with apparatus 	-	<ul style="list-style-type: none"> - To develop refresher training plan and implement - To update/ improve the software - To fulfill the protection/ security - To build legal environment supporting the maintenance of software for cervical and breast cancer screening by IT specialists of aimag and districts - To supply computer, printer and phone - To supply internet modem 	<p>80,000,000</p> <p>20,000,000</p> <p>6,000,000</p> <p>75,000,000</p> <p>12,000,000</p>		<ul style="list-style-type: none"> - Training budget, supply of electronic devices, insufficient internet speed is challenge - Update/ improvement of software - If protection and security of software will not be same at central or local level - 50% of cancer registration staff have double duties, which influence to lacking data and quality of screening data entry
<p>To share and report cancer screening data to public</p> <p>To organize nationwide BCC/ IEC activities targeting risk groups and advertize by media</p>	State Implementing Agency-City Health Department	NC for PH NCC	<ul style="list-style-type: none"> - Center for Health Development operate a website named webdoctor - Information for public can be placed on NCC official website 	<ul style="list-style-type: none"> - Staff capacity building of Health Promotion sub-division of NCFPH and supply of equipments - To set-up and functionalize the screening team at NCC 	<ul style="list-style-type: none"> - To organize media campaign on cancer prevention for World Cancer Day on every 4th February. - Publish "Oncology" magazine for public education 1-2 times a year, include in subscription list and distribute - To develop and broadcast TV programs on cancer prevention by TV channel on regular basis 	190,000,000	Health Promotion Foundation WHO assistance To find funding from the contract work with industry and	

			- NCC is able to publish "Oncology" magazine for public education 1-2 times a year		- To organize awareness activity and assign information team in workplaces with many female employees such as industry, organizations and mining sites		organization s	
<p>To organize systematic, regular IEC actions on health promotion and health education</p> <p>• III group- facilitators /P.Enkhtuya, National center for Public Health/</p>								
To form National Core group on BCC/IEC		NC for Public Health	Had experience in managing National Core Group on HIV/AIDS/ Reproductive Health	- To organize ongoing meetings ensuring participation of responsible state, specialized organizations and NGO - Train	- To integrate the activities of relevant state, specialized organizations and NGOs - Provide/Update information		Health Promotion Foundation	
To operate www.ncdi.mn continually	EPOS	NC for Public Health	- Every organization run own website - Has human resources : IT engineer, network admin staff- 2,	- To add a vacancy for webmaster - To involve specialists in training on data uploading - Needs for technical assistance for specialists who provide information to website	- To advertise website - To change name of website into clear short Mongolian name - To link this website to every relevant organization's website		State budget, Health Promotion Foundation	

To continue the campaigns	MCA-Health project Contractor organizations	NC for Public Health MoH Healthcare organizations under the jurisdiction of MoH	Has experience	- Training needs on strengthen capacity of specialists, to organize campaigns and assess the impact of those, to share experience - Experience sharing	- To improve capacity of doctors, medical personnel on IEC activities - To work closely with specialists of contractor organizations strengthened by the project		Health Promotion Foundation WHO International organizations	Insufficient budget Turnover of trained specialists
To intensify awareness & advocacy	MCA-Health project Contractor organizations	NC for Public Health	Has experience	To involve in training	- To develop advocacy strategy - To use project module		Health Promotion Foundation Local budget	
To strengthen National Network for Health Promotion workplace and maintain its operation								
To implement health promotion at workplace and establish permanent structure	MCA-Health project -EPOS	MoH-Division of Public Health NC for Public Health		Capacity building training is needed	- MoH - Division of Public Health to coordinate the formation of National Core group - To set-up working group at NC for Public Health - To define the strategy		Health Promotion Foundation	
To motivate society by strengthening National Network for Health promotion workplace	MCA-Health project -EPOS	NC for Public Health		To provide capacity building training	- To enhance participation, understanding for all level of decision makers through advocacy and increase the public perception		Health Promotion Foundation Local budget	
First Health Promotion Workplace National Conference	MCA-Health project -EPOS	MoH-Division of Public Health NC for Public Health		Needs good planning	- To organize regularly every 1-2 years		Health Promotion Foundation Donation from organizations on Health	

							Promotion workplace	
To strengthen public & private partnership (PPP)								
Guide PPP to address NCD risk factors	MCA-Health project	NC for Public Health	Has a team of experienced specialists	<ul style="list-style-type: none"> - To learn from experience - To utilize the skills of trained staff 	<ul style="list-style-type: none"> - To introduce concept 			
Competitive Small Grant program								
To support organization and public initiatives on behavior change, health promotion, PPP and advocacy through implementing grant program	MCA-Health project -EPOS	NC for Public Health	Has a team of experienced specialists	<ul style="list-style-type: none"> - To learn from experience - To utilize the skills of trained staff 	<ul style="list-style-type: none"> - To employ grant program's manual, policy and principles - To organize training on grant program guidance and train the evaluators 		Health Promotion Foundation Local Development Funds	<ul style="list-style-type: none"> Insufficient budget Lack of leadership and management
To strengthen quality control for NCD medical services								
2 group - facilitators /A. Unurjargal, MoH/								
Enforce compliance with quality assurance, quality management, quality standard's methodology and tools.	MCA Health project EPOS Gov't impementing agency-Health Department	MoH Division of Medical Services Aimag/ city Health Departments , Healthcare organizations	Possible	<ul style="list-style-type: none"> - Organize trainings - Evaluate compliance with quality assurance, quality management, quality standard's methodology and tools. - To continue the program on "Strengthening Quality Management for Medical services" 	<ul style="list-style-type: none"> - Supply with books, guides and manuals. - Incentives for quality assurance specialists. - To develop unified quality indicators. - To provide professional assistance, methodology and technical advisory to provincial and capital city medical services quality sub-councils. 		WHO Health Promotion Foundation	Staff turnover
To develop quality indicators of the clinical guidance of the early detection of	MCA Health project	MoH Dept of Monitorig, Evaluation	Develop necessary forms to monitor implementation of clinical guidance on early detection of NCD. The amendments to the to the		Deliver resolution to local health organizations.			Less risks once with Minister's approval resolution.

hypertension, diabetes type-2, breast and cervical cancer, and carry out monitoring and evaluation.	EPOS Gov't impementing agency-Health Department	and Internal Auditing Division of Medical Services National Center for Public Health	relevant orders and resolutions correlating to the list of Health Care Organization primary forms.		Develop methodology to fill in forms, organize trainings.			
Per newly set of quality indicators to develop statistical form, create national database.	MCA EPOS	MoH Dept of Monitorig, Evaluation and Internal Auditing Center for Health Development National Center for Public Health						
In compliance to the Minister's Order of 2012 to record, inform and report Medical Services mistakes and violations.	MCA EPOS	Center for Health Development	Mistakes, violations and successes are being uploaded onto Center for Health Development website.	Because the current Order 274 has blurry understanding of mistakes and violations, unclear methodology to record them the order has to be revised.	<ul style="list-style-type: none"> - Revise the Order - Record the mistakes and violations of the Medical Services, informing and reporting, provide trainings - Improvement of IT software solutions - Have the system of lessons learned 			<ul style="list-style-type: none"> - Use of mistakes and failures as a mean of disciplinary actions the Healthcare Institutions will not record and report. - Recorded failures and mistake would harm organization's reputation. - Risk of management's misunderstanding
Carry out internal and external auditing on implementation of	State Specialized	MoH Dept of Monitorig,	External auditing system is in place-	(To use "Audit" as it is described in the current Mongolian law – As	- To eliminate duplication of legislative documents on internal auditing (Gov't			- If legally regulated the risk is less.

clinical guidance standards.	Inspection Agency	Evaluation and Internal Auditing National Center for Public Health	State Specialized Inspection Agency. Internal auditing system is in place.	Mongolian Law focuses on financial side more please use different wording in translation) -	Resolution 311 of 2011, Health Minister's Order 06/25) - Carry out measures to empower and strengthen capabilities of quality services by the MoH. - Organize trainings to organization's management/leadership on quality. - Take measures to have quality services work in full staff. - Get approval on Job/Position Descriptions, to train on quality control - Exchange internal and external best practices. - To establish an external auditing system by professional associations on guidance standards, enable collaboration with quality services.			- Legislation process is quite questionable. - Inexistence of consolidated database of professional associations of Mongolia.
To improve data information, organize ongoing monitoring and evaluation								
To setting up the surveillance system for prevalence of NCD risk factors, mortality and morbidity, provide evidences	MCA-Health project, Public Health Institute University of Health Sciences	NC for Public Health + University of Health Sciences??	Has experienced team conducted the following studies on certain frequency: STEP, KAP on NCD among population, KAP on road traffic safety among pedestrians, drivers and traffic policemen, Health	To collaborate with University of Health Sciences	To start from refresher training Needs survey e-PC		WHO Health Promotion Foundation	Premature planning is not an option

			facility based advocacy studies					
To assign independent evaluators to evaluate the training process	MCA-Health project	NC for Public Health		To work with the former team	Preparation and refresher training		Health Promotion Foundation	Premature planning is not an option
To monitor the process and quality of screening, to report back the findings	State Implementing agency-Health Department	NC for Public Health		To develop the guidance/ instructions on monitoring and evaluation	To organize jointly monitoring with MoH, State Specialized Inspection agency, Medical services quality subdivision and make decision on arising issues		MoH, Allocate in Center's for Health Development budget	
To organize regular visit to monitor the utilization and maintenance of apparatus and materials used for early detection and screening on NCD	MCA-Health project -EPOS	NC for Public Health ???		To develop guidance/ instruction	To make contract with vendor/ supplier organization			
To prevent from RTI								
Black Spot Treatment	MCA-Health project PIU	Coordination Center for Road Traffic\Traffic Police???		To form multidisciplinary team and share information	- To do needs assessment every year and allocate in budget of relevant organizations		Central and local budget	
To organize National workshop on Road Traffic Safety and invite responsible organizations	MCA-Health project EPOS	MoH, National Center for Public Health, Ministry of Justice Coordination Center for Road Traffic\Traffic Police	Has capacity		- To set-up the Preparation working group to fulfill synergy and integration of activities of different stakeholders on Road Traffic safety		Health Promotion Foundation	

