The National Strategy And Plan Of Action Against Diabetes, Hypertension, Dyslipidemia And Obesity in Jordan

رئاسة الوزراء

٥/٢١
٧١٤

الرقم ١٠ / ١/١٠ / ١٢٣٢٨
التاريخ ٢٦- جمادى الاخرة- ١٤٣٢
الموافق ٢٩- ٠٥ -٢٠١١

معالي وزير الصحة

أشير إلى كتابكم رقم م أ غ س/٣١٩/قلبية تاريخ ٢٠١١/٤/١٨.

استعرض مجلس الوزراء كتاب معاليكم المشار إليه أعلاه المتعلق بالإستراتيجية الوطنية للوقاية من ومكافحة مرض السكري وارتفاع التوتر الشرياني واختلاط الدهنيات والسمنة، وقرر المجلس في جلسته المنعقدة بتاريخ ٢٠١١/٥/٢٨ بناء على توصية لجنة الخدمات والبنية التحتية الصادرة عن جلستها المنعقدة بتاريخ ٢٠١١/٥/٢٤ ما يلي:-

١. تبني الإستراتيجية المذكورة أعلاه كإستراتيجية وطنية وأن يكون معاليكم مسؤولا عن تنفيذها.
٢. تفويض لجنة إعداد الإستراتيجية الممثلة لكافة القطاعات الطبية في المملكة (وزارة الصحة، الخدمات الطبية الملكية، كليات الطب في الجامعات الأردنية، المركز الوطني للسكري والغدد الصم والوراثة، جمعيات الاختصاص ذات العلاقة في النقابات المهنية والقطاع الخاص) مسؤولية المتابعة والإشراف على تنفيذ خطة عمل الإستراتيجية.
٣. أن تلتزم الوزارات ذات العلاقة (وزارة الأوقاف والشؤون والمقدسات الإسلامية، وزارة التربية والتعليم، وزارة التعليم العالي والبحث العلمي، وزارة الشؤون البلدية) بتنفيذ خطة عمل الإستراتيجية وحسب ما ورد بكتاب معاليكم المشار إليه أعلاه.

على أن تقدم لجنة المتابعة والإشراف تقريرا سنويا لي وأخر نصف سنوي لمعاليكم يتضمن سير العمل والانجازات لخطة الإستراتيجية والمعوقات التي تواجه التنفيذ ومقترحات الحلول

واقبلوا فائق الاحترام.

رئيس الوزراء

نسخة/إلى معالي وزير الأوقاف والشؤون والمقدسات الإسلامية،
نسخة/إلى معالي وزير التربية والتعليم،
نسخة/إلى معالي وزير التعليم العالي والبحث العلمي،
نسخة/إلى معالي وزير الشؤون البلدية
نسخة/إلى معالي رئيس المركز الوطني للسكري والغدد الصم والوراثة،
نسخة/إلى عطوفة رئيس هيئة الأركان المشتركة،
نسخة/إلى عطوفة أمين سر مجلس الوزراء قرار رقم (١٠٦٧) وتاريخ ومرفقاته.
نسخة/إلى مديرية توثيق ومتابعة قرارات مجلس الوزراء واللجان الوزارية،

مع نسخة من كتاب معاليه المشار إليه أعلاه

The national strategy and plan of action against diabetes, hypertension, dyslipidemia and obesity in Jordan.

Introduction:

The global and regional situation:

Noncommunicable diseases (NCDs) are the current and future epidemic in developed and developing countries. NCDs caused an estimated 35 million deaths in 2005 representing 60% of the global mortality. About 86% of deaths and 77% of disease burden in Europe are caused by noncommunicable disease (NCD), a group of conditions that includes cardiovascular disease, cancer, mental disorders, diabetes mellitus, and chronic pulmonary disease.

