Chapter 4

The quality of diabetes care in Israel

This chapter reviews the quality of diabetes care in Israel. Diabetes care is mainly provided and co-ordinated in the community care sector. As a result of improvements made in the community care sector at large, quality of care provided to patients with diabetes has been improving in recent years, as shown by decrease in long and short-term complications. Today, quality of care appears to be good in the general population, but remains a problem in some population groups. Scaling-up and widening diabetes prevention programmes, especially amongst disadvantaged populations and some ethnic groups will be required in the context of a rising disease burden. Moreover, these population groups might also suffer poorer health outcomes than the rest of the population and may require specific tailored care. Care co-ordination and continuity, especially between the community care sector and hospital sector will also need to be improved, especially as patients with diabetes are likely to experience complications. A particular focus on diabetes co-morbidities, including mental health, will be required to move towards greater patient-centred care and better outcomes.

4.1.   Introduction

In Israel, as in many OECD countries, diabetes mellitus is a leading cause of death, is associated with significant co-morbidities, and is associated with considerable health expenditure. While the prevalence of diabetes in Israel is close to the OECD average (6.5% of the total adult population in 2009) (OECD, 2011a), trends of increasing prevalence of obesity, ageing of the population and changing lifestyles are likely to drive an increase in the future. Moreover, diabetes affects certain population groups unequally, and has become a major public health concern amongst certain ethnic groups (*e.g.* Arab-Israelis or immigrants from Ethiopia).

The landscape of diabetes care in Israel has changed considerably over the course of the last decade, mostly as a result of general improvements in the community care sector at large. Overall, data shows that health funds and governmental efforts to prevent, monitor and manage diabetes have resulted in good quality standards of care, and, in turn, in better health outcomes for patients with diabetes. Short-term complication rates, uncontrolled diabetes rates and retinopathy have been decreasing in recent years: for instance, data reported to OECD suggest that hospitalisation for poorly controlled diabetes (uncontrolled diabetes[1]) in Israel was the second lowest in the OECD in 2009 (OECD, 2011a). Nevertheless, these improvements have been unequal across the population: some population groups are more likely to be affected by not only higher prevalence rates, but also poorer health outcomes. Additionally, co-ordination and continuity of care, key facets of diabetes care, are currently weaknesses in the Israeli delivery model.

This chapter reviews the quality of care of diabetes in Israel, and forms a good disease-specific case study for some of the more general points made about Israel's health system throughout this report. For example, the chapter points out difficulties facing a central authority in ensuring quality of care and driving changes across competing health funds. Co-ordination of diabetes care across different levels of care in the health system, especially across primary and secondary care, has been a concern. Finally, diabetes is more severe in some ethnic groups. Beside genetic factors, differences in environmental exposure, lower health literacy and cultural barriers, this might also reflect inequality of access to community care and other services in selected population groups in Israel, as discussed in Chapter 3 (Box 4.1).

Box 4.1. What is diabetes care?

What is diabetes?

Diabetes is a condition where the concentration of glucose in the bloodstream is too high. Over time, This can cause serious complications, including blindness, heart attacks, stroke, kidney failure and lower extremity amputations. Once developed, diabetes is lifelong and its chronicity, complexity and rising prevalence make diabetes a challenge for any health care system and a key marker of health care quality.

There are two main types of diabetes. In type 1 diabetes, the insulin necessary to allow glucose to leave the bloodstream and enter cells is not produced because insulin-producing cells in the pancreas have been destroyed. In type 2 diabetes (formerly called non-insulin dependent diabetes or adult-onset diabetes), the body either does not produce enough insulin, or the insulin it produces is ineffective (insulin resistance). Type 2 diabetes accounts for at least 90% of all cases of diabetes. In addition, high blood sugar levels can also be observed in pregnant women without a history of diabetes. The prevalence of Gestational Diabetes Mellitus (GDM) differs from population to population: for instance, Lawrence *et al*. (2008) estimates that GDM occurs in 4-14% of all pregnancies in the United States. In Israel, a population-based study in the Maccabi health fund showed that overall, prevalence of GDM is about 6% (Chodick *et al*., 2010).

Although diabetes cannot be cured, it can generally be managed successfully. The cornerstone of management is a healthy lifestyle around diet, physical activity and non-smoking, with some patients also taking medication or injecting insulin.

What constitutes good quality care?

Diabetes is a complex, chronic condition and reaching a shared understanding of the condition between the patient and their clinical team is critical. High quality care, therefore, consists of regular reviews and assessments, tailored patient education; lifestyle management (particularly around a good diet, taking exercise and stopping smoking); monitoring and achieving blood glucose control (including self-monitoring as appropriate); monitoring and achieving blood pressure and lipids control (and estimating cardiovascular risk); antithrombotic therapy in particular patients and avoiding kidney, eye and nerve damage in all patients. High quality care also involves identifying and managing depression and other complications, referring as appropriate to specialist care.

International experience tends to show that quality initiatives have achieved substantial improvements in the processes of care (such as checking blood tests at regular intervals), but that success has been much more variable in terms of clinical outcomes (such as achieving blood glucose control). Furthermore, quality initiatives have not always benefitted particular groups such as the elderly or those of low socio-economic position, and have tended to neglect patient-reported assessments of quality, in favor of clinical measures and outcomes.

What is the burden of disease associated with diabetes?

More than 366 million people worldwide have diabetes (International Diabetes Foundation, 2011). The World Health Organization refers to this as a "global epidemic", predicting diabetes to become the seventh leading global cause of death by 2030. If not managed well, type 2 diabetes doubles the risk of heart attacks and strokes and can reduce life expectancy by eight to ten years (Franco *et al.*, 2007).

The International Diabetes Federation estimate that in industrialised countries health care costs in people with diabetes are doubled and that, globally, diabetes caused at least USD 465 billion in health care expenditures in 2011. In OECD, the cost of diabetes was estimated to USD 345 billion (IDF, 2009). Beyond health care costs, diabetes also represents significant indirect cost to the economy due to loss of productivity and greater absenteeism, as well as non-financial costs to patients and their carers. The St Vincent Declaration (1989) points to important human intangible costs caused by the disease. Diabetes requires a lifelong daily management of the disease, important changes in lifestyles and diets, daily medication (with potential side effects) and complications which can have important bearings on the well-being and mental health of individual and their families (Department of Health, 2001).