To register traffic accidents to electronic system (Traffic Accident Information System)	MCA-Health project	Coordination Center for Road Traffic\Traffic Police	Capacity built by project		<ul style="list-style-type: none"> - Control of usage/ operation, share information and eliminate duplication - Organize training 			
To organize Basic Life Support training for health personnel, Ambulance station drivers, traffic policemen and citizens	MCA-Health project	MoH, Ambulance Center?? Red Cross??	Has competencies and skills strengthened by project		<ul style="list-style-type: none"> - Train more people - To re-train 		Health Promotion Foundation	

Annex 11 Results of KAP studies 2010 and 2013 among teachers

	Baseline study results (2010)	Follow-up study results (2013)	P value
Participation in health education training			
% of urban teachers who participated in health education trainings	52.2%	67.1%	*
% of rural teachers who participated in health education trainings	26.4%	42.2%	*
KNOWLEDGE			
Knowledge on risk factors for NCDs			
% of teachers who named obesity	59.6%	74.4%	0.000
% of teachers who named physical inactivity	56.6%	71.9%	0.000
% of teachers who named cholesterol check	25.9%	38.9%	0.000
% of teachers who named sugar consumption	47.5%	61.4%	0.000
% of teachers who named salt consumption	50.7%	59.7%	0.02
% of teachers who named stress	53.4%	57.1%	0.01
% of teachers who named smoking	52.8%	65.1%	0.000
% of teachers who named drinking alcohol	51.0%	58.4%	0.000
% of teachers who named age over 40 years	10.8%	15.1%	0.000
% of teachers who named genetic factors	21.7%	30.3%	0.000
Knowledge about prevention measures for NCDs			
% of teachers who named physical activity	66.5%	77.1%	0.000
% of teachers who named low fat diet	63.8%	68.6%	0.000
% of teachers who named cholesterol check	25.9%	38.9%	0.000
% of teachers who named blood pressure control	45.1%	54.9%	0.972
% of teachers who named no alcohol consumption	54.1%	66.3%	0.000
% of teachers who named not smoking	53.9%	66.1%	0.000
% of teachers who named low salt and sugar diet	51.6%	59.7%	0.000
% of teachers who named taking advantage from screening	44.9%	67.1%	0.000
% of teachers who named breast self-examination	40.7%	45.4%	0.001
% of teachers named 2 or more prevention methods (M&E indicator)	59%	91%	0.000
Knowledge about early detection methods for breast and cervical cancer			
% of teachers who knew PAP smear test as early detection	40.5%	71.6%	
% of teachers who knew how to do breast self examination	71.5%	83.9%	
% of teachers who knew breast self exam as early detection method	68.9%	84.3%	
PRACTICES			
Smoking			
% of smokers	8.4%	4.4%	0.000

Urban	9%	3.7%	*
Rural	7.9%	5%	*
Alcohol consumption			
% of teachers who had not consumed alcohol in the last 30 days	33.0%	41.4%	0.000
% of teachers who had consumed alcohol more than 6 days in the last 30 days	13%	1.4%	0.000
Healthy diet			
Days fatty meat consumed per week	5.1	2.4	*
Days butter consumed per week	4.9	1.9	*
Physical activity			
% of teachers who did exercises for 3-4 days per week	9%	12.9%	*
% of teachers who did exercises for 5-7 days per week	7%	10.1%	*
% of teachers who had intensive exercise practice (jogging, cycling etc)	25.7%	34.7%	*
Health checks			
% of teachers who had annual glucose check up	14.2%	34.4%	*
% of teachers who had annual cholesterol check up	8.2%	21%	*
% of female teachers who at least once a year visit their gynaecologist	70%	81.7%	*
First Aid preparedness			
% of teachers who knew how to provide first aid in case of an emergency	70.0%	78.7%	*
% of teachers who reported to have first aid kit in their schools	67.0%	80.6%	*

Annex 12 Comparative tables of the FBIS studies 2010 / 2013

10.1 Primary health care

Table 10.1. Attitudes of doctors of Soum Health center and Family Health center towards NCD prevention

Agreement to statements on NCD prevention (A6)	Strongly agree		Agree		Agree partly		Disagree		Strongly disagree		Mean		SD	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁						
1) NCDs are a big problem for the Mongolian population	65.7	65.8	30.8	29.2	3.5	3.9	0.0	0.4	0.0	0.7	4.6	4.6	0.6	0.7
2) NCD prevention is not important for the health of the population	8.5	8.1	10.4	5.6	3.5	2.2	41.3	37.4	36.3	46.7	2.1	1.9	1.3	1.2
3) NCD prevention activities are an important part of my work	38.8	48.9	48.8	42.1	9.0	8.6	3.5	0.4	0.0	0.0	4.2	4.4	0.8	0.7
4) I don't have enough time to work for NCD prevention	26.4	19.8	35.8	28.9	28.4	37.7	7.0	10.3	2.5	0.3	3.8	3.5	1.0	1.0
5) I have enough materials for prevention/screening activities	4.5	20.4	18.9	47.7	35.8	26.9	33.3	4.6	7.5	0.4	2.8	3.8	1.0	0.8
6) I have enough skills to provide prevention/screening on NCDs	10.0	20.4	40.8	51.6	38.8	25.4	8.5	2.5	2.0	0.0	3.5	3.9	0.9	0.7

7) I have enough knowledge for prevention/screening activities	12.9	24.7	45.3	50.5	33.8	22.9	5.5	1.8	2.2	0.0	3.6	4.0	0.9	0.7
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Table 10.2. Attitudes of nurses /feldshers of Soum Health center and Family Health center towards NCD prevention

Agreement to statements on NCD prevention (A6)	Strongly agree		Agree		Agree partly		Disagree		Strongly disagree		Mean		SD	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁						
1) NCDs are a big problem for the Mongolian population	60.3	64.5	36.5	33.6	3.0	1.6	0.0	0.3	0.3	0.0	4.6	4.6	0.6	0.5
2) NCD prevention is not important for the health of the population	20.3	8.1	15.7	6.5	6.5	2.4	34.3	52.2	23.2	30.9	2.8	2.1	1.5	1.1
3) NCD prevention activities are an important part of my work	33.2	41.9	56.8	52.7	9.2	4.0	0.8	0.5	0.0	0.8	4.2	4.3	0.6	0.7
4) I don't have enough time to work for NCD prevention	16.5	15.5	33.0	31.9	33.2	33.5	16.5	16.3	0.8	2.8	3.5	3.4	1.0	1.0
5) I have enough materials for prevention/screening activities	7.6	19.6	21.6	39.0	37.0	29.2	29.5	10.9	4.3	1.4	3.0	3.6	1.0	1.0
6) I have enough skills to provide	8.1	18.0	39.5	48.8	44.3	27.8	7.8	4.9	0.3	0.5	3.5	3.8	0.8	0.8

prevention/screening on NCDs															
7) I have enough knowledge for prevention/screening activities	9.2	15.8	38.9	48.0	41.1	32.7	10.0	3.0	0.8	0.5	3.5	3.8	0.8	0.8	

Table 10.3. Attitudes of managers of Soum Health center and Family Health center towards NCD prevention

Agreement to statements on NCD prevention (A6)	Strongly agree		Agree		Agree partly		Disagree		Strongly disagree		Mean		SD	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁						
1) NCDs are a big problem for the Mongolian population	74.8	75.0	19.9	25.0	4.9	0.0	0.0	0.0	0.5	0.0	4.7	4.8	0.6	0.4
2) NCD prevention is not important for the health of the population	17.5	5.6	11.7	2.6	1.9	0.5	29.1	40.3	39.8	51.0	2.4	1.7	1.5	1.0
3) NCD prevention activities are an important part of my work	45.1	53.9	45.6	41.2	7.8	4.9	1.5	0.0	0.0	0.0	4.3	4.5	0.7	0.6
4) I don't have enough time to work for NCD prevention	18.9	22.9	38.8	30.8	30.6	30.8	11.7	14.4	0.0	1.0	3.7	3.6	0.9	1.0
5) I have enough materials for prevention/screening activities	7.8	21.1	20.4	37.7	35.0	28.9	33.5	11.3	3.4	1.0	3.0	3.7	1.0	1.0