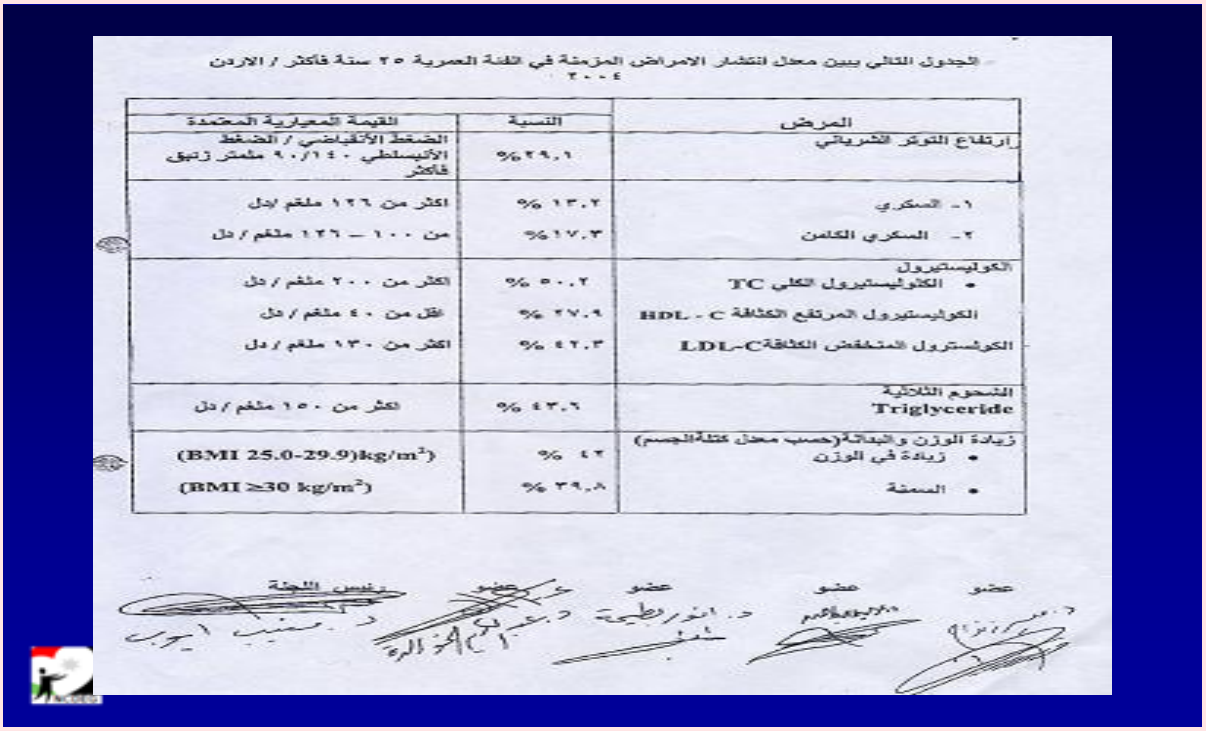
In the EMR, in the year 2005, NCDs were responsible for 52% of deaths and 47% of disease burden in the region. Moreover, if the current trend persists, NCDs are estimated to increase in the EMR by 17% between the years 2005 and 2015. There is a real need to act now because inaction violates human rights and the consequences of inaction are devastating on social and economic development. A comprehensive concerted approach against NCDs has been outlined by the global action plan against NCDs, the global strategy on diet, physical activity, and health, and several other WHO documents. The purpose of this document is to adapt the global guidance to the prevailing cultural, social, and economic specificities of Jordan.

Diabetes mellitus as a cause of death has always been grossly underestimated. In 2004, DM was reported as responsible only for 2% of total deaths in the EMR, while cardiovascular diseases were responsible for 27%.

The situation in Jordan:

Several studies have been conducted in Jordan to determine the prevalence of diabetes and other NCDs. Most of these studies were community-based and consistently reported high prevalence of DM between 13 and 17%. Pre-diabetes (FBS 100-125 mg/100 ml) ranged between 15 and 20% of the surveyed population. The findings of two rounds of STEPwise surveys conducted at the national level in 2004 and 2007 confirmed the high prevalence of diabetes and pre-diabetes in Jordan.

An expert committee was formed by H.E. the minister of health in the year 2004 to review the findings of the different studies and to come up with the best estimates for diabetes and related conditions in Jordan. The committee endorsed the figures shown in the table below. In summary, over 30% of Jordanians aged ≥25 years had elevated FBS above 100 mg/100ml, over 80% suffered from overweight or obesity, about 30% were hypertensive, and many had a sort of dyslipidemia.



الجدول التالي يبين معدل انتشار الامراض المزمنة في الفئة العمرية ٢٥ سنة فأكثر / الاردن ٢٠٠٤

المرض	النسبة	القيمة المعيارية المعتمدة
ارتفاع التوتر الشرياني	%٢٩.١	الضغط الأنقباضي / الضغط الأنبساطي ١٤٠/٩٠ ملمتر زئبق فأكثر
١- السكري	% ١٣.٢	اكثر من ١٢٦ ملغم /دل
٢- السكري الكامن	%١٧.٣	من ١٠٠ ــ ١٢٦ ملغم / دل
الكولستيرول		
• الكولستيرول الكلي TC	% ٥٠.٢	اكثر من ٢٠٠ ملغم / دل
الكولستيرول المرتفع الكثافة HDL - C	% ٢٧.٩	اقل من ٤٠ ملغم / دل
الكولسترول المنخفض الكثافةLDL-C	% ٤٢.٣	اكثر من ١٣٠ ملغم / دل
الشحوم الثلاثية Triglyceride	% ٤٣.٦	اكثر من ١٥٠ ملغم / دل
زيادة الوزن والبدانة(حسب معدل كتلةالجسم)		
• زيادة في الوزن	% ٤٢	(BMI 25.0-29.9)kg/m^2)
• السمنة	% ٣٩.٨	(BMI ≥30 kg/m^2)

رئيس اللجنة — عضو — عضو — عضو — عضو

About 36% of Jordanians ≥25 years of age were found to suffer from the metabolic syndrome which refers to clustering of three or more of the risk factors of cardiovascular disease mentioned below:

ATP III criteria for the metabolic syndrome: presence of three or more of the following criteria:

- *Abdominal obesity: waist circumference >102 cm in men and >88 cm in women.*
- *High fasting glucose: serum glucose level >= 110 mg/dl or on treatment for diabetes.*
- *High blood pressure: systolic blood pressure >=130 and/or diastolic blood pressure >=85 mmHg or on treatment for hypertension.*
- *Hypertriglyceridemia: serum triglycerides level >=150 mg/dl .*
- *Low HDL cholesterol: serum HDL cholesterol <40 mg/dl in men and <50 mg/dl in women.*

The direct cost of management of diabetes, hypertension, and dyslipidemia in Jordan in 2004 reached JD 654 million.