4.2. Diabetes is a growing public health threat in Israel

Although diabetes prevalence in Israel is around the OECD average, rates are much higher in specific population groups

In 2010, 6.5% of the total Israeli adult population had diabetes (either diabetes type 1 or 2); in line with the OECD average (Figure 4.1). Incidence of type 1 diabetes among those aged 0-14 years is 10.4 per 100 000,[2] which is much lower than the OECD average of 16.9 per 100 000. Other studies have reported higher diabetes prevalence rates: according to both the WHO (2011) and Danaei *et al.* (2011), diabetes prevalence rates could be as high as 10% (respectively 8.7% and 10.2% for men and women) in Israel.

However, prevalence for type 1 and 2 diabetes is particularly high amongst certain population groups and ethnic minorities. The National Programme for Quality Indicators in Community Health (QICH) reports a prevalence of diabetes as 4.7 times higher in the exempt population (as defined by exemption to copayment on medical services and prescriptions therefore at higher socio-economic disadvantage) than in the general population. Some studies have also shown that these vulnerable population groups have worst health outcomes, quality of life and develop the disease at a significantly younger age.

Figure 4.1. The prevalence of diabetes among adult aged 20-79 in Israel is around the OECD average, 2010


* Information on data for Israel: *http://dx.doi.org/10.1787/888932315602.*
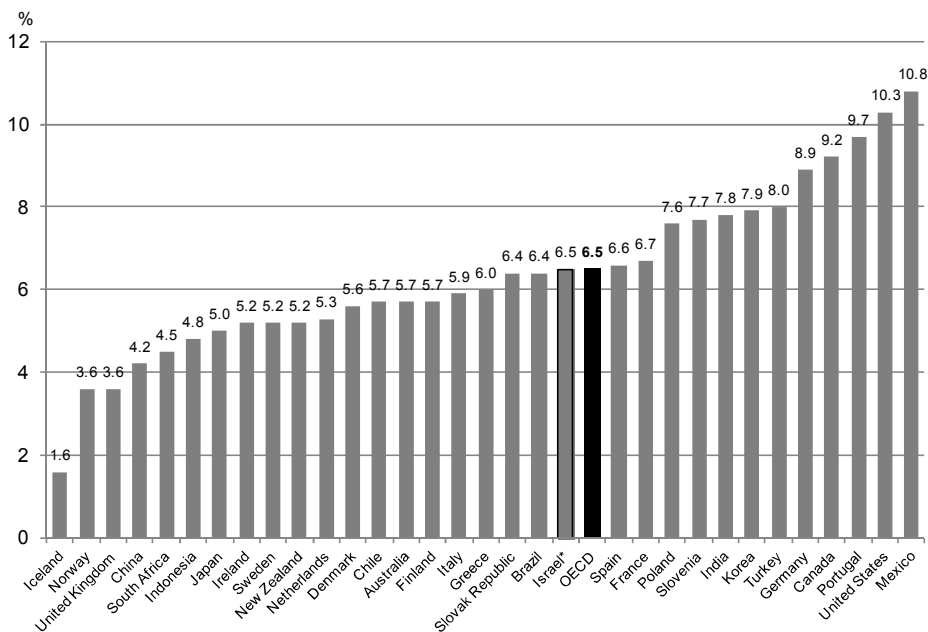
Source: OECD (2011), *Health at a Glance – OECD Indicators,* DOI: 10.1787/health_glance-2011-en; International Diabetes Federation.

For instance, prevalence of type 2 diabetes among Arab-Israelis is almost twice as high as among the Jewish population, and Arab-Israelis develop type 2 diabetes 11 years earlier than the Jewish population, on average (Kalter-Leibovici *et al*., 2011) (Arab-Israelis have lower incidence rates of type 1 diabetes than Jews). Among people aged over 45, prevalence of diabetes is consistently higher among the Arab permanent population (Figure 4.2). A disproportionate burden (relative to the overall population) is also likely to be suffered by Ethiopians immigrants.

**Figure 4.2. Self-reported diabetes prevalence is higher among Arabs
than among Jewish people in Israel, 2009**
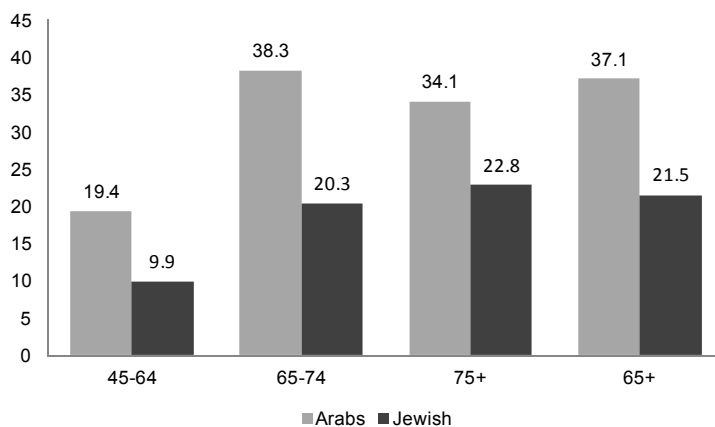
Note: The 2009 Health Survey is based on a representative sample of the permanent population of Israel, excluding those residing outside localities (Bedouin tribes) and residents of institutions (*e.g.*, retirement homes and chronic nursing institutions).

Source: Israel Central Bureau of Statistics, "Household Health Survey 2009".

Israel is likely to experience rising prevalence of both type 1 and type 2 diabetes

Type 1 diabetes in the 10-17 year group is increasing in Israel. According to Sella *et al.* (2011), there was a 5.8% annual increase in the incidence rate of type 1 diabetes between 2000 and 2008. Koton (2007) showed that the annual incidence of type 1 diabetes increased by 5.2% and 8.0% in Jewish and Arab-Israelis respectively between 1997 and 2003. The incidence of type 1 diabetes among Ethiopians was also significantly higher than for the rest of the Jewish population (Koton, 2007; Sella *et al.*, 2011). There is in general little evidence on the driving cause of rising type 1 diabetes (Gale, 2002).]

While diabetes prevalence rates at present are about OECD average, they are also likely to increase in the course of the next decades. Similarly to other OECD countries, diabetes prevalence has been rising in recent decades as a result of ageing population, deteriorating lifestyles and diets, particularly relevant for some ethnic minorities and population groups (Wilf-Miron *et al.*, 2010).

Ageing population

In 2009, 9.8% of the Israeli population was 65 years old and over, expected to reach 14% by 2030 (OECD, 2011b). The share of the very old people – *i.e.*, those older than 75 years in the population aged over 65 years increased from 39.8% in 1998 to 47.7% in 2009.