6) I have enough skills to provide prevention/screening on NCDs	14.1	24.5	40.3	55.4	35.0	17.2	10.7	2.9	0.0	0.0	3.6	4.0	0.9	0.7
7) I have enough knowledge for prevention/screening activities	12.6	25.4	46.6	59.5	35.4	12.2	4.9	2.4	0.5	0.5	3.7	4.1	0.8	0.7

Table 10.4. Reasons for insufficient coverage of early detection of managers of health facilities

Variables	Baseline study (t ₀) n=206	Follow up study (t ₁) n=206
1) Not enough capacity in terms of staff	39.8	45.1
2) Not enough capacity in terms of equipment	61.2	18.0
3) Not enough capacity in terms of budget for transportation	33.0	47.6
4) Not enough capacity in terms of budget for consumable materials of screening instruments	68.9	29.1
5) Not enough individual attention for health	29.6	89.3
6) People live too far away	80.1	30.6
7) Moving nomads	34.0	36.9
8) Other reasons	4.4	20.9
9) There were no limitations	1.5	2.9

Table 10.5. Problems for limitations of NCD screening services reported by doctors

What were the reasons for limitations of coverage? (S17)	Family Health center		Soum Health center		Total	
	t ₀ n= 150 (%)	t ₁ n= 206 (%)	t ₀ n= 51 (%)	t ₁ n=76 (%)	t ₀ n=201 (%)	t ₁ n=282 (%)

1) Not enough capacity in terms of staff	56.0	40.3	29.4	25.0	49.3	36.2
2) Not enough capacity in terms of equipment	66.0	13.6	64.7	25.0	65.7	16.7
3) Not enough capacity in terms of budget for transportation	30.0	22.8	54.9	52.6	36.3	30.9
4) Not enough capacity in terms of budget for consumable materials of screening instruments	79.3	15.5	74.5	18.4	78.1	16.3
5) Not enough individual attention for health	12.7	87.4	21.6	73.7	14.9	83.7
6) People live too far away	74.7	17.5	76.5	53.9	75.1	27.3
7) Moving nomads	24.7	34.0	39.2	47.4	28.4	37.6
8) Other reasons	0.7	17.0	3.9	11.8	1.5	15.6
9) There were no limitations	0.7	2.9	3.9	3.9	1.5	3.2

Table 10.6. Proportion of doctors having clinical guidelines/standards/protocols

Variables	Hypertension		Diabetes		Breast cancer		Cervical cancer		All for	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Protocols (%)	55.2	49.6	50.7	47.2	42.3	42.9	42.8	43.3	39.3	41.5
Guideline (%)	82.6	96.1	63.2	94.0	53.7	87.9	56.2	89.0	39.8	85.8
Standart (%)	81.6	91.5	77.1	87.2	57.7	81.2	60.2	80.9	51.2	78.7

Table 10.7. Implementation of guidelines: availability of drugs and equipment, training coverage and usefulness of guidelines reported by doctors

Variables	Hypertension		Diabetes		Breast cancer		Cervical cancer		All for	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Are drugs available for the implementation of standards, guidelines and protocols at the facility level?										
Yes (%)	58.7	69.9	25.3	57.4	9.2	39.0	10.5	39.4	6.5	37.2

Are equipment and supplies available for the implementation of standards, guidelines and protocols at the facility level?										
Yes (%)	53.7	77.7	25.6	74.5	7.2	61.0	14.8	67.7	4.0	59.2
Have you been trained in utilization of standards, guidelines and protocols?										
Yes (%)	40.8	63.5	29.9	60.3	21.0	53.9	21.5	55.0	12.9	51.4
Are standards, protocols, guidelines useful for you?										
Yes (%)	63.7	84.4	56.1	81.6	35.1	76.2	35.3	76.6	18.9	75.2

Table 10.8. Proportion of nurses/feldshers having clinical guidelines/standards/protocols

Variables	Hypertension		Diabetes		Breast cancer		Cervical cancer		All for	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Protocols (%)	21.1	44.1	20.0	43.0	18.6	42.2	18.1	42.7	16.8	40.1
Guideline (%)	39.5	80.4	32.7	79.6	27.6	78.5	28.4	79.0	25.7	75.0
Standart (%)	55.9	80.9	42.7	78.5	34.1	76.3	34.9	77.2	29.5	72.0

Table 10.9. Implementation of guidelines: availability of drugs and equipment, training coverage and usefulness of guidelines, reported by nurses/feldshers

Variables	Hypertension		Diabetes		Breast cancer		Cervical cancer		All for	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Are drugs available for the implementation of standards, guidelines and protocols at the facility level?										
Yes (%)	42.7	64.8	31.9	53.2	26.5	35.5	27.0	35.8	18.6	34.4
Are equipment and supplies available for the implementation of standards, guidelines and protocols at the facility level?										
Yes (%)	39.2	71.2	29.5	70.2	21.6	60.5	21.6	66.4	17.6	57.8
Have you been trained in utilization of standards, guidelines and protocols?										
Yes (%)	30.0	50.3	25.7	48.7	21.9	50.5	23.0	49.7	13.8	41.9
Are standards, protocols, guidelines useful for you?										

Yes (%)	33.8	71.0	29.5	69.6	25.7	70.4	26.8	70.2	14.1	66.1
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Table 10.10. Health promotion activities in schools reported by doctors and nurses

Variables		Soum doctors/GPs		Nurses/feldshers	
		t₀ n=201	t₁ n=282	t₀ n=370	t₁ n=372
Involvement in any health promoting schools events or activities on NCD prevention (HPS1)					
	Yes	64.2	69.1	58.9	74.4
Cooperation with NGOs in the school events (HPS4)					
	Yes	38.8	27.4	50.5	36.3
Understanding about 'Health Promoting Schools' concept (HPS7)					
	Yes, know the idea quite well	39.5	37.5	43.6	37.4
	Yes, I heard about it, but don't know exactly what it means	33.3	42.6	32.6	44.4

Table 10.11. Health promotion activities in workplaces reported by doctors and nurses

Variables		Soum doctors/GPs		Nurses/feldshers	
		t₀ n=201	t₁ n=282	t₀ n=370	t₁ n=372
Involvement in any health promoting work place events or activities on NCD prevention (HPW1)					
	Yes	48.8	62.4	41.4	64.2
Cooperation with NGOs in the workplace events (HPW4)					
	Yes	37.8	29.9	49.7	34.4
Understanding about 'Healthy Workplaces' concept (HPW6)					
	Yes, know the idea quite well	39.8	60.1	54.2	54.3
	Yes, I heard about it, but don't know exactly what it means	40.8	36.5	15.0	40.9

Table 10.12. Health promotion activities in workplaces reported by managers of health facilities

Variables	Primary care level		Secondary care level	
	t ₀ n=159	t ₁ n=170	t ₀ n=47	t ₁ n=36
Involvement in any health promoting work place events or activities on NCD prevention (HPW1)				
Yes	88 (64.2)	98 (58.0)	21 (70.0)	23 (65.7)
Cooperation with NGOs in the workplace events? (HPW9)				
Yes	45 (51.1)	67 (69.8)	9 (42.9)	19 (82.6)
Understanding about 'Health Promoting Workplaces' Concept? (HPW11)				
Yes, know the idea quite well	58 (65.9)	136 (82.4)	19 (90.5)	34 (94.4)
Yes, I heard about it, but don't know exactly what it means	18 (20.5)	27 (16.4)	1 (4.8)	2 (5.6)

Table 10.13. Health promotion activities in community reported by doctors and nurses

Variables	Soum doctors/GPs		Nurses/feldshers	
	t ₀ n=201	t ₁ n=282	t ₀ n=370	t ₁ n=372
Involvement in any health promoting community events or activities on NCD prevention (HC2)				
Yes	49.8	62.4	34.6	65.1
Cooperation with NGOs in the communities events? (HC5)				
Yes	32.0	48.6	40.4	40.6
Understanding about 'Healthy Communities' (HC1)				
Yes, I know the idea quite well	42.8	26.6	32.4	29.0
Yes, I heard about it, but don't know exactly what it means	36.8	52.6	42.4	50.8

Table 10.14. Participation in NCD training, doctors and nurses

Variables	Soum doctors/GPs		Nurses/feldshers	
	t ₀ n=201 (%)	t ₁ n=282(%)	t ₀ n=370(%)	t ₁ n=372(%)

Within the past year, how many trainings on NCD prevention and early detection/screening have you participated in?(T1)					
	In more than two trainings	14.4	18.5	11.4	18.8
	In two trainings	12.4	12.3	10.5	14.5
	In one training	23.9	41.7	23.0	45.2
	In none	49.3	27.5	55.1	21.5