التكلفة التقديرية لعلاج السكري، ارتفاع ضغط الدم وارتفاع مستويات الكلسترول في الأردن لعام ٢٠٠٤

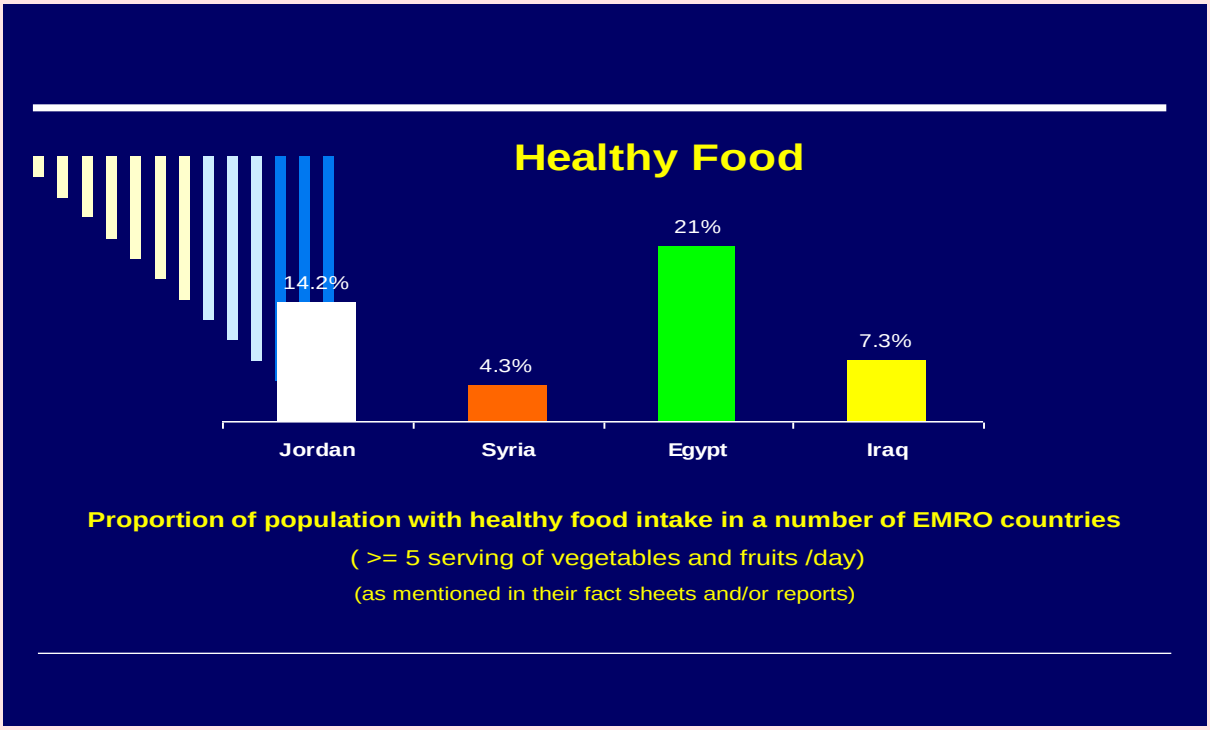
الاجراءات الطبية	الحالات المشخّصة	جميع الحالات
الأدوية	175	428**
الإستشارات الطبية	7	16
الفحوص المخبرية	12	24
المستشفيات	94	186
المجموع	288	654

**بموجب دراسة الدكتور علي مقداد من مركز مكافحة الأمراض الأمريكي ٢٠٠٤*
*** مليون دينار*

Missed or undiagnosed diabetes accounted for more than one third of all cases of diabetes. Even in deaths occurring in hospitals, a high proportion of diabetics were completely missed.