Rising obesity and overweight

According to OECD data, the prevalence of obesity in Israel was 13.8% of the total adult population, in 2009, below the OECD average of 16.9%. Nevertheless, some studies have reported higher obesity rates in Israel. For example, the WHO (2011) estimates obesity rates as high as 26.2% of the total Israeli adult population, based on a survey on health and nutrition conducted in 2003-04 (face to face interviews). Another study by Finucane *et al.* (2011) shows the mean BMI for men and women being respectively 27.1 kg/m² and 27.3 kg/m². Obesity and overweight have risen in recent years and is likely to continue to rise, due to changing lifestyles and diets, especially among certain population groups. For instance, Kalter-Leibovici *et al.* (2011) estimate that obesity rates among Arab-Israeli women reach 54.8%, against 34.1% among Jewish women. Only 23% of Arab-Israeli women declare to have a regular leisure physical activity, against 51.6% of Jewish women.

Overweight and obesity prevalence rates in children are currently low but on the rise. Janssen *et al.* (2005) showed that 9.3% of children were overweight, one of the lowest rates among the group of 34 countries reviewed. Nonetheless, in 2005, Israeli adolescents ranked first in consumption of soft drinks, and also time spent in front of the television or computer. Physical inactivity and unhealthy diets are also more likely to be prevalent in certain population groups, including Arab teenage girls: 60% of Arab-Israeli teenage girls were reported to watch more than three hours of television on regular week-days (Janssen *et al.*, 2005).

4.3. Despite good health promotion and prevention, efforts to tackle risky behaviour should be scaled up and widened in focus

Diabetes is a well-characterised condition, with documented risk factors and comprehensive clinical guidelines and protocols developed over the past decades. As in other OECD countries, programmes to reduce the risk of onset of type 2 diabetes through general health promotion campaigns have been implemented in Israel in recent years (Box 4.2).

Box 4.2. The National Programme for Promoting an Active and Healthy Lifestyle

The National Programme for Promoting an Active and Healthy Lifestyle is a cross-governmental programme defined by the Ministry of Health, the Ministry of Education and Ministry of Culture and Sports to promote active and health lifestyles, with a particular focus on child obesity. To monitor the implementation, a cross-governmental committee was formed, working with local authorities (municipalities), the four health funds and the private sector. The Ministry of Health acts as the steward of this initiative, and has allocated NIS 26 million in 2011 to the programme.

The three areas of work for this joint co-operation across governments are the following:

- *Increase awareness of lifestyles risks:* marketing awareness in schools and workplaces by trained "health promoters" employed by health funds.

- *Building of public infrastructure supportive of healthy lifestyles:* including sports infrastructure in schools, cycling roads and walking alleys. As part of this initiative, a pilot programme was launched in 75 schools to provide healthy delivery of meals (limitation of products available in vending machines and cafeterias), promote physical activity among children and increase awareness through education programmes.

- *Implementation of disincentives to products which are considered harmful* (*i.e.* accurate marking and labelling of food, taxation of products with little nutritional value, etc.) and *incentives for local authorities or health funds to undertake health promotion initiatives*. For instance, financial incentives could be provided for health funds which will develop individual counselling activities, as well as prevention and treatment of obesity programmes.

Israel has put two commendable programmes to prevent obesity and promote healthy lifestyles. The National Programme for Promoting an Active and Healthy Lifestyle and Healthy Israel 2020 have been designed as multi-level strategies involving health funds, ministries and local communities. One impressive achievement of these programmes was the adoption of regulations on reduction of salt and sugar levels in industrial products, as well as better marking of ingredients and nutritional value. According to recent works of the OECD on prevention of obesity, food labeling is widely regarded as a cost-effective intervention to tackle overweight and obesity (OECD, 2010).

Nevertheless, most of the interventions are only currently piloted at the local level, and there is a risk that efforts to tackle unhealthy food habits and obesity may not be scaled-up at national level, or might remain unco-ordinated across sectors and levels of government. In the absence of a co-ordinated plan of action or of remedies for inaction – whether through compulsion, fiscal incentives or other sticks and carrots measures, isolated

strategies at the local level and initiatives left to the good will of individual organisations and health funds are likely to have only marginal impacts on the lifestyle and health of the population.

Moreover, most of the efforts seem to be directed to prevention of obesity and health promotion among children, especially in schools, leaving interventions in the workplace and counseling in primary care out of the scope of the current strategy. Nonetheless, these interventions have been identified as very powerful in driving changes among the adults, and in families. In its intensive form (with specialist and primary care consultations), counseling by health professionals is effective in reducing the total energy intake from fats by 10% (OECD, 2010). The impacts of such interventions are likely to be amplified when implemented alongside other interventions, such as food regulation, worksite intervention and mass media campaigns. These combined interventions are more cost-effective than treatment routinely provided by health services. For instance, a comprehensive multi-level intervention package would only cost USD 21 per person per year in Western Europe (OECD, 2010).

Another efficient use of limited available resources would be to work with specific population groups, known to present important risk factors. This is especially relevant to the case of Israel, as obesity is more prevalent in specific and identified population groups for which intervention programmes can be limited by important cultural and linguistic factors. For instance, Arab-Israeli women have been shown to be more at risk of developing type 2 diabetes as a result of lack of physical activity, sedentary lifestyle, and possible genetic propensity towards diabetes. Some local initiatives, such as walking groups for Arab-Israeli women, have proved popular in some localities, and should be further supported. Culturally appropriate lifestyle interventions give good results, too. For instance, an intervention targeted at obese Arab-Israeli women combining counseling sessions (group and individual) with a specialist dietician and physical activity group sessions has shown to have been successful in reducing risk factors associated with diabetes (Kalter-Lebovici *et al.*, 2010). Defining and implementing a tailored action plan in targeted communities could harness the benefits of a nation-wide health promotion programme, especially among adults. This must be done in partnership with the population groups meant to benefit, to ensure that the initiatives are relevant and acceptable, and be accompanied by rigorous evaluation, to ensure effective use of public funds.

4.4. Secondary prevention and diagnosis of diabetes strategies in Israel are in line with current international standards

Gestational diabetes is tested in all pregnant women at mild-to-moderate risks around weeks 24-28 of pregnancy, in line with the experience of other OECD countries and research literature. Identifying gestational diabetes at early stages of pregnancy can reduce the risks of prenatal death, neonatal complications, fetal overgrowth, caesarean delivery, and hypertensive disorders. Pre-natal consultations could suitably identify women at risk for screening, as risk profiles for gestational diabetes (overweight or obesity, previous or familial history of impaired glucose fasting or type 2 diabetes) have been well defined (Ducarme *et al.*, 2008).