Table 10.15. Participation of managers of health facilities in NCD training

Variables		Primary care		Secondary care	
		t ₀ n=159 (%)	t ₁ n=170 (%)	t ₀ n=47 (%)	t ₁ n=36 (%)
Within the past year, how many trainings on NCD prevention and early detection/screening have you participated in? (T1)					
	In more than two trainings	18.2	32.7	23.3	32.4
	In two trainings	18.9	31.5	13.3	11.8
	In one training	28.9	21.4	33.3	20.6
	In none	34.0	14.3	30.0	35.3

Table 10.16. Resources for NCD prevention and screening, doctors (baseline n=201; follow up n=282)

Variables	Excellent=4		Good=3		Fair=2		Poor=1		Mean		SD	
	t ₀	t ₁										
Supplies	2.5	19.0	9.0	56.5	43.8	21.9	44.8	2.6	1.69	2.92	0.74	0.71
Equipment	1.0	10.6	10.9	57.4	37.3	26.6	50.7	5.3	1.62	2.73	0.72	0.72
Drugs	1.5	8.8	22.9	44.5	35.8	38.0	39.8	8.8	1.86	2.53	0.82	0.78
Size of staff	4.0	6.5	36.3	42.4	39.8	39.5	19.9	11.6	2.24	2.44	0.82	0.78
Skills of staff	3.5	10.2	43.3	43.4	43.8	33.2	9.5	13.2	2.41	2.51	0.71	0.85
Knowledge of staff	4.0	8.9	45.3	70.5	39.8	17.7	10.9	3.0	2.42	2.85	0.74	0.60
Health education and prevention IEC materials	2.5	8.9	24.4	71.2	42.3	17.3	30.8	2.6	1.99	2.86	0.81	0.59
Management	5.0	6.0	34.3	42.9	37.3	35.3	23.4	15.9	2.21	2.39	0.86	0.82
Coordination	4.0	11.1	30.3	35.1	37.3	37.0	28.4	16.8	2.10	2.40	0.86	0.90

Table 10.17. Resources for NCD prevention and screening, nurses and feldshers (baseline n=370; follow up n=372)

Variables	Excellent=4		Good=3		Fair=2		Poor=1		Mean		SD	
	t ₀	t ₁										
Supplies	3.5	23.0	16.8	62.4	46.5	12.6	33.2	2.0	1.91	3.06	0.80	0.66
Equipment	0.8	15.4	14.3	61.7	41.4	19.1	43.5	3.7	1.72	2.89	0.73	0.70
Drugs	1.9	12.4	29.5	45.6	40.3	35.5	28.4	6.5	2.05	2.64	0.81	0.78
Size of staff	5.4	9.3	53.5	42.7	31.9	36.8	9.2	11.2	2.55	2.50	0.74	0.81
Skills of staff	3.8	12.7	59.2	52.0	31.9	22.0	5.1	13.3	2.62	2.64	0.64	0.87
Knowledge of staff	3.8	14.8	58.4	73.8	31.6	10.3	6.2	1.1	2.60	3.02	0.66	0.54
Health education and prevention IEC materials	3.5	14.2	28.1	73.7	44.9	11.2	23.5	0.8	2.12	3.01	0.80	0.54
Management	10.3	7.8	42.2	42.4	40.3	31.9	7.3	17.9	2.55	2.40	0.77	0.87
Coordination	5.9	12.6	38.4	39.1	43.8	33.7	11.9	14.6	2.38	2.50	0.77	0.89

10.2 Secondary health care

Table 10.18. Attitudes of health professionals of secondary health care facilities towards NCD prevention

(Scale: 'strongly agree'=5, 'agree'=4, 'agree partly'=3, 'disagree'=2, 'strongly disagree'=1, for negatively poled items: 'strongly agree'=1 to 'strongly disagree'=5)

Attitude	Specialized doctors				Specialized nurses			
	t ₀ n=67		t ₁ n=97		t ₀ n=68		t ₁ n=88	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
1) NCDs are a big problem for the Mongolian population (A6.1)	4.79	0.41	4.77	0.42	4.59	0.53	4.97	0.18
2) NCD prevention is not important for the health of the population (A6.2)	3.83	1.49	4.09	1.17	3.41	1.44	2.64	0.75
3) NCD prevention activities are an important part of my work (A6.3)	4.47	0.68	4.41	0.70	4.21	0.61	4.88	0.39
4) I don't have enough time to work for NCD prevention (A6.4)	2.11	1.02	2.00	0.99	2.58	0.98	1.66	0.70

5) I have enough materials for prevention/screening activities (A6.5)	2.70	1.10	3.38	0.94	2.92	0.99	4.39	0.71
6) I have enough skills to provide prevention/screening on NCDs (A6.6)	3.83	0.83	3.90	0.77	3.37	0.79	4.63	0.59
7) I have enough knowledge for prevention/screening activities (A6.7)	3.89	0.93	4.02	0.74	3.37	0.69	4.57	0.58

Table 10.19.Major problemsfor screening of hypertension reported by managers of health facilities

Variables (<i>Poor and very poor</i>)	Baseline study (t₀) n=35 (%)	Follow up study (t₀) n=36 (%)
Availability of professional technical assistance from aimag	33.3	13.9
Availability of equipment	39.4	19.4
Availability of consumable materials	57.6	45.5
Availability of training on screening management and coordination	45.5	11.4
Availability of guidelines	46.9	16.7
Availability of standards	50.0	18.2
Availability of protocols	56.3	25.8
Coordination of activities	50.0	14.3
Availability of IEC materials in general	63.6	16.7
Availability of posters	69.7	33.3
Availability of leaflets	75.8	33.3
Availability of booklets	69.7	55.6
Availability of other IEC material	63.6	30.8

Table 10.20.Major problems for screening of diabetesreported by managers of health facilities

Variables (<i>Poor and very poor</i>)	Baseline study (t₀) n=35 (%)	Follow up study (t₀) n=36 (%)
--	--	---

Availability of professional technical assistance from aimag	36.4	14.3
Availability of equipment	78.8	17.1
Availability of consumable materials	87.9	42.9
Availability of training on screening management and coordination	57.6	8.8
Availability of guidelines	66.7	14.3
Availability of standards	63.6	21.2
Availability of protocols	78.8	23.3
Coordination of activities	66.7	15.2
Availability of IEC materials in general	75.8	20.0
Availability of posters	81.8	34.3
Availability of leaflets	78.8	37.1
Availability of booklets	84.8	57.1
Availability of other IEC material	81.8	38.5

Table 10.21.Major problems for screening of breast cancer reported by managers of health facilities

Variables	Baseline study (t₀) n=35 (%)	Follow up study (t₀) n=36 (%)
Availability of professional technical assistance from aimag	60.6	14.3
Availability of equipment	87.9	30.6
Availability of consumable materials	90.9	31.4
Availability of training on screening management and coordination	75.8	11.4
Availability of guidelines	81.8	8.3
Availability of standards	84.8	19.4
Availability of protocols	84.8	31.0
Coordination of activities	48.5	13.9

Availability of IEC materials in general	69.7	25.0
Availability of posters	81.8	25.7
Availability of leaflets	81.8	38.9
Availability of booklets	81.8	41.7
Availability of other IEC material	78.8	30.8

Table 10.22. Major problems for screening of cervical cancer reported by managers of health facilities

Variables	Baseline study (t ₀) n=35 (%)	Follow up study (t ₁) n=36 (%)
Availability of professional technical assistance from aimag	45.5	14.3
Availability of equipment	57.6	14.3
Availability of consumable materials	75.8	32.4
Availability of training on screening management and coordination	60.6	8.8
Availability of guidelines	62.5	5.7
Availability of standards	68.8	20.0
Availability of protocols	75.0	30.0
Coordination of activities	54.5	8.8
Availability of IEC materials in general	72.7	31.4
Availability of posters	84.8	25.7
Availability of leaflets	81.8	37.1
Availability of booklets	84.8	42.9
Availability of other IEC material	84.8	33.3

Table 10.23. Training coverage of specialized doctors and nurses

	Specialized doctors		Specialized nurses	
	t ₀ n=67	t ₁ n=97	t ₀ n=68	t ₁ n=88
Within the past year, how many training events on NCD prevention and early detection/screening have you participated in? (T1)				

More than 2	12.1	18.1	1.5	14.8
2 times	9.1	16.0	8.8	13.6
Once	30.3	40.4	30.9	38.6
None	48.5	25.5	58.8	33.0

Table 10.24.Equipment supply in Internal medicine/Endocrinological cabinet (baseline: n=33; follow up: n=61)

Type of equipment	Number of available units					
	None (%)		One(%)		More than 2(%)	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
1) Stethoscope	NA	3.3	NA	56.7	NA	40.0
2) Sphygmomanometer for blood pressure measuring	28.6	3.3	31.4	61.7	40.0	35.0
3) Ophthalmoscope	71.4	68.5	17.1	29.6	11.4	1.9
4) Weight scale	60.0	16.4	22.9	72.7	17.1	10.9
5) Height measuring tool	60.0	21.8	22.9	74.5	17.1	3.6
6) Waist measurement tool	77.1	22.4	17.1	62.1	5.7	15.5
7) ECG machine	40.0	41.8	20.0	38.2	40.0	20.0
8) Glucometer	42.9	44.6	22.9	51.8	34.3	3.6
9) Cholesterol measurement tool	94.3	46.3	5.7	50.0	0.0	3.7
10) Strips for glucometer	80.0	69.8	2.9	20.8	17.1	9.4
11) Biochemistry analyzer (protein, createnine, triglyceride)	77.1	96.2	22.9	3.8	0.0	0.0
12) Neurological hammer	82.9	90.2	5.7	9.8	11.4	0.0