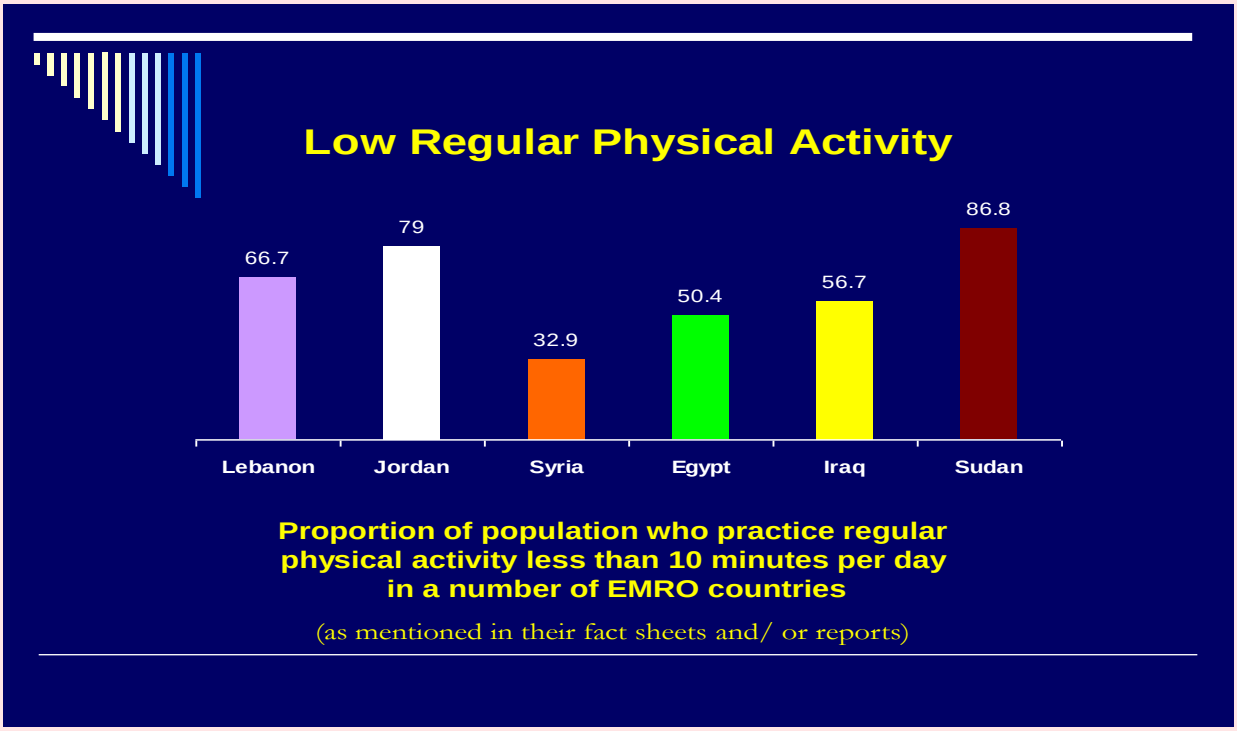
Changes in lifestyle mainly in the form of unhealthy diet and physical inactivity represent the main preventable risk factors for diabetes and other NCDs. The traditional Mediterranean diet (rich in vegetables, legumes, grains, and olive oil) has been gradually replaced by unhealthy diet high in saturated fats and low in vegetables and fruits.

According to the 2007 STEPwise survey, only 14% of the population in Jordan eats healthy food defined as ≥ 5 servings of vegetables and fruits/day as shown in the figure below.



Detailed information on food consumption pattern in Jordan is lacking. Certain inappropriate practices seem to be on the increase such as the excessive consumption of “Mansaf”, a popular Jordanian dish. “Mansaf” is highly rich in animal fat and served largely in occasions and parties in huge quantities, to show respect to guests and generosity. Such extreme traditional practices should be discouraged and moderation should be encouraged.

Physical inactivity is also increasing in Jordanians as everywhere with the changes in lifestyle that accompanied modernization leading to a sedentary lifestyle with little physical activity. The modern means of transportation, pattern of work, TV, computers, and others contribute to such pattern of physical inactivity. As shown below, about 80% of Jordanians ≥25 years of age were physically inactive with less than 10 minutes of regular exercise/day, according to the 2007 Stepwise survey.



The most recent available data on hyperglycemia, hypertension, dyslipidemia, and overweight come from a national population-based study of 5640 Jordanians conducted in the 4th quarter of the year 2009. The table below shows that the level of these conditions is alarming. Vitamin D deficiency is linked to NCDs; it was also found to be highly prevalent in Jordanian females (37.3%).

	ذكور	إناث
نقص فيتامين (د)	5.1	37.3
زيادة الوزن و السمنة	80.8	84.0
ارتفاع مستوى السكر بالدم	36.2	25.9
ارتفاع ضغط الدم	54.6	39.8
انخفاض الكوليسترول عالي الكثافة الجيد	72.2	66.0
ارتفاع مستوى الدهون الثلاثية	64.7	47.5

Vitamin D deficiency: <30 ng/ml; Overweight and obesity: BMI ≥25 kg/m^2; Hyperglycemia: >125 mg/100ml; Hypertension: > 130/85 mm/hg; low HDL: <40 in males and <50 in females; hypertriglyceridemia: > 150 mg/100ml.

Challenges:

1- Diabetes, as many other NCDs, is asymptomatic in the early stages of its course. Symptoms often develop late when the opportunity for more effective interventions had elapsed. Increasing the awareness of people of the asymptomatic nature of the disease and of the seriousness of late diagnosis are needed in an effort aimed at “down staging” of the disease at the time of diagnosis. Physicians have also to be educated so as not to miss the opportunity of early diagnosis through medical screening of their patients.

2- The impact of interventions taken today against DM and other NCDs will show up after many years. Therefore, political commitment is usually weaker when compared to most infectious diseases. Politicians give priority to interventions with short-term impact likely to occur during their term rather than to interventions with long-term impact likely to happen during their successors’ terms. The swine flu epidemic clarifies this point very well.

3- Lack of coordination of efforts to prevent and control diabetes and other NCDs. Within the public medical sector, limited coordination exists between the different levels of care. There is a need for an efficient bidirectional referral system between primary, secondary, and tertiary levels of care. Integration of diabetes into PHC is an important issue to consider in this regard. The role of the private health sector is not well-characterized but joining efforts should be ensured.