Most adults are diagnosed with type 2 diabetes through general blood tests, which seem to be part of regular health check-ups in Israel: for instance, in 2009, 73% of the adult population in Maccabi had at least one fasting glucose result in their medical file. In Maccabi, if patients are diagnosed with abnormal blood glucose tests, they are offered a second test to diagnose diabetes. In Clalit, patients with abnormal results are offered 14 sessions with a dietician for lifestyle modification; and closely followed by their co-ordinating doctor.

In general, under-diagnosis of type 2 diabetes is unlikely to be a major concern, given the regular use of blood tests of the Israeli population. Recent debates and studies have shown that universal screening for adults could be resource consuming, while improving very little diabetic patients health outcomes. Simmons *et al.* (2010) show that the research on the impact of universal or targeted screening have concluded on mixed results: screening for type 2 diabetes seems to be neither cost-effective neither significantly beneficial for patients under treatment. Given the recurrence of blood tests in Israel, such an approach will be even less suitable. Simmons *et al.* (2010) also show that if diabetes screening per se is not cost-effective, it can be embedded in a broader screening for conditions such as cardiovascular disease and should include a more comprehensive health assessment of risk factors for other chronic conditions.

4.5. Israel has good measurement of quality of diabetes care, but co-ordination of care for diabetic patients can be improved

Israel measures of diabetes care in the community show improvement over time but also disparities across population groups

The National Programme for Quality Indicators in Community Health (QICH) is one of the largest programmes to measure quality of primary and community care across OECD countries. With regards to diabetes,

indicators developed within the programme are similar to those used in the Quality and Outcomes Framework in the United Kingdom and intend to measure both process and outcomes (Table 4.1). The National Comprehensive report produced in 2010 shows that quality of care for diabetic patients appears good and has been improving in recent years.

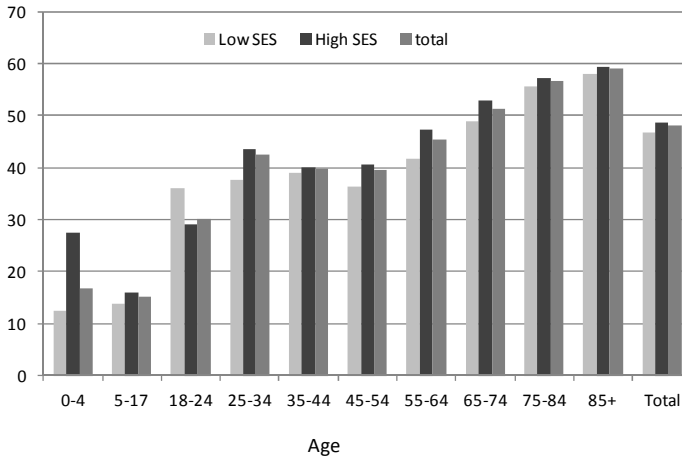**Table 4.1. Quality indicators in community health indicators for diabetes in Israel, 2009**

| QICH indicators (diabetes)	2009
Percentage of individuals with diabetes mellitus with a record of hemoglobin A1c (HbA1c)	92.30%
Percentage of individuals with diabetes mellitus with HbA1c less than or equal to 7.0%	48.00%
Percentage of individuals with diabetes mellitus with HbA1c greater than 9.0%	12.90%
Percentage of individuals with diabetes mellitus with HbA1c greater than 9.0% who purchased insulin	53.10%
Percentage of individuals with diabetes mellitus with a record of low-density lipoproteins (LDL) cholesterol testing	90.40%
Percentage of individuals with diabetes mellitus with low-density lipoprotein (LDL) cholesterol levels less than or equal to 100 mg/dL	65.60%
Percentage of individuals with diabetes mellitus who had an eye examination	64.30%
Percentage of individuals with diabetes mellitus with a record of microalbumin levels	74.30%
Percentage of individuals with diabetes mellitus ages 5+ years who received an influenza immunization	55.00%
Percentage of individuals with diabetes mellitus and a record of blood pressure	91.90%
Percentage of individuals with diabetes mellitus ages 18+ years with blood pressure less than or equal to 130/80 mm Hg	68.60%
Percentage of individuals with diabetes mellitus ages 18+ years with a record of body mass (BMI)	83.60%

Source: Manor O., A. Shmueli, A. Ben-Yehuda, O. Paltiel, R. Calderon and D.H. Jaffe (2011), *National Program for Quality Indicators in Community Health in Israel. Report for 2007-2009,* School of Public Health and Community Medicine, Hebrew University-Hadassah, Jerusalem.

With regards to process indicators, there is some evidence that quality of diabetes care has been improving since 2007. For instance, the percentage of individuals with diabetes mellitus with a record of HbA1c in the past year reached 92.3% in the past year and 90.4% of individuals with diabetes had a record of an LDL cholesterol test during the measurement year. Improvements are also noteworthy in blood pressure and eye examination, although the latter is lower in older age groups, where the risk of developing blindness is the highest.

Glycemic control, as defined by the measure "percentage of individuals with diabetes mellitus with HbA1c (a measure of blood glucose control over the past three months) less than or equal to 7.0%", has been stable over the three years of measurement. In 2009, according to this measure, 48% of patients achieved glycemic control (Figure 4.3)

Figure 4.3. Almost half of all patients with diabetes mellitus have HbA1c level less than or equal to 7.0% in Israel, 2009

SES: socio-economic status.

Source: Manor O., Shmueli A., Ben-Yehuda A., Paltiel O., Calderon R. and D.H. Jaffe (2011), *National Program for Quality Indicators in Community Health in Israel. Report for 2007-2009,* School of Public Health and Community Medicine, Hebrew University-Hadassah, Jerusalem.

In recent years, an important body of literature has built up around the importance of control of blood glucose levels to reduce the risk of cardiovascular disease and microvascular complications. However, levels of appropriate blood glucose (HbA1c less or equal to 7%) applied in such quality measures have been widely debated. Such tight control of blood glucose levels can be hard to achieve in the general population, as patient treatment options or history and severity of the disease can influence the ability of providers to achieve glycemic control. Currently, one of the goals of the QICH programme is to define sub-group specific HbA1c to evaluate quality of monitoring and appropriateness of treatment (Jaffe *et al.*, 2012). In the UK's Quality and Outcome Framework, similar indicators are used to measure quality of diabetes care: the target rate for the percentage of patients with a level of

HbA1c less than 7.4% has been defined at 50% (in order not to penalise physicians for dealing with complex patient conditions).