Table 10.25.Equipment supply in Gynecological/Oncological cabinet(baseline: n=31; follow up: n=36)

Type of equipment	Number of available units					
	None (%)		One (%)		More than 2 (%)	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
1) Gynaecological examination table/ bed	22.6	0.0	9.7	82.6	67.7	17.4
2) Speculum	80.6	0.0	3.2	0.0	16.1	100.0
3) Spatula (wood or plastic) or endo-cervical brush	80.6	0.0	0.0	14.3	19.4	85.7

4) Examination light for gynaecological examination	90.3	7.7	6.5	92.3	3.2	0.0
5) Glass slide, glass slip	90.3	0.0	0.0	10.0	9.7	90.0
6) Jars containing alcohol or	80.6	7.7	9.7	76.9	9.7%	15.4
7) Fixation liquid/ fixative	83.9	0.0	12.9	77.8	3.2	22.2
8) Marker/glass writer/labels	83.9	5.6	6.5	61.1	9.7	33.3
9) PAP smear colour paint	93.5	33.3	3.2	66.7	3.2	0.0
10) Box to transport PAP smears	87.1	0.0	9.7	33.3	3.2	66.7
11) Cabinets for archiving slides	90.3	25.0	6.5	75.0	3.2	0.0
12) Supplies for infection control (gloves for examination)	80.6	9.1	3.2	0.0	16.1	90.9
13) Colposcope set	77.4	5.6	12.9	83.3	9.7	11.1
14) Colposcopy accompany parts	67.7	0.0	22.6	71.4	9.7	28.6
15) Punch biopsy forceps	96.8	12.5	0.0	62.5	3.2	25.0
16) Formalin	100.0	0.0	0.0	50.0	0.0	50.0
17) Monsel's solution	100.0	100.0	0.0	0.0	0.0	0.0
18) LEEP set	77.4	0.0	19.4	100.0	3.2	0.0
19) LEEP set accompany parts	87.1	0.0	12.9	90.0	0.0	10.0
20) Cryotherapy set	100.0	50.0	0.0	50.0	0.0	0.0

Table 10.26. Equipment supply in Cytological/pathological laboratory

Type of equipment	Number of available units					
	None (%)		One (%)		More than 2 (%)	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
1) Biopsy Gun (Syringe holder), unit	100.0	100.0	0.0	0.0	0.0	0.0
2) Narrow gauge aspiration needles (Chiba needles), unit	92.3	100.0	7.7	0.0	0.0	0.0
3) Tube for biopsy specimen unit	76.9	76.2	7.7	0.0	15.4	23.8
4) Cover slip glue, liter	80.0	40.0	20.0	15.0	0.0	45.0
5) Box to transport specimen	76.9	71.4	15.4	0.0	7.7	28.6
6) Microtome	61.5	76.2	30.8	23.8	7.7	0.0
7) Glass Writing Pen, unit	69.2	23.8	7.7	9.5	23.1	66.7

8) Slide saving container, unit	53.8	38.1	23.1	0.0	23.1	61.9
9) Slide container for transporting sample, unit	84.6	33.3	7.7	0.0	7.7	66.7
10) Glass staining containers, unit	69.2	28.6	15.4	0.0	15.4	71.4
11) Cuvette for staining procedure, unit	100.0	85.7	0.0	0.0	0.0	14.3
12) Pap stain EA, litre	66.7	15.0	22.2	30.0	11.1	55.0
13) Pap stain OG, litre	55.6	15.8	33.3	26.3	11.1	57.9
14) Shelf for glass slides, unit	76.9	47.6	7.7	0.0	15.4	52.4
15) Bottle set for stain: 300 ml (5 unit per set), 500 ml and 1000ml	69.2	14.3	0.0	14.3	30.8	71.4
16) Filter for stain, unit	69.2	33.3	7.7	4.8	23.1	61.9
17) Glass slides size 76 x 26 x 1.2 mm, unit	69.2	47.6	7.7	0.0	23.1	52.4
18) Cover slip, unit	53.8	9.5	7.7	0.0	38.5	90.5
19) Integrated Video camera and PC connection	46.2	23.8	53.8	76.2	0.0	0.0
20) Microscope, Binocular, transmitted light microscope for routine applications in clinical laboratories	61.5	14.3	30.8	85.7	7.7	0.0

10.3. Client survey

Table 10.27 Advice given on nutrition, physical activity, breast and cervical cancer and diabetes

Variable	Primary Health care level				Secondary health care level			
	Family health centers		Soum health centers		Aimag general hospital		District health centers	
	t ₀ n=472	t ₁ n=645	t ₀ n=268	t ₁ n=273	t ₀ n=99	t ₁ n=168	t ₀ n=74	t ₁ n=93
Have you received any advice on nutrition and what you eat? (q4b)								
Yes	93.0	61.0	92.0	84.5	84.5	70.2	93.2	33.3
Have you received any advice about physical activity or exercising? (q5a)?								

	Yes	50.4	52.2	58.7	77.9	47.5	64.0	43.8	32.6
Have you received any advice about the amount of alcohol you consume?(q6a)									
	Yes	32.4	25.8	44.4	51.5	38.4	44.3	43.0	8.2
If you are a smoker, have you received any advice about tobacco use? (q7a)									
	Yes	33.5	26.8	38.7	45.3	38.8	40.3	36.4	14.1
Did the doctor/member of the health staff talk to you specifically about the prevention or testing for high blood pressure?(q8)									
	Yes	72.5	69.4	77.3	79.9	63.3	77.8	72.7	45.7
Did the doctor/member of the health staff talk to you specifically about the prevention or doing a test to see if you have an early stage of breast cancer?(q10)									
	Yes	27.7	49.2	37.1	63.8	20.0	20.5	11.3	52.0
Did the doctor/member of the health staff talk to you specifically about the prevention or doing a test to see if you have an early stage of cervical cancer?(q11)									
	Yes	31.0	52.4	46.0	67.0	28.9	55.1	17.2	20.0
Were you offered any printed materials by the health staff to take home related to healthy life-styles? (q12)									
	Yes	55.5	42.8	35.8	68.4	50.5	45.9	61.2	14.3

Table 10.28. Tests or measurements conducted for the clients within the past 12 months(baseline: n=913; follow up: n=1179)

Primary care facility	Glucose testing (%)		Measuring blood pressure (%)		PAP test (%)		Breast examination (%)	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Family health centers	32.1	48.8	76.3	82.2	24.8	31.3	26.8	34.7
Soum health centers	25.5	55.1	87.0	93.4	19.2	46.9	25.9	49.0

Table 10.29. Tests or measurements conducted for the clients within the past 12 months(baseline: n=913; follow up: n=1179)

Primary care facility	Glucose testing (%)		Measuring blood pressure (%)		PAP test (%)		Breast examination (%)	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁

Aimag general hospital	37.5	38.7	79.1	77.4	24.2	22.7	22.2	16.9
District Health center	46.2	46.9	72.0	90.7	31.9	41.8	24.7	41.3

10.4. Knowledge about NCD prevention of health staff

Table10.30. Knowledge about NCD prevention of doctors and nurses of primary health care

	Doctors		Nurses		Managers of health facilities	
	t ₀ n=201	t ₁ n=282	t ₀ n=370	t ₁ n=372	t ₀ n=206	t ₁ n=206
	%	%	%	%	%	%
General NCD						
1) What is the 'normal' Body Mass Index (BMI) as defined by WHO in general?	68.5	91.4	69.2	81.6	74.5	90.1
2) How is the Body Mass Index (BMI) calculated?	63.5	87.9	63.2	79.9	75.2	86.1
3) How often should a person be physically active to a moderate amount (at least 30 minutes) to stay healthy?	34.4	58.9	39.7	52.3	40.3	55.9
4) How often should a person eat fresh (non-processed) vegetables (except potatoes) and fruits to stay healthy?	16.2	22.9	18.1	22.0	21.4	25.2
5) What amount of salt is recommended for daily consumption?	46.9	90.7	60.3	87.3	65.5	90.1
Hypertension						
6) What are optimal blood pressure values?	68.5	74.3	84.1	87.8	86.9	74.3