It has been rightly said that most of the effective interventions against NCDs lie outside the health sector. Unfortunately, cooperation and coordination between the health sector and various governmental and nongovernmental ministries and agencies are not satisfactory. The health sector had traditionally claimed exclusive authority over health matters in the country and was reluctant in joining forces with all concerned. As the current epidemic of NCDs is beyond the capacity of the health sector to overcome alone, strengthening coordination with all concerned partners and recognizing their role is critical for success against these diseases. There is a need for radical changes in our thinking and approach against NCDs. There is no point in talking about multisectoral cooperation without recognizing the vital role of all these sectors.

4- The political instability in the region and its consequences for Jordan are among the important issues that may impede progress against diabetes and other NCDs. National security comes first and everything else should be next.

5- The global financial crisis may limit the resources allocated to health particularly those provided by international donors.

Strengths and opportunities:

1- With the high and increasing prevalence of diabetes, the strong evidence for availability and effectiveness of interventions against diabetes, and the sensitization of the public in support for action, the government seems to be determined to face the challenge. H.E. the minister of health

requested from H.E. the president of the NCDEG to lead the effort of developing a national strategy and action plan to tackle the problem of diabetes in Jordan.

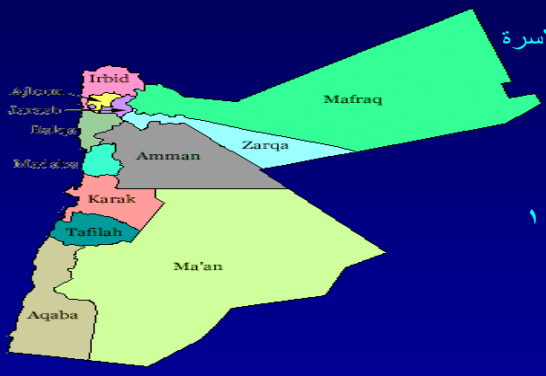
2- The health infrastructure and human resources are sufficiently developed to meet the expectations with reasonable increase in resources and appropriate re-organization and re-orientation of the health system. Most Jordanians are within 30 minutes drive from a public health facility and over 70% of the population is covered by health insurance.

Private health care is largely concentrated in major cities and Royal Medical Services largely focus on curative care in secondary and tertiary facilities. UNRWA provides primary health care services to Palestinian refugees. The number of physicians, nurses, pharmacists, and dentists per 1000 population in 2009 were 2.45, 3.9, 1.41, 0.73, respectively.

3- The literacy rate in Jordan is among the highest in the region exceeding 93%. Television sets including Satellite services are available for the vast majority of the population. Cellular phones are possessed by most residents. Educational messages, therefore, can easily reach the population.

4- The impact of Implementation of the strategy against diabetes extends to other NCDs, namely, hypertension obesity, dyslipidemias, and cardiovascular disease; these conditions share the same risk factors.

المستشفيات والمراكز الصحية في الأردن، ٢٠٠٩ (بالإضافة لخدمات الرعاية الصحية المقدمه من وكالة غوث اللاجئين الفلسطينيين والعيادات الخاصه):



	عدد المستشفيات	عدد الاسرة
• **المستشفيات**		
• وزارة الصحة:	٣٠	٤٣٥٨
•ألخدمات الطبيةالملكية:	١١	٢١٣١
• الخدمات الطبية في الجامعات 2		١٠١٣
• القطاع الخاص:	٦١	٣٨٣٥
المجموع	**١٠٤**	**١١٣٥٥**

•**المراكز الصحية**	
• مركزصحي شامل:	٧٠
• مركز صحي أولي:	٣٧٨
•مركز صحي فرعي	٢٣٦

Vision:

"All partners are committed to a population free of preventable diabetes and all diabetes preventable complications; a population in which diabetic patients enjoy high quality of life similar to their fellow citizens"

Mission:

"Advocacy for and coordination of national efforts to prevent diabetes and provide the best care for diabetic patients"

Ultimate goal:

"Reduction of the incidence of diabetes and its complications in Jordan"

Guiding principles:

i- Fighting against diabetes is a national responsibility

ii- Prevention of diabetes and care with diabetics is a human right

iii- Equity: Access to high quality services should be ensured for the poor and marginalized with no gender discrimination

iv- Community involvement

v- Multisectoral approach

vi- Empowering patients to care for themselves

The focus of the strategy:

The Strategy would focus on prevention and management of diabetes with special attention to children and adolescents.

1- Prevention of diabetes:

This can be achieved through:

a- Promotion of healthy diet for all the population: Healthy diet has been defined as follows:

1- Saturated fats constitute less than 10% of the daily energy intake, trans-fatty acids less than 1%, and free sugars less than 10%
2- Contains < 5 g salt a day.
3- Includes 400 g fruits and vegetables a day.
4- Intake of Legumes, whole grains and nuts is encouraged.
5- Achieves energy balance and a healthy weight

b- Promotion of physical activity for all the population: The recommended level of physical activity is at least 30 minutes a day of moderate intensity exercise such as walking, dancing, cycling, cleaning the house, etc. For weight control, however, more exercise may be needed.