An additional measure of quality of diabetes care is the percentage of patients with uncontrolled diabetes, as measured by the indicator "percentage of individuals with diabetes mellitus with HbA1c greater than 9.0% (Figure 4.4)". In Israel, 12.9% of individuals had poor glycemic control, according to this measure. It is worth noting that this rate has been decreasing over the past three years – but is more prevalent among low socio-economic status (SES) populations. The share of patients with poor glycemic control receiving insulin therapy has increased from 44.8% to 53.1% from 2007 to 2009. Nevertheless, access to medication and services could further be improved: medication costs for diabetic patients are capped at USD 70 per month, which can represent a considerable financial burden for patients. Additionally, patients with diabetes are not exempted from co-payments for consultations with specialists in the community, which can have important impacts on access to care, but also compliance and outcomes of patients.

Figure 4.4. Low socio-economic groups have slightly higher percentage of individuals with diabetes mellitus with HbA1c greater or equal to 9.0%, 2011
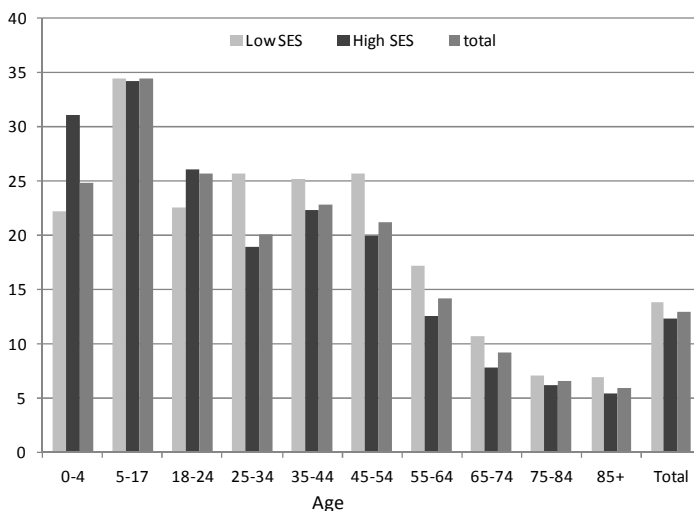
SES: socio-economic status.

Source: Manor O., A. Shmueli, A. Ben-Yehuda, O. Paltiel, R. Calderon and D.H. Jaffe (2011), *National Program for Quality Indicators in Community Health in Israel. Report for 2007-2009,* School of Public Health and Community Medicine, Hebrew University-Hadassah, Jerusalem.

Another measure of quality of diabetes care is the rate of vaccination for influenza. Epidemiological studies showed that diabetic patients, especially those with end stage renal disease or cardiovascular disease (and those with abnormalities in the immune system), are at higher risk of death from influenza and pneumococcal disease (American Diabetes Association, 2007). Vaccination rates appear to be higher among older population (those aged 85+) but could be improved by more widespread vaccination campaigns.

Overall, the QIHC programme suggests that quality of diabetes care is improving over the years. Nevertheless, other epidemiological studies (Israel Central Bureau of Statistics, 2003-2004) show that there might be large inequalities of care and outcomes among the population, especially for some specific population groups. The measure of socio-economic status is informative to capture large differences in health care quality across the population, but might give little insight to policy makers to better target initiatives to specific groups in need, presenting risky lifestyles or genetic propensity towards developing diabetes. Disaggregating these data (especially those collected by the QICH programme) geographically or by language (rather than based on ethnicity) at the level of regions can provide information on where improvements in care can be achieved, and inform targeted programmes in the community.

Health funds have developed important patient education and empowerment programmes for diabetic patients; patient associations could play a stronger role

Patient education and empowerment is a critical component of diabetes management and role of health professionals, as diabetes is a self-managed chronic disease. Patient education is an on-going process, which needs to be adapted to changing patient needs, lifestyles, treatment and health outcomes. Over the past decade, a body of clinical procedures and protocols on management of diabetic patients and patient education; mostly applied to primary care. Such protocols have been defined by health funds in Israel.

Currently, patient education and empowerment is provided through patient training courses and counselling sessions organised by Health funds to improve health literacy, lifestyle habits and self-management skills (including home glucose monitoring). In Clalit, patient empowerment was placed as a central piece of diabetes care in the *Diabetes in the Community* programme (see Box 4.3). Patient education and empowerment programmes included distribution of educational materials in three language and healthy lifestyle workshops. More targeted initiatives have taken place in the specific population groups with culturally appropriate materials, such as among Ethiopians and Arabic insurees (included visits to the community of integrated

teams for severely ill patients and distribution of translated cook books for healthy food based on traditional Arabic cuisine). In Maccabi, training courses are being organised for voluntary patients, combining individual counselling and group education sessions organised with 15 other diabetic patients to share on their experience. Each patient diagnosed with diabetes can enrol in ten group discussion sessions. Maccabi has also put in place frequent "Diabetes mornings" in larger clinics at the regional level, during which patients can consult with a dietician and nurse for individual counselling, as well as perform a blood and eye test.

Although the two main health funds have put patient education and empowerment at the heart of the organisation of diabetes care, by organising group and individual sessions, and providing supporting materials and training courses in Hebrew as well as Russian, Arabic and Ethiopian. However, the frequency and take-up and effectiveness/impact of such initiatives is unknown and currently not monitored by health funds. For instance, discussion with the NGO Tene Bruit suggests that Ethiopian populations do not benefit widely from these interventions. The NGO has set up a telephone line with community health workers and doctors proficient in Ethiopian to provide more information on self-management, and as also organised health fairs to promote changes in lifestyles, especially with regards to healthy diets. Finally, patient education and empowerment should be individual tailored interventions, from a lifecycle perspective. Such an approach could be promoted by greater involvement of patient associations, absent in Israel. The Israeli Diabetes Association, mainly composed of medical professionals, and researchers, plays a limited advocacy role in the community, as its main activities are targeted to medical professionals' knowledge and awareness.

The development of patient associations can be a positive step towards care, particularly around shared decision making and management. In other countries, such groups have been instrumental in delivering patient education, advocating for patients' needs and liaising with health funds, pharmaceutical companies, clinicians and other stakeholders to ensure high-quality care. This development would be especially relevant in the context of a fragmented ethno linguistic country where concerns over inequalities in access are important, such as Israel.