7) What is the level of blood pressure that is defined as HIGH blood-pressure?	22.4	49.6	17.8	31.2	21.8	45.0
8) What is the recommended value of total cholesterol level in blood?	27.4	71.1	31.1	62.3	28.2	59.9
9) How many office measurements are necessary to call a hypertensive patient?	56.8	92.5	70.5	93.5	77.2	88.1
Diabetes						
10) What is the normal level of fasting plasma glucose for venous blood plasma?	55.6	90.7	62.4	82.9	68.9	90.1
11) How can diabetes mellitus type II NOT be prevented?	54.4	81.4	60.5	66.1	66.0	78.2
Breast and cervical cancers						
12) What is a possible effect of the detection of breast cancer in early stages compared to later stages?	49.4	63.6	40.5	52.6	64.1	63.4
13) What is NOT a method for the detection of breast cancer?	63.1	91.4	73.0	87.3	86.4	95.0
14) What is NOT a method of screening for cervical cancer ?	64.7	89.6	70.3	85.9	78.2	90.1
15) A prevention method for cervical cancer is ...	57.3	91.8	51.4	87.5	73.3	94.1
Average percentage	49.9	76.5	54.1	70.7	61.9	75.0
Score (SD)	7.5 (4.1)	11.5 (1.9)	8.2 (2.6)	10.6 (2.1)	9.3 (2.1)	11.3 (1.9)

Table10.31. Knowledge about NCD prevention of specialized doctors and nurses of secondary health care

	Specialized doctors	Specialized nurses	Managers of health facilities

General NCD	t₀ n=66	t₁ n=95	t₀ n=68	t₁ n=92	t₀ n=35	t₁ n=36
1) What is the 'normal' Body Mass Index (BMI) as defined by WHO in general?	65.2	88.3	60.3	70.3	57.1	81.3
2) How is the Body Mass Index (BMI) calculated?	59.1	83.0	44.1	74.7	62.9	71.9
3) How often should a person be physically active to a moderate amount (at least 30 minutes) to stay healthy?	34.8	60.6	42.6	62.6	51.4	68.8
4) How often should a person eat fresh (non-processed) vegetables (except potatoes) and fruits to stay healthy?	19.7	27.7	16.2	30.8	29.8	34.4
5) What amount of salt is recommended for daily consumption?	51.5	88.3	47.1	91.2	71.4	87.5
Hypertension						
6) What are optimal blood pressure values?	74.2	75.5	77.9	87.9	97.1	81.3
7) What is the level of blood pressure that is defined as HIGH blood-pressure?	31.8	46.8	11.8	38.5	20.0	50.0
8) What is the recommended value of total cholesterol level in blood?	37.9	73.4	39.7	69.2	20.0	56.3
9) How many office measurements are necessary to call a hypertensive patient?	68.2	85.1	58.8	79.1	83	90.6
Diabetes						
10) What is the normal level of fasting plasma glucose for venous blood plasma?	71.2	95.7	58.8	96.7	57.1	90.6
11) How can diabetes mellitus type II NOT be prevented?	60.6	71.3	41.2	68.1	57.1	75.0
Breast and cervical cancers						
12) What is a possible effect of the detection of breast cancer in early stages compared to later stages?	63.6	68.1	79.4	60.4	74.3	65.6

13) What is NOT a method for the detection of breast cancer?	83.3	92.6	58.8	81.3	97.1	100.0
14) What is NOT a method of screening for cervical cancer?	72.7	94.7	60.3	86.8	85.1	100.0
15) A prevention method for cervical cancer is ...	71.2	97.9	55.9	89.0	82.9	93.8
Average percentage	57.7	73.3	50.2	69.5	56.1	73.8
Score (SD)	8.6 (3.4)	11.5 (2.0)	7.5 (3.8)	10.9 (2.3)	9.4 (1.7)	11.5 (2.1)

Annex 13 Comparative tables of the STEPS surveys 2010/2013

COMPARISON

<i>Mongolia STEPS Surveys 2009 & 2013</i>		
 Results for adults aged 15-64 years (incl. 95% CI)	2009 (N=5438)	2013 (N=6013)
Step 1 Tobacco Use		
Percentage who currently smoke tobacco	27.6% (26.0 – 29.4)	27.1 (25.2-29.0)
Percentage who currently smoke tobacco daily	24.3% (22.9 – 25.7)	24.8 (23--26.8)
<i>For those who smoke tobacco daily</i>		
Average age started smoking (years)	19.2 (18.7-19.6)	19.7 19.2--20.3
Percentage of daily smokers smoking manufactured cigarettes	84.6% (78.8-90.3)	95.2 90.5--97.6
Mean number of manufactured cigarettes smoked per day (by smokers of manufactured cigarettes)	8.7 (7.8-9.6)	10.0 9.2--10.8
Step 1 Alcohol Consumption		
Percentage who drank alcohol in the past 12 months	34.2% (28.7 – 39.6)	28.2 25.8--30.7
Percentage who drank on 5 or more days per week in the past 12 months	7.4% (5.7 – 9.1)	0.3 0.1--0.9
Percentage who drank less than once a month in the past 12 months	38.6% (34.6 – 42.7)	58 54.1--61.8
Step 1 Fruit and Vegetable Consumption (in a typical week)		
Mean number of days fruit consumed	1.2 (1.0-1.3)	1.1 1--1.2
Mean number of servings of fruit consumed on average per day	0.4 (0.3-0.5)	0.4 0.4--0.5
Mean number of days vegetables consumed	4.8 (4.3-5.3)	4.5 4.2--4.9
Mean number of servings of vegetables consumed on average per day	1.4 (1.2-1.7)	1.0 0.9--1.1
Percentage who ate less than 5 servings of fruit and/or vegetables on average per day	92.3% (88.7-95.8)	96.4 95.3--97.2
Step 1 Physical Activity		
Percentage with low levels of activity (defined as < 600 MET-minutes per week)*	7.5% (5.2-9.9)	22.3 18.4--26.7
Percentage with high levels of activity (defined as ≥ 3000 MET-minutes per week)*	80.8% (75.7-85.8)	53.2 46.5--59.9
Median time spent in physical activity on average per day (minutes) (presented with inter-quartile range)	342.9 (158.6-510.0)	105.7 31.4-300.0
Percentage not engaging in vigorous activity	48.5% (43.3-53.6)	66.6 63.4--69.8
Results for adults aged 15-64 years (incl. 95% CI)	2009	2013
Step 2 Physical Measurements		
Mean body mass index - BMI (kg/m ²)	24.6 (24.3-24.9)	25.9 25.7--26.2

Percentage who are overweight (BMI \geq 25 kg/m ²)	39.8% (37.1-42.5)	54.4 52.3--56.6
Percentage who are obese (BMI \geq 30 kg/m ²)	12.5% (10.8-14.3)	19.7 18--21.5
Mean systolic blood pressure - SBP (mmHg), including those currently on medication for raised BP	125.6 (124.3-126.9)	127 125.9--128
Mean diastolic blood pressure - DBP (mmHg) , including those currently on medication for raised BP	78.9 (78.1-79.6)	79.9 79.3--80.4
Percentage with raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg or currently on medication for raised BP)	27.3% (24.9-29.8)	27.5 25.6--29.4
Percentage with raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg) who are not currently on medication for raised BP	61.1% (56.4-65.8)	71.9 66.7--76.5
Step 3 Biochemical Measurement		
Mean fasting blood glucose, including those currently on medication for raised blood glucose (mmol/L)	4.7 (4.6-4.9)	5.0 4.8--5.1
Percentage with impaired fasting glycaemia as defined below • capillary whole blood value \geq 5.6 mmol/L (100 mg/dl) and $<$ 6.1 mmol/L (110 mg/dl)	9.4% (7.4-11.5)	8.3 6--11.5
Percentage with raised fasting blood glucose as defined below or currently on medication for raised blood glucose • capillary whole blood value \geq 6.1 mmol/L (110 mg/dl)	6.5% (4.5-8.4)	6.9 4.3--11
Mean total blood cholesterol, including those currently on medication for raised cholesterol (mmol/L)	4.4 (4.1-4.6)	5.1 5--5.2
Percentage with raised total cholesterol (\geq 5.0 mmol/L or \geq 190 mg/dl or currently on medication for raised cholesterol)	25.0% (19.4-30.5)	61.9 55.7--67.6
Summary of combined risk factors		
<ul style="list-style-type: none"> • current daily smokers • less than 5 servings of fruits & vegetables per day • low level of activity • overweight (BMI \geq 25 kg/m²) • raised BP (SBP \geq 140 and/or DBP \geq 90 mmHg or currently on medication for raised BP) 		
Percentage with none of the above risk factors	3.0% (1.7-4.2)	1 0.6--1.4
Percentage with three or more of the above risk factors, aged 15 to 44 years	19.4% (17.3-21.5)	28.3 26.1--30.5
Percentage with three or more of the above risk factors, aged 45 to 64 years	53.8% (49.4-58.1)	53.2 49.8--56.5
Percentage with three or more of the above risk factors, aged 15 to 64 years	26.4% (24.1-28.7)	36.9 34.6--39.1

Annex 14 Comparative results of the KAP studies among the general population, 2010 / 2013

SUMMARY OF COMPARISON RESULTS

Table 1

General knowledge, attitudes and practices related to NCDs (GK)

