Recommendations for more effective diabetes management in Turkey

An IMS Consulting Group white paper on achieving effective disease management, treatment and funding
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Executive summary

The prevalence of diabetes is on the rise in Turkey, posing challenging questions about the management, treatment and funding of the disease over coming years. In this paper, IMS Consulting Group (IMSCG) assesses the diabetes landscape from the perspective of global best practices, building a point of view on achieving effective disease management, treatment and funding. Focusing on three broad levers, IMSCG makes 8 recommendations for government stakeholders to focus on as they tackle the growing disease burden.

Recommendations for more effective diabetes management in Turkey

**Living healthy with diabetes**

**Establish disease management capabilities**

**Implement ideal treatment**

**Provide adequate funding for treatment**

**Recommendations**

**RECOMMENDATION 1**
Develop a common mission with key stakeholders for disease management, establish joint organizational accountability and coordinate for success

**RECOMMENDATION 2**
Implement key initiatives such as a treatment guideline, training program and clinical quality program that promote ideal treatment

**RECOMMENDATION 3**
Leverage patient-based data to improve the quality of evidence-based analysis and achieve impartial policy decision making in diabetes disease management

**RECOMMENDATION 4**
Promote lifestyle changes against diabetes for public, pre-diabetic and diabetic patients

**RECOMMENDATION 5**
Empower healthcare professionals further to achieve effective patient monitoring and training

**RECOMMENDATION 6**
Ensure timely transition to insulin to minimize the risk of diabetes complications

**RECOMMENDATION 7**
Emphasize policies that target reducing number of diabetes patients who develop complications in order to minimize the overall direct costs of diabetes

**RECOMMENDATION 8**
Provide sustainable pricing and reimbursement conditions to ensure availability of innovative anti-diabetic drugs

Source: IMSCG analysis
Challenges

Alarming epidemiology

The TURDEP II study on the epidemiology of diabetes estimated prevalence in the population aged 20+ at 13.7% in 2010 - much higher than the estimated 7.2% of nine years earlier. The International Diabetes Federation’s (IDF) estimate for 2013 was higher at 14.8%. IMSCG projections based on these two estimates indicate a prevalence of 16.6% by 2019.

TURDEP II estimated that 55% of people with diabetes were already diagnosed; however, IDF estimated this ratio at 65% in 2013, most likely as a result of improved access to healthcare services in recent years. IMSCG expects this trend to continue, reaching 68% in 2019.

The overwhelming majority of diagnosed patients receive treatment, yet there are no formal studies on this figure. Based on previous market research, IMSCG estimates 75-80% of diagnosed patients receive drug treatment and expects this figure to stabilize at just over 80%. Overall, Turkey faces higher prevalence of diabetes with a significant portion of sufferers neither diagnosed nor receiving care (see Figure 1).

Surging costs of diabetes

The costs associated with treating diabetes are among the highest of all diseases for the social security system. While the Social Security Institution (SSI) has not publicly reported diabetes related costs, a study in 2010 estimated total direct costs at TL12.8 billion (€5.1 billion).

The majority of costs originate from treating the severe complications of diabetes - surgeries and dialysis for example - and from screening for complications. IMSCG estimates pharmaceutical costs of diabetes after costs at TL1.1 billion (€400 million) in 2013. Future costs are expected to increase in line with current Euro rates.

Figure 1: Estimated diabetes epidemiology in Turkey

Source: IMSCG analysis
Treatment challenges

According to key opinion leaders (KOLs) and policymakers, the major cost item associated with the treatment of severe complications is linked to the low overall standard of treatment. Diabetes is a difficult condition for patients to manage owing to its chronic nature and the lifestyle changes required. This is exacerbated by poor patient education which contributes to non-adherence to prescribed therapies and insufficient physician education which results in ineffective prescribing. These factors both lead patients' blood glucose levels to increase above targets in the long term, eventually leading to severe complications.

Incipient disease management approach

Diabetes is a chronic disease requiring a long term disease management approach at the policy and healthcare provision levels. Minimizing the risk factors for diabetes in the general population and improving the treatment of diabetes for optimal patient health outcomes, including minimizing complications, are critical objectives to this approach.

Key non-governmental organizations and the Turkish Ministry of Health (MoH) recognize the importance of tackling diabetes with a holistic, long term approach. In 2009, the MoH started the Diabetes Prevention and Control Program with the involvement of KOLs and organizations in the area. The program set ambitious goals in all areas of epidemiology, focusing specifically on reducing the prevalence of diabetic and pre-diabetic patients and on increasing diagnosis rates. A number of initiatives have been implemented under the program, with some critical milestones still in progress.
Approach

To understand how effective treatment and management of diabetes can be achieved in Turkey, IMSCG analyzed the challenges faced in the diabetes landscape and identified potential improvements. The following questions were addressed:

- What are the implications of the increasing prevalence of diabetes?
- How can an approach for diabetes disease management be implemented?
- What should be done to improve the treatment of diabetes and health outcomes for the population?
- What is driving the cost of diabetes treatment?
- How do potential improvements in treatment affect costs?
- What is the optimal budget to provide effective treatment?

To answer these key questions, a three-phased study was undertaken using IMSCG forecasting methodology, analyzing global treatment guidelines, and conducting stakeholder interviews with KOLs in endocrinology and officials in regulatory institutions.

Assess cost of diabetes

For this study, IMSCG forecast pharmaceutical costs only, leaving other treatment costs out of scope. To provide an estimate of non-pharmaceutical costs, other studies were referenced. Pharmaceutical costs were estimated using IMSCG forecasting methodology, incorporating top down disease epidemiology with bottom up past pharmaceutical sales data.

Sales data by drug class was used to estimate the number of drug-treated patients taking into account average dosage, compliance rate and concomitant use parameters. The latter two parameters were estimated from primary market research studies. For top-down parameters like prevalence and diagnosis rates, latest evidence in epidemiology was used. The resulting IMS Diabetes Model integrated key parameters from various sources to forecast the number of patients by drug therapy and associated pharmaceutical