Box 4.3. Clalit: Diabetes in the Community

The *Diabetes in the Community* programme was launched in 1995 by the largest health insurance fund Clalit (managing care for 75% of the nation's diabetic patients). Under the programme, a diabetes management system was implemented in all Clalit primary care clinics nationwide. Care co-ordinators (of whom 80% were nurses) were appointed in every clinic, alongside a team with a primary care physician, a diabetologist, dietitian and health educator working together for a given number of diabetic patients.

As part of the initiative, Clalit developed disease registers to follow diabetic patients, clinical pathways, clinical guidelines adapted to primary care, and continuous medical education programmes. These have been available almost yearly since 1995 and tackle different topics related to diabetes management, ranging from prevention to care for complications (Goldfrach and Porath, 2000). Rather than applying a national standardised programme, *Diabetes in the Community* aimed at increasing co-operation between clinics and with other levels of care within districts, leaving districts the necessary margins for maneuvers to organise the programme at the local level.

For instance, in the Tel Aviv-Yaffo district, 45 community clinics were appointed to participate to the *Diabetes in the Community* programme, in which one primary care physician and nurse where appointed in each facility. The programme consisted in three steps. Firstly, a lead team composed of a diabetologist, a dietitian and specialised diabetes nurse to provide a three-day course to train appointed physicians and nurses on the use of special management tools specifically developed by Clalit (including follow-up care, care co-ordination and more medical training of management and care of diabetes). The appointed physicians then in turn gave a three-hour lecture on the interventions and the lessons from the three-day course to all physicians working in the clinic (Stern *et al.*, 2005). Finally, the lead team responsible for education at the district level and the appointed physicians and nurses from the community carried out a series of consultations with patients defined at high risk (high blood glucose levels) on disease management and lifestyle modifications. These consultations were carried out over the course of two years, with about four months intervals (Stern *et al.*, 2005).

An evaluation of the programme between 2000 and 2002 showed that not only the quality of diabetes improved, but also the participation in the programme: the number of diabetic patients seeking care in the appointed clinics and supported by the initiative increased by 7% in two years. Care did not improve only for patients with poorly controlled diabetes (with HbA1c greater than 8.5%), but for all patients. The share of patients with uncontrolled diabetes decreased from 27% to 19%, while the share of patients with good control (HbA1c less than 7%) increased from 38% to 50%. This improvement trend has also been confirmed in Goldfracht *et al.* (2011), which followed diabetic patients over 12 years and showed considerable improvements in quality of care in all indicators.

These positive results are nonetheless to be analysed in a context of improvements in quality of diabetes care in the community nationwide as a result of general political and financial commitment of health funds and the Ministry of Health. Nevertheless, they show that well structured comprehensive programmes tackling both patients empowerment and physicians education and co-operation between clinics at the local levels can significantly improve management of diabetes.

Continuity of diabetes care in primary care has improved with efforts to improve community care in Israel …

The recent reforms of the Israeli health care system have put primary care as a pillar of new approaches to patient-centred care. Continuity of diabetes care, *i.e.* support of diabetic patient with a stable team and site of care, has been considered one of the key factors for achieving positive health outcomes among diabetic patients (Mainous *et al.*, 2004; Gulliford *et al.*, 2004).

With the expansion of geographic coverage of clinics and availability of primary care services, continuity of care with a provider or a group of providers has improved significantly. The current organisation of care relies on care co-ordinators or primary care physicians to perform a wide range of tasks from diabetes prevention and health promotion to management of diabetes for the majority of the population. For instance, in Clalit, a survey showed that 80% of diabetic patients were cared by primary care physicians only (Goldfracht *et al.*, 2005). In the two main Health Funds, diabetic patients are usually enrolled in a patient list and are assigned a diabetes management team upon diagnosis.

The quality of continuity care has also improved as a result of development of clinical guidelines Comprehensive clinical guidelines have been developed by health funds based on guidelines from the American Diabetes Association, NICE and the Israeli Diabetes Association. In 2010, a meeting of 50 diabetes experts has reviewed and updated all clinical guidelines developed by Clalit, subsequent to which the revised guidelines were sent personally to all nurses and doctors in the network. Clalit has also organised a periodical Continuous Medical Education (CME) programme specialised in diabetes care, in the form of a one-day training. The CME sessions have been last organised in 2010, and were attended by 3 000 physicians and nurses. They tackled a breadth of topics from diagnosis and prevention to patient compliance to treatment. While this is a strong programme of CME, such a systematic approach to CME with regards to diabetes might not be available to all physicians across the health care system. The development of clinical pathways and procedure, and organisation of CME and training workshop by each Health Plan should be made available to all physicians, and therefore could be more closely monitored by national organisations such as the Israeli Diabetes Association.

There has also been evidence of innovative practices developed by health funds on the combined use of electronic medical records (EMR) and quality indicators developed under the QICH programmes. Primary care physicians therefore use EMRs not only as quality measurement tools, but also as a management tool for patients with recorded chronic conditions. In the case of diabetes, the QICH focuses on 12 indicators including measure of level of

Hba1c, eye exam within the last year, blood pressure monitoring or BMI control. These indicators are also used by physicians to develop a comprehensive follow-up care system by sending reminders on patients who fall short on some quality indicators, and identify patients at risk of complications.

… but larger efforts should be undertaken to improve care co-ordination

While continuity of community care has improved significantly in recent years, co-ordination of care between different levels of care remains one of the weaknesses of the current organisation of diabetes care. Poor care co-ordination is a particularly prominent feature observed across the Israeli health care system (see Chapter 2), especially for three out of four health funds for which patient files are not harmonised across primary, hospital and post-acute care.

In the case of diabetes, more concerning is the absence of information on transferability of patient files between primary care and hospital settings. For instance, there is currently no information on patient care post-discharge in the case of acute complication, and on use of patient files in hospital settings. While patient EMR are shared between providers in community care, efforts should be undertaken towards ensuring that EMR can be accessed and modified at all points of care.

Referrals to specialist diabetes clinics can also be extremely important in the management of diabetes for complicated cases, as multidisciplinary teams can provide comprehensive care and lifestyle advice in accordance to patients' needs. This is especially relevant for foot examination, for which quality of care is not currently being monitored through the QICH data (see Section 4.6), even though foot examinations are carried out by trained nurses at the primary-care setup. Finally, similar to the situation in other OECD countries, Israel also faces the challenge of co-ordination across sectors, including the health and social care sector, the latter being an important source of provision of health care for diabetic patients (especially older age patients).