		2010		2013	
Knowledge that NCDs cannot be transmitted (GK1)					
		%	95% CI	%	95% CI
Gender	Female	83.0	79.7-85.8	76.7	73.5-79.7
	Male	79.5	72.8-84.9	72.9	68.4-76.9
Age	15-24	81.4	75.8-86	71.3	66.9-75.4
	55-64	78	68.4-85.2	82.2	75.5-87.3
Agreement that NCDs are less dangerous than infectious diseases (GK2A)					
'Completely agree'					
Location	Urban	8.3	6.3-10.9	3.9	2.5-6.2
	Rural	5.1	3.5-7.2	4.3	2.0-9.2
Agreement to 'NCDs are common among Mongolians' (GK3A)					
Location	Urban	68.2	64.3-71.8	77.3	73.8-80.5
	Rural	77.7	72.9-81.9	72.7	64.4-79.6

Table 2

Comparison of baseline and follow-up results on alcohol

		2010		2013	
		%	95% CI	%	95% CI
Respondents who disagreed with the statement that Mongolians tend to drink too much alcohol at one time (RF11A)					
Total		8.6	6.8-10.9	5.8	4.8-6.9
Urban		4.5	CI 3.2-6.4	3.8	2.8-5.2
Rural		12.8	9.5-17.0	7.7	6.4-9.3
Occasions when people most commonly drink large amounts of alcohol (RF12P)					
Celebrations		91.3	88.8-93.2	95.3	94.2-96.1

Tradition or customs	58.6	54.8-62.4	72.5	67.8-76.7	
After receiving salary	61.6	57-65.9	65.7	61.8-69.3	
No particular reason	47.3	42.7-51.9	54.8	50.9-58.6	
Respondents drinking alcohol between waking up in the morning and midday(RF15P)					
Total	21.7	18.5-25.3	14.4	12.9-16.2	
Gender	Male	28.0	18.5-25.3	23.4	12.9-16.2
	Female	8.9	12.9-16.2	5.3	4.0-7.0
Location	Urban	19.1	14.4-24.7	12.0	10.2-14.1
	Rural	25.3	21.9-29.0	16.9	14.3-19.9
Drunk driving					
All	16.6	14-19.7	19.8	16.8-23.2	
Gender	Men	19.1	15.5-23.2	24.6	20.9-28.9
	Women	8.6	4.2-16.9	7.3	3.9-13.2
Location	Urban	17.1	13.7-21	18	14-22.7
	Rural	16.1	12.2-21	21.8	16.8-23.2

Table 3
Comparison of baseline- and follow-up results
on tobacco use

		2010		2013	
		%	95% CI	%	95% CI
Knowledge about risks of tobacco smoking (RF2K)					
Agreement to “Smoking is very harmful for the heart”					
Age	35-44	49.4	42.0-56.9	62.6	56.2-68.6
Location	Urban	49.3	44.1-54.5	57.8	57.8-67.0
Knowledge related to the extent of smoking needed to harm the health (RF2K)					
Agreement to “Smoking at least once a week is harmful for health”					
Total		2.2	1.5-3.2	4.2	3.4-5.2
Attitude to protect oneself from passive smoking (RF8A)					
Agreement to “Do not care someone smoking in my home”					
Total		17.9	15.3-20.8	12.8	11.1-14.7
Gender	Male	27.7	22.9-33.0	18.7	15.2-22.8
Location	Rural	22.1	18.3-26.5	13.8	11.0-17.2
Agreement to “Do not allow others to smoke in my home”					
Total		45	41.0-49.0	50.7	47.7-53.7
Gender	Male	34	29.4-39.0	45	40.7-49.3

Location	Rural	41.3	35.6-47.2	50.6	46.4-54.7
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Table 4

Comparison of baseline and follow-up results on Diet

		2010		2013	
“Eating fruits everyday is important” (RF20P)					
Age	15-24	50.8	48.2-53.5	67.1	63.5-70.5
	25-34	57.5	53.6-61.4	66.5	62.4-70.5
“Eating vegetables everyday is important” (RF22A)					
Total		62.3	60.1-64.3	69.3	66.5-72.0
Gender	Male	64.1	60.8-67.3	68.8	65.3-72.2
	Female	60.4	57.2-63.6	69.6	66.7-72.4
Age	15-24	57.7	54.1-61.3	67.9	64.3-72.1
	25-34	62.4	59.2-65.5	71.3	65.8-76.2
	45-54	66.4	61.3-71.2	70.1	65.8-74.1

Table 5

Comparison of baseline and follow-up studies on salt

		2010		2013	
Ketchup is high in salt (RF30)					
Gender	Male	30	26.8-33.5	29.8	26.4-33.5
	Female	40.1	35.7-44.8	42	38.3-45.9
Potato chips are high salt(RF30)					
Gender	Male	41.4	36.4-46.7	51.4	45.4-57.4
	Female	45.4	40.9-50.0	60.3	55.8-64.7
Total		43.4	39.1-47.9	56.3	51.2-61.2

Table 6

Comparison of baseline and follow-up studies on physical activity

		2010		2013	
Knowledge on recommended frequency of regular physical activity (RF34K)					
5 or more times a week					
Gender	Male	48	43,8-52,3	52,4	48,5-56,3

	Female	48.3	44.5-52.2	50.4	45.2-55.5
Age	15-24	43.5	38.5-48.8	49.0	44.3-53.7
	55-64	61.9	55.7-67.8	69.1	62.2-75.3
Reason for not being physically active (RF35P3)					
“Lack of time”					
Location	Urban	30.5	27.1-34.2	37.6	34.8-40.5
	Rural	29.1	25.7-32.7	28.3	24-33.1
“Don’t know how to be active”					
Gender	Male	26.3	23.4-29.3	17.4	14.2-21.1
	Female	29.8	26.7-33.2	19.1	16.5-21.9
Total		24.3	21.4-27.4	18.3	15.9-21.0

Table 7. Comparison of baseline and follow-up studies on Weight management

		2010	2013		
Self assessment of own body weight (RF49A)					
Overweight					
Total		19.5	17.5-21.5	25.4	23.1-27.8
Location	Urban	21.1	18.3-24.2	29.6	26.9-32.4
	Rural				
Extent of given importance to their own body weight (RF50A)					
All	Important	56.8	53.5-60.1	63.8	58.7-68.5
	Very important	34.5	30.7-38.4	29.6	24.8-34.9
Percentage of population who measured their body weight in the last six months (RF48P)					
Total		57	53.8-58.9	70.1	67.4-72.6
Gender	Female	61.5	57.1-65.7	72.3	69.5-75
	Male	52.5	49.0-56.0	67.4	63.6-71
Location	Urban	64.2	61.0-67.2	72	69.2-74.6
	Rural	49.8	44.8-54.9	68.3	63.3-72.9

Table 8

Summary of comparative study on General attitudes towards common NCD risk factors

		2010		2013	
		%	95% CI	%	95% CI
Drinking alcohol everyday is “harmful” for health (RF51A1)					
Total		26.5	23.6-29.7	39.6	35.8-43.6

Age	15-24	20.4	17.3-23.9	36.8	31.1-42.9
	25-34	26.7	22.3-31.7	38.7	33-44.8
	55-64	28.4	23.2-34.2	44.2	34.7-54.2
Gender	Male	27.4	23.9-31.1	40.3	35.9-45.0
	Female	25.7	22.2-29.5	39.0	35.9-43.3
Location	Urban	19.4	16.8-22.3	40.9	35.9-45.0
	Rural	33.7	29.4-38.3	39.0	35.9-43.3
Tobacco use is “harmful” for health (RF51A2)					
Gender	Male	60.9	57.7-63.9	66.3	60.8-71.4
	Women	55.5	50.7-60.2	64.7	60.1-69
Age	15-24	52.6	47.1-58.1	58.6	51.4-65.4
	25-34	58.3	54.4-62.0	69.1	63.1-74.4
Low consumption of fruits and vegetables is “harmful” for health (RF51A3)					
Gender	Male	24.5	21.3-27.9	25.1	22.6-27.7
	Women	33.9	30.8-37.2	39.5	36.9-42.1
Age	15-24	27	23.4-31.0	29.1	26.2-32.2
	25-34	27	22.9-31.6	33.6	30.1-37.3
	55-64	31.7	25.3-38.8	36.6	28.1-46.2
Eating food with high content of salt is harmful for health(RF51A4)					
Gender	Male	60.2	55.1-65.1	69.1	64.8-73.1
	Women	64.8	61.8-68	71.1	67.8-74.1
Age group	15-24	58.8	54.3-63.3	65.3	59.4-70.7
	35-44	59.4	54.3-64.4	74.4	69.4-78.7
	55-64	64.7	59.3-69.9	78.2	72-83.3
Being physically inactive is harmful for health (RF51A5)					
Total		60.5	58.2-62.8	69.8	65.5-73.8
Gender	Male	59.7	56.2-63.2		
	Women	61.3	58.8-63.8	70.1	65.4-74.4
Age	25-34	62.0	57.4-66.6	71.7	66.9-76.1
	35-44	59.6	55.5-63.6	72.6	67.5-77.1
	55-64	53.4	53.4-65.4	78.1	71.9-83.2
Being overweight is harmful for health (RF51A6)					
Gender	Male	64	59.6-68.1	70.8	66.0-75.3
	Women	66	63.2-68.7	73.6	68.6-78.1
Age	15-24	59.7	55.1-64.1	68.0	61.4-74
	25-34	64.1	60.5-67.6	75.9	70.4-80.6
	55-64	67.1	61.7-72.0	73.1	65.9-79.3