Although healthy diet and physical activity seem to be clear, simple, and easy to implement, experience has shown that a lot of work and determination are needed to bring about a significant sustainable change in dietary habits, behaviors and lifestyle at the population level. Ample scientific evidence exists on the positive effect of healthy diet and physical activity on morbidity, mortality and disease burden of NCDs.

2- Improved management of diabetes and hyperglycemia:

Diabetes is currently defined as FBS >125 mg/dl; Levels of FBS between 110 and 125 are referred to as impaired fasting; and levels below 110 are desirable. However, many experts have been vocal in advocating that levels of FBS exceeding 100mg/dl should be considered as abnormal. Pre-diabetes in this document refers to FBS levels between 100-125 mg/dl.

Strategic directives (objectives, end results):

i- Develop and implement an advocacy plan:

1) Increase awareness of people, community mobilization
2) Obtain political support
3) Insure funding

4) Put health on the national development agenda

5) Incorporate health on all relevant programs outside the health sector

ii- Strengthen capacity:

1) Human resources

2) Facilities

3) Equipment, technology, and drugs

4) Training

iii- Policies and legislations:

1) Dietary

2) Physical activity: Schools, work places, urban planning, etc

3) Access to care

iv- Reduce the level of risk factors in the population:

1) Target diet and physical activity: Interventions are available and has to be modified to suit Jordan and will be detailed in the national plan of action. The box below is derived from the WHO document: "Prevention and control of noncommunicable diseases: implementation of the global strategy".

Promoting healthy diet and physical activity

(a) Develop and implement national guidelines on healthy diets and physical activity.
(b) Establish or update, in collaboration with the agricultural sector and other key sectors, a national policy and action plan on food and nutrition, with an emphasis on diet-related noncommunicable diseases.
(c) Establish a reliable surveillance system for nutrition, including dietary trends and patterns of household consumption.
(d) Introduce mass media, education and information campaigns in order to promote healthy diets and physical activity to the main target audiences.
(e) Create healthy school environments and youth programmes by: Annex EB122/913
• incorporating appropriate health promotion strategies into policies for schools and young people;
• introducing the promotion of healthy diets and physical activity into policies for schools and young people; actively supporting regular classes involving physical activity; including nutrition and physical activity in curricula; and providing healthy food options through food services;
• involving parents and families in school-based and youth-focused activities in support of healthy diets and physical activity.
(f) Create healthy workplace environments by:

• incorporating appropriate health promotion strategies on risk factors for noncommunicable diseases into workplace policies, including the promotion of healthy diets and physical activity;
• offering healthy food options through food services; and
• actively supporting and promoting the practice of health-enhancing physical activity during the working day.
(g) Change physical environments to support active commuting and create space for recreational activity by:
• ensuring that walking, cycling and other forms of physical activity are accessible to and safe for all;
• introducing transport policies that promote active methods of travelling to and from schools and workplaces, such as walking or cycling;
• improving sports, recreation and leisure facilities; and
• increasing the number of safe spaces available for active play.
(h) Enact fiscal policies that encourage the consumption of healthier food products and promote access among poor communities to recreational physical activity.
(i) Involve primary health care in the promotion of healthy diets and physical activity by encouraging health-care providers and facilities to make available a range of preventive services and health-promoting activities.
(j) Enact legislation to support the healthier composition of food products, by including:
• decreasing saturated fats
• eliminating industrially produced trans-fatty acids
• reducing salt levels.

2) Study the pattern of food consumption and diet in Jordan (The Mediterranean food !!)

3) Health-enhancing environment

4) Prevention to start from childhood

5) Pre-diabetes

v- Health services delivery:

1) Universal access to care

2) Shifting of health care model to a chronic model of care

3) Capacity building

4) Integration of health services

5) Management guidelines for diabetes

6) Target high and low risk population

7) Target social determinants of health

8) Empower patients to care for themselves

9) Social support networks

10) Peer support

Vi- Multisectoral approach

vii- Knowledge and information:

1) Routine surveillance

2) Identify gaps in knowledge

3) Disseminate knowledge to the public by all means

viii- Monitoring of progress and formal evaluation of programs

Draft action plan for the prevention and control of diabetes mellitus in Jordan.

Actions	Time frame	Responsible body
1- Develop a national strategy and action plan for diabetes mellitus • Establish a national high-level steering committee (NSC) chaired with a high-level person such as the prime minister or a person of such a caliber (A prince, princess, etc would be a fortunate choice). The committee should be charged with: o Overseeing the preparation and implementation of the national plan o Nominating the national technical committee (NTC) o Ensuring sufficient funding o Coordination between the different sectors and with the government o Others: to be specified	July 2010	Government and MoH
• Establish a secretariat to assist in coordination, documentation, preparation for the meetings, typing, etc	August 2010	H.E. Professor Ajlouni and the NCDEG+MoH
• Develop a draft national strategy and action plan for diabetes prevention and control	July 2010	A task force of experts lead by H.E. Professor Kamel Ajlouni
• Finalize the Strategy and action plan through: o Wide-scale national consultation of all stakeholders. o Sending the draft document to all stakeholders and inclusion of their inputs o Meetings with different stakeholders o Convening a conference in which all stakeholders are represented to discuss, modify, and approve the document o Obtain final approval from the government	July-Sept. 2010	The task force, NSC, and the NTC. The final approval should be obtained from the government
• Disseminate the strategy to all stakeholders, governmental and nongovernmental to integrate in their agendas.	October 2010	MoH, NSC
• Organizing a visibility and publicity event with the media	October 2010	NSC, MoH
• Secure the funding for the action plan from all possible resources	First quarter of 2011	MoH, NCDEG, Universities
• Establish a web page to include up –to date necessary information on diabetes to be available for different		

stakeholders including public, patients, health professionals, and researchers.		