## 4.6. Israel should step up efforts to manage diabetes complications and its co-morbidities

Care for diabetes could be improved by focusing on patient groups most at risk of complications and implementing targeted incentives schemes for providers and patients

As diabetes is a chronic condition and requires lifelong treatment and monitoring of care, some patients will be at risk of experience complications

directly related to daily management of the condition. There is no comprehensive data on development of complication and general health status of patients with diabetes in Israel. Common long-term complications of diabetes include blindness, lower extremity amputations and end stage renal failure, which are not systematically recorded in Israel.

Blindness and lower extremity amputation rates are the frequent macro- and micro-vascular complications directly related to inadequate management of blood glucose levels. Israel ranks amongst one of the highest in lower extremity amputation rates across the OECD (Figure 4.5) with more than 16.9 per 100 000 population while the OECD average is 11.4 per 100 000 population.

Figure 4.5. Israel has high lower extremity amputation rates compared to other OECD countries, 2009 (or latest year available)

* Information on data for Israel: http://dx.doi.org/10.1787/888932315602.
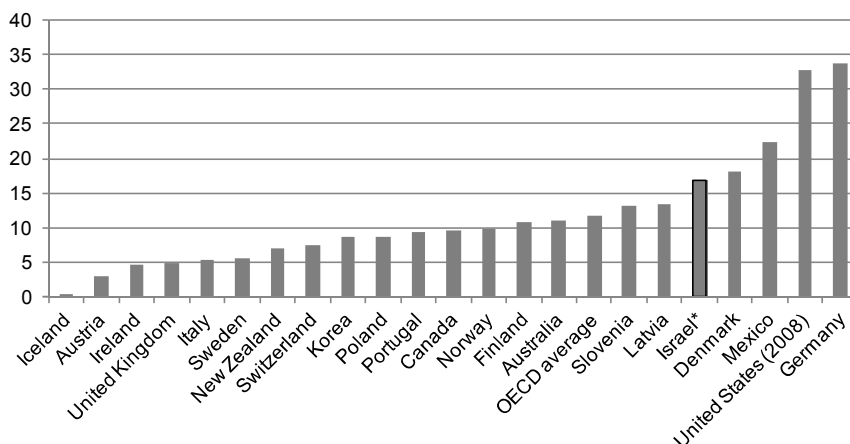
Source: OECD Health Data 2011, DOI: 10.1787/health-data-en.

Blindness is also considered quite high, affecting 1.6% of diabetic patients, and remaining the main cause of blindness for people aged between 41-65 years old in Israel. Nonetheless, blindness amongst diabetic patients has dropped from a high 5 per 100 000 in 1999 to less than 3 per 100 000 population in 2008. This is in line with the decrease in blindness which has been observed in the country for several decades (Skaat *et al.*, 2012).

Finally, the high incidence of end stage renal disease (ESRD) further supports the evidence that more attention should be paid to patients at risk of

complications. End stage renal failure invariably translates into a need for lifelong renal dialysis or transplant, and higher mortality. Increase in dialysis prevalence rates was driven by an increase in ESRD among diabetic patients (threefold increase between 1989 and 2001). In 1989, diabetes accounted for only 19% of all ESRD, but it reached 41% in 2001 (Figure 4.6). Prevalence is higher among older men than women – with 10.8 per 1 000 diabetic patients for men aged over 75 years (compared to a low 2.2 per 1 000 for women). Data on incidence of ESRD for all cause from Calderon-Magalit *et al.* (2011) show an increase in incidence in most countries, with Israel rate being one among the highest in the world. Yet, recent data from the Israeli Center for Disease Control (2011) show that, despite an increase in the incidence of ESRD for all cause since the beginning of the 1990s, the rate has remained stable since the beginning of the 2000s.

Figure 4.6. Age-standardised and prevalence rates (per 100 000 population) of diabetes related end stage renal disease is rapidly increasing in Israel
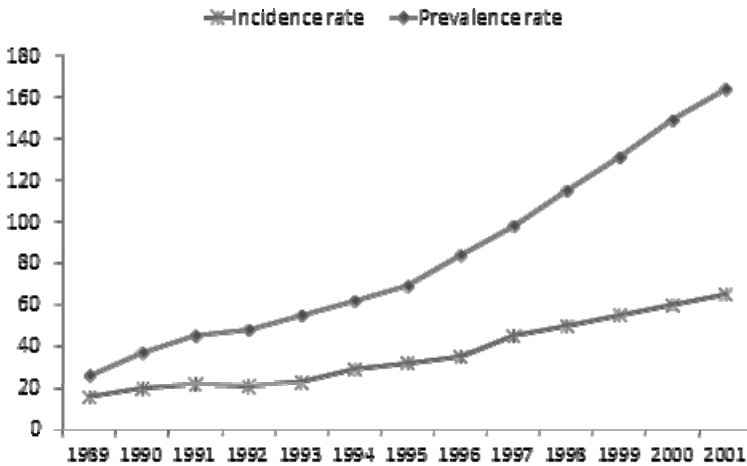
Source: Adapted from Kalderon-Margalit, R., E.S. Gordon, M. Hoshen, J.D. Kark, A. Rotem and Z. Haklai (2008), "Dialysis in Israel, 1989-2005 Time Trends and International Comparisons", *Nephrology Dialysis Transplantation*, Vol. 23.

This increase is particularly concerning as the availability of kidney transplantation is still a sensitive issue in Israel. Since 2002, about 150 kidney transplants were on average performed each year (with the exception of 2011 with 242 transplants) (Israel National Transplant Center, 2012). In the absence of transplantation option, patients with ESRD experience lifelong dialysis and ultimately high mortality rates.

These data altogether show that there could be improvements in management of diabetes complications. For instance, the inclusion of an indicator on foot checks in the QICH is recommended, in addition to the definition of clinical standards and guidelines in relation to foot care. In 2009, the Nursing Administration in the Israeli Ministry of Health and the National Council on Diabetes issued recommendations for foot checks by nurses working in the community. Nevertheless, more comprehensive guidelines including patient education on self-care and detection of foot abnormalities (such as dry skin, pain and regular self-examination) should be issued and disseminated widely across health funds.