Table 9

Knowledge and attitudes of the population towards high blood pressure (RF39-47)

Year	Effective		Not effective		Very effective	
	%	95% CI	%	95% CI	%	95% CI
Medication						
2010	3.2	2.4-4.2	77.4	73.7-80.8	19.3	15.9-23.3
2013	5.5	4.5-6.8	85.1	82.7-87.2	9.3	7.5-11.6
Losing weight						
2010	25.6	22.8-28.7	65.1	61.9-68.1	9.3	7.6-11.4
2013	22.1	18.9-25.7	67.6	64-71	10.3	7.8-13.4
Changing diet						
2010	20.3	18.2-22.7	71.7	68.6-73.3	8.6	7.2-10.3
2013	15.0	13.1-17.1	75.9	72.8-78.6	9.1	6.8-12.1
Exercising						
2010	13.7	12.1-15.5	69.1	66.8-71.2	17.2	15.0-19.7
2013	10.5	8.9-12.5	72.5	68.1-76.6	16.9	13.3-21.3

Table 10

Summary of comparative study on CVDs

		2010		2013	
		%	95% CI	%	95% CI
Know a little about CVD	All	38.2	35.3-41.2	45	41.7-48.3
	Knowledge about stroke (CD2K)				
	All	34	31.2-36.9	40.7	37.7-43.7
Know a little	Men	31.7	28.3-35.2	37.6	33.6-41.8
	Women	36.3	32.7-40	43.2	40.3-46.2
	Urban	36.9	33.4-40.5	39.4	35.9-43.0
	Rural	31	27-35.3	41.9	37.2-46.8
Knowledge about following factors as of CVDs risk (CD5K1; CD5K2; CD5K3)					
Stress	Men	90.8	88.9-92.4	94.5	92.9-95.8
	Women	94.8	93-96.2	94.7	92.8-96.2
Overweight	All	85	82.9-86.9	90.1	87.3-92.3
	Urban	86.9	84.3-89.2	92.7	90.6 -94.4

	Rural	91.3	89.4 -92.9	95.2	93.8 -96.3
	25-34	84.5	80.4 -87.8	91.7	89.8 -93.3
	35-44	88.1	84 -91.3)	96.6	94.6 -98)
Agreement with increasing trend of CVDs (CD3K)					
	All	14.7	12.6 -17	10	8.5 -11.7
Do not know Of the trend	Men	16.9	13.8-20.5	12.3	9.9-15.2
	Women	12.5	10- 15.4	8	6.8 - 9.6
Decreasing	Men	1.6	1 - 2.5	3.5	2.6 -4.8
	15 -24	2.5	1.4- 4.3	5.7	4.4 - 7.3
	Rural	2.1	1.5 -2.8	4.8	3.8 - 6
Knowledge about preventability of CVDs (CD7K)					
Preventable	All	89.5	87.6 -91.1	93	91.5 -94.3
	Men	88.8	85.9 - 91.2	93.7	91.8 - 95.2
	15-24	82.8	79.1 - 86	92.1	89.6 - 94
	Rural	88.9	85.9 - 91.4	93.8	91.6 -95.5
Do not know exactly	All	8.9	7.5 -10.5	5.7	4.5 -7.2
	Men	9.2	7.5 - 11.4	5.1	3.9 - 6.8
	35-44	15.1	12 - 18.8	6.4	4.5 - 9.2
	Rural	9.1	7.2 - 11.4	4.7	3.1 - 6.9

Table 11
Comparison between baseline and follow-up studies on diabetes

		2010		2013	
Knowledge of diabetes (D1K)					
		%	95 CI	%	95 CI
Know a little	Male	24.2	21.6-27.1	38.2	33.8-42.7
	Female	31.9	28.2-35.8	45.3	41.2-49.5
Don't know	Rural	26.6	22.8-30.8	16.3	11.8-22.2
Understanding that people with diabetes can live a normal life (D2K) (Correct answers)					
Location	Rural	47.3	41.3-53.5	66.8	61.8-71.4
Gender	Male	48.8	44-53.8	62.3	58.1-66.3
Age group	15-24	51.1	45.3-56.8	63.5	58-68.6
	25-34	46.4	41-51.8	60.6	56.2-64.9
Diabetes can be prevented (D2K6)					
	All	66.3	62.2-70.2	78.2	74.5-81.4
Gender	Male	64.6	60.1-68.9	77.6	73.6-81.1
	Female	68	63.5-72.1	78.7	74.4-82.4

Location	Urban	75.3	71.2-78.9	75.7	69.9-80.6
	Rural	57.2	51.7-62.6	80.6	76-84.5
Age group	15-24	69.9	62.7-76.2	81.9	78.8-84.6
	35-44	62.9	56.7-68.6	78.1	71.7-83.3
Participants who received advices on diabetes from a health worker (D4P)					
Gender	All	14.8	13-16.8	23.6	19.8-28
	Male	13.2	10.9-15.9	20.3	16.5-24.7
	Female	16.4	13.4-19.9	26.4	21.7-31.7
Location	Urban	14.4	11.9-17.2	17.5	13.9-21.7
	Rural	15.3	12.7-18.3	29.6	23-37.1
Age group	35-44	15	11.3-19.6	26.7	21.2-33.1
	45-54	20.3	15.6-26	33.3	26.5-40.9

Table 12

Road Traffic Safety

	2010	2013	
	(%)	(%)	p value
Feeling safe in road traffic (RT11A)			
Feeling very unsafe or unsafe in traffic	61.6%	72.1%	
Urban	75.7%	80.8%	p=0.015
Rural	47.5%	63.7%	
Perceived danger for road traffic safety (RT12A)			
	“Dangerous” and “Very dangerous” (2010)	“Dangerous” and “Very dangerous” (2013)	
Road conditions (RT12A5)	85.8%	92.6%	
15-24	83.4	89.2	p=0.007
25-34	85.3	93	
35-44	88.5	94.2	
Nonuse of seat belts (RT12A4)	87.0%	92.1%	
15-24	81.8	91.3	p=0.021
25-34	84.0	93.3	
35-44	87.8	94.6	
Reasons for not using seatbelts (RT13A) (% , 95%CI)			
Don't know that it is dangerous	33% (28,6-37,6)	19.6% (16,5-23,2)	
No seat belts	4.5% (3,2-6,2)	0.7% (0,4-1,3)	
Dislike seat belts	40.9% (36,5-45,6)	29.7% (25,9-33,8)	
No enforcement	21.6% (18-25,8)	14.2% (11,9-16,7)	

Table 13

Summary of comparative study on Breast cancer

	2010		2013	
	%	95% CI	%	95% CI
Know a little about breast cancer (BCC1K)				
30-64 years	31.3	27.1-35	39.2	35.5-43
Rural	29.8	23.8-36.6	41.7	34.7-49.1
Very familiar with breast cancer				
30-64 years	7.6	5.7-10.2	12.6	9.2-17.1
Rural	8	5.1-12.3	16.1	10.4-24.2
Agreement to 'Possibilities for recovery increase when breast cancer is detected in an early stage' (BCC3K)				
30-64 years	80.5	77.3-83.2	94.1	91.8-95.8
Agreement to 'Women can detect early signs of breast cancer by breast self examination' (BCC4K)				
30-64 years	80.8	77.3-83.2	87.9	84.8-90.5
Women who had physical breast examination by health workers within the last 3 years (BCC6P)				
30-64	22	17.9-26.8	37.6	31.8-43.8
Rural	23.1	16.4-31.5	52.9	42.6-63
Women knew how to perform breast self-examinations (BCC5K)				
30-64	63.3	58-68.2	67.7	62.8-72.2
Rural	65.7	57.3-73.1)	71.2	63.1-78.1

Table 14

Comparison of baseline and follow-up studies on Cervical cancer

	2010		2013	
	%	95% CI	%	95% CI
Know well about cervical cancer (BCC7K)				
30-64 years	10.9	8.2-14.3	15.7	12.5-19.5
Urban area	9.8	6.6-14.2	15.5	11.9-20
Rural area	11.9	8-17.4	16	10.8-23.1
Know about recommended frequency of pap smear test (BCC8K)				
30-64 years	6	4.1-8.8	34.2	28.6-40.2
Urban area	6.1	4.2-8.7	33.8	26.4-42.2
Rural area	6	3.1-11.4	34.7	26.8-43.4

KNOW ABOUT PREVENTABILITY OF CERVICAL CANCER BY VACCINE (BCC13K)				
30-64 years	15.3	12.7-18.3	43.5	38.7-48.3
Urban area	11	8.8-13.8	40.8	34.9-47
Rural area	19.6	15.4-24.5	46.5	39-54.3
Participation in the Pap smear test				
All women	36.9	32.6-41.3	45.7	40.4-51.1
Urban	36.5	30.7-42.8	39.5	32.3-47.1
Rural	37.1	31.3-43.4	54.2	48.7-59.6

13 References

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