2- Prevention of diabetes mellitus • Promote healthy diet and physical activity: ○ Prepare a comprehensive situation analysis including the size of the problem; food consumption data and trends which may be obtained from ministries of agriculture and trade, DoS, or other sources; availability, affordability, and pricing of food categories; traditional dietary patterns; social norms, beliefs, and value system; community organization, lines of authority, and influential groups and individuals. ○ Prepare national dietary guidelines and disseminate it to all concerned ○ Prepare and implement a culture-sensitive advocacy plan: ▪ Obtain political commitment and support at the highest level. Target politicians, high-level government officials and parliamentarians through information on the size of the problem of diabetes and its complications, the availability of effective interventions, the consequences of inaction, etc. Increase awareness of the population, community leaders, religious leaders, civil societies, etc to exert pressure on politicians and government officials ▪ Increase awareness of people through all means: develop educational messages, pamphlets, posters, lectures in selected places such as clubs, municipalities, societies, civil associations, mass media, messages via cellular phones, etc. Utilize community leaders, mosques, churches, teachers, artists, drama, writers, celebrities, etc to convey the message and advocate for its adoption. ▪ Educate physicians and health care workers on the prevention of diabetes and the skills to communicate with their patients and the local community. ▪ Role playing: Imitation of high-level people is prominent in our culture. The best way to convince people to walk or to ride bicycles to work is to see ministers and other high-ranking people doing the same. Similarly, the best way to bring about a change in food consumption patterns in ceremonies and occasions is to see rational behaviors by high-ranking people, celebrities, and community leaders. People value deeds not talk	First quarter of 2011 First quarter of 2011 First quarter of 2011	MoH, MoA, MoT, DoS, NCDEG NCDEG, Diabetes Society, Universities NCDEG, MoH, MoI, Journalists

particularly from highly-respected leaders. The images of Mr. Bush, the father, jogging daily on TV could not be overshadowed even by his Iraqi war. Our leaders may be ready to play such roles. They should not, and are not less patriotic than Mr. Bush ▪ Participation in and publicizing the World Diabetes Day. All stakeholders should take this opportunity to promote diabetes prevention and control. • Develop a policy framework including the necessary regulations and laws that cover all areas relevant to promotion of healthy diet and physical activity: o Diet: ▪ Food production policies: encourage production of healthy foods and discourage or sanction production of unhealthy foods ▪ Review and amend policies of food importation in favor of healthy food ▪ Tax and price controls: Over taxation of unhealthy foods to influence pricing. The aim is to make healthy choices the easier choices ▪ Marketing policies: Review and amend. Abandon marketing practices of unhealthy foods, abandon marketing of unhealthy foods to children and adolescents ▪ Labeling of food products particularly their fat and trans-fats content, caloric content, and coloring substances. National Labeling standards should be developed or updated for locally-produced and imported foods. Cheating should be strictly penalized ▪ Advertisement of foods: National standards and guidelines should be developed or updated and strictly enforced. ▪ Develop national standards for foods served in cafeterias of schools and workplaces. ▪ Licensure controls: Restaurants and cafeterias not adhering to healthy food guidelines may not be licensed or have their license temporarily or permanently withdrawn o Physical activity: ▪ Urban planning: Planning of cities should have a health component including encouragement of physical activity. MoH and concerned health agencies should be represented in all plans of municipalities. ▪ Establish play yards, parks, and gardens within reach of all city and town residents		

- Establish sidewalks and cycling lanes along as many streets as possible particularly newly planned streets
- Designation of certain car-free areas within cities. These areas should be selected in markets and shopping places. It is possible to forbid cars from entering these areas during certain hours or days, for example, in holidays, or during the night in hot areas in summer, and in the afternoon during winter.
- Disallow the parking of cars on street sidewalks.
- Abandon the prevailing practice of growing trees in street sidewalks and remove existing trees
- Forbid the use of street sidewalks for selling goods, and for restaurants and cafeterias.
- Licensure policies for streets, towers, and buildings.
- Schools: The school environment should be encouraging for physical activity:
    - Develop standards for playgrounds and sporting facilities
    - License schools that meet the standards only.
    - Develop a time-plan to transfer, rehabilitate, or get rid of existing schools that do not meet the standards
    - The school curriculum should include enough time for physical education.
    - Physical education should add to the grade point average of students. Students who excel in certain sports should have advantage in joining universities particularly in physical education.
    - Schools should encourage competition in sports between classes and with other schools.
    - Keep the school play yards available for the public after working hours and holidays.
- Workplace:
    - Time should be allocated for physical exercise, for Example, 30 minutes/day.
    - A room or hall in the workplace should be allocated for physical exercise and supplied with basic equipment (fitness

room) ▪ Home: • Whenever possible, availability of a treadmill or other fitness equipment should be encouraged. This is particularly important for women who may not be permitted to cycle, swim, or walk in the streets freely. A jumping rope should also be encouraged since it is cheap and do not occupy a space within the home. • Walking in the house garden, when available should be encouraged. Caring for trees, flowers, etc in the garden is another good opportunity for exercising. Females may find this most suitable in certain cultures.		
3- Improve management of diabetes:		

- Capacity building:
  - Human health resources
    - Assess the exiting national human resources related to diabetes and identify needs: Physicians, nurses, pharmacists, dieticians, lab technicians, podiests, etc.
    - Develop a plan to cover any existing and future shortages
    - Emphasize diabetes in medical curricula
    - Training:
      - Primary health care physicians on management of diabetes including the use of standard treatment protocol and communication skills with the patients and their families.
      - Identify training needs of all other health workers and conduct the necessary training.
      - Continuing education in the area of diabetes for all health care professional
    - Career development and motivation:
      - Develop an incentive plan for health care workers dealing with diabetes: financial incentives, scholarships, educational opportunities, etc.
  - Facilities
    - Equip primary health care centers with basic facilities to measure fasting blood sugar (Glucometer and strips)
    - Introduce HbA1c measurements in all comprehensive primary care centers.
    - Make educational materials on diabetes available in all health care centers including booklet, pamphlets, posters, etc.
  - Medications:
    - Ensure the availability of oral hypoglycemic drugs and insulin and other related medications in all levels of medical care.
- Adapt the medical system to better deal with diabetes
    - Re-orient the current system from acute care model to chronic care model
    - Integrate diabetes prevention and treatment into

primary care ▪ Define the roles of each level of medical care in management of diabetes and its complications ▪ Improve the level of coordination between different levels of care. Develop an efficient bi-directional referral system ▪ Provide medical care to diabetics through a multi-displinary team. ▪ Develop and update diabetes management guidelines ▪ Disseminate these guidelines to all concerned and train physicians on these guidelines. ▪ Empower patient and families to take care of themselves through education and counseling and encourage and train patients to self-monitor through personal glucometers. ▪ Develop a pilot program for peer support. ▪ Establishing and implementing protocols to ensure that newly diagnosed patients with diabetes are promptly educated about lifestyle changes and diabetes self-management techniques that can delay or prevent complications of diabetes; tested when appropriate for comorbid conditions, such as eye or cardiovascular disease; and involved in developing a plan to control HbA1c, blood pressure, and cholesterol. ▪ Keep records of diabetic patients in each facility and provide the necessary follow up care even at home when necessary • Screening programmes ▪ Apply screening (blood glucose testing) programmes to facilitate identification and earlier diagnosis of pre-diabetes and diabetes among high-risk groups such as those with a family history of diabetes, obesity or hypertension, and those with a history of clinically significant laboratory findings or gestational diabetes. ▪ Apply screening programmes in patients with existing diabetes for the early detection of complications such as retinopathy, nephropathy, coronary heart disease and foot problems to reduce the resulting morbidity and mortality. ▪ Educate physicians not to miss the opportunity of medical screening of patients aged more than 40 attending for other reasons and pregnant women		

for gestational diabetes • Access to the care ▪ Ensure equity in access to medical care for all diabetics. ▪ Remove health disparities in medical care. ▪ Expand civil health insurance to cover all diabetics • Recognize and support the National center for Diabetes and Endocrinology which is a WHO collaborative center to act as a National Diabetes Institute. The main objectives of the institute would be to ▪ Coordinate any national diabetes research including epidemiological studies. ▪ Develop and evaluate prevention programs and conduct diabetes related clinical trials. ▪ Provide standardized protocols for diabetes care and management of complications. ▪ Become a model training centre for healthcare professionals. ▪ Engage in education activities through the mass media and general public. ▪ Provide a reference library for all educational material.		
4. Strengthening multi-sectoral collaboration: ▪ Identify all concerned parties and build partnerships with them. ▪ Recognize and appreciate the role of all partners in the prevention of diabetes and encourage them to feel ownership of the achievement in this regard. Their role in health should be highlighted in their department plans. ▪ Include all concerned partners in all stages from planning to implementation, represent them in all committees, and invite them to attend meetings. ▪ Strengthen the participation and cooperation with regional alliances and networks (EMAN)		
5. Community involvement: ▪ Ensure community involvement in all stages of the plan. Represent them in all committees. ▪ Encourage them to identify their needs and include these in the plan ▪ Involve community leaders, religion leaders, youth organizations, civil societies, etc to support and help in the implementation of the plan.		

▪ Form support groups from the community ▪ Design and implement a community-based intervention program in selected communities as a pilot project		
6. Diabetes research ▪ Identify research priorities in diabetes ▪ Support and implement research in areas identified as priorities		
7- Monitoring and evaluation ▪ Close monitoring of progress, early identification of problems, and provision of timely corrections ▪ Periodic evaluation. This may be carried out by concerned people in the project (internal evaluation) and external evaluation by consultants not related to the project. ▪ Strengthen the surveillance system for diabetes and other NCDs to provide baseline information and ongoing data to assess progress and impact of the efforts against these diseases		