High prevalence of retinopathy should also be addressed: retinal examination appears to be not only lower than in other countries (64.3% of total diabetic patients, vs. 90% in the United Kingdom), but also particularly low for strands of the population most at risk of developing cataract and blindness: retinal examination appears to be less and less often performed for patients aged over 75 years old, with only about 50% of patients aged 85 or over receiving such an exam. This is especially surprising given that this pattern is not observed across any other indicator in the QICH, as elderly tend to receive as much care and checks as the rest of the population (except for BMI and blood pressure measurement). Retinal screening is a widely accepted clinical practice in other countries to prevent visual impairment potentially leading to blindness, therefore an important component of quality of diabetes care (Cuadros *et al*., 2009). Policies seeking to achieve higher eye examination should be pursued for the total population, and more specifically target elderly, especially those in lower socio-economic groups for which eye examination rates drop to a low 48%. In other countries, the use of retinal cameras and digital photography to screen for retinopathy, even at early stages of the condition, has proved to be an efficient way by which screening rates could be improved (Massim *et al*., 2003; Cuadros *et al*., 2009).

Indicators currently collected could be combined to develop more patient-centred measures of quality of care, for instance by identifying patients falling short on several targets.

More generally, these indicators should be interpreted with caution. As micro-vascular complications leading to foot amputation, blindness or end stage renal failure typically develop over the course of a few years up to decades, they do not necessarily reflect the quality of care as currently delivered today, and are likely to document shortfalls in diabetes care in previous decades (especially prior to the recent introduction of the QICH and primary care developments in the health funds). Nevertheless, quality of care might improve further if providers were to face additional incentives to diagnose and better manage such complications, in low SES and elderly patient groups.

Renewed effort is needed to successfully manage complex patients in the community, whose outcomes fall short of agreed quality thresholds. This requires Israel to re-examine provision of specialist support available physicians working in the community and explore the potential for innovative service models at the interface between acute hospital care and ambulatory care. This might involve the use of targeted, results-based, incentive schemes, for both clinicians and patients.

Greater attention should be paid to the identification and management of the multiple additional morbidities that often co-exist in diabetic patients

Currently, efforts have focused on monitoring indicators directly related to identifying and managing diabetes, most notably keeping the H1bAc at controlled levels. Nevertheless, there is a scope to improve the care for the multiple co-morbidities that diabetic patients face. Even for patients with appropriate blood glucose level, diabetes triggers important metabolic changes beyond insulin secretion and sensitivity. Diabetes patients are two to three times more sensitive to cardiovascular disease or pneumococcal diseases. There is currently no information on the share of diabetic patients with coronary heart disease, stroke or Transient Ischemic Attack, or mental health problems, while cardio and cerebrovascular diseases are the main causes of death of diabetic patients. The presence of co-morbidities can interfere with compliance with diabetes treatment, and have a negative impact on patient outcomes.

Diabetes can also have a significant impact on mental health in all people with diabetes, more at risk of experiencing severe depression (Lustman *et al*., 2000; Nichols *et al*., 2003; Goldney *et al*., 2004; Schram *et al*., 2009). Poor mental health status and well-being can be an additional obstacle to effective self-management and treatment adherence. In addition to diagnosing mental health problems amongst diabetes, psychological support provided alongside diabetes management in primary care is crucial to the success of the policies already in place.

Israel should build upon its highly successful QICH programme and consider additional indicators (including health outcome indicators). A particular focus on recording co-morbidities and complications should be the priority of future policy developments. While this is already done in primary care settings for people with diabetes, more systematic data collection could feed into a broader process of monitoring and managing co-morbidities. This would help to identify patients at most risks of developing complications and evaluate the quality of data recorded with the aim, ultimately, to decrease variability across health care providers. The recording of smoking is a positive step towards a more patient-focused

management (nicotine supplements and smoking cessation drugs are also included in the health service baskets). Additionally, QICH indicators could also be used to identify patients at risk of developing cardiovascular diseases through building a composite indicator comprising HbA1c, blood pressure and cholesterol measurements and targets, and better link this indicator to appropriate specialist referrals and lifestyle modification counselling.

Additionally, while current guidelines in Israel include co-morbidities (hypertension, dyslipidemia), further efforts should be directed towards developing more comprehensive guidelines to manage diabetes alongside identified co-morbidities, for example for mental health. Clinical guidelines on the specific topic have been developed in other OECD countries and could potentially benefit to better manage diabetes for an increasing number of patients experiencing more than one chronic condition. For instance, the National Institute of Clinical Excellence has recently issued guidelines on identification of depression among patients with chronic conditions, including diabetic patients (NICE Guideline No. 90, 2009). Depression screening tests and management protocols have also been developed in recent years (Poutanen *et al.*, 2010; de Azevedo-Marques and Zuardi, 2011; Gaynes *et al.*, 2010).

4.7. Conclusions

As in most OECD countries, diabetes care is largely organised and co-ordinated in primary care settings from health promotion and prevention to actual management of diabetes and its complications. The recent implementation of the QICH shows that quality of diabetes care in community appears to be high and consistent with international standards observed across other OECD countries. In addition, there has been evidence of innovative practices undertaken by the main health funds to measure and monitor diabetes care, and also ensure that quality of care is delivered across the population, such as the use of EMR to manage individual patients.

Nonetheless, facing new challenges of a rising epidemic as a result of ageing population and changing lifestyles and diets in a rather budget constrained environment, Israel will need to consolidate the current efforts to improve diabetes care, especially in vulnerable populations.

The government and health funds should also seek to implement quality assurance mechanisms to ensure that 1) current policies to tackle diabetes (for instance, health promotion and prevention) are harnessed with strong political and financial commitment, 2) that care is better co-ordinated across providers and that quality can be monitored across sectors in the long run (by the consolidation of information exchange platform between different levels of care), 3) current measurement efforts are pursued and extended to new areas of

care, especially identification and care for diabetes complications (foot care, emphasis on elderly in retinal examination) and co-morbidities (cardiovascular disease, mental health, etc.), and 4) providing greater focus on diabetes care in vulnerable population and providing linguistically and culturally relevant support to these population.

Notes

1. Uncontrolled diabetes is defined as the number of hospital discharges of people aged 15 years and over with diabetes type 1 or 2 without mention of a short-term or long-term complication. Rates are presented per 100 000 population (OECD, 2011). Uncontrolled diabetes admissions to hospitals are usually triggered by high levels of blood glucose; and therefore are a good proxy for quality of continuing diabetes care and patient education. Methodology for calculation of uncontrolled diabetes admission rates can be found at *http://stats.oecd.org/ wbos/fileview2.aspx?IDFile=4f8625fa-7aff-4b7b-bb68-8b9db40b24fc.*

2. A recent study of Sella *et al.* (2011) reports higher rates of about 15.23 per 100 000 persons-years between 2006 and 2008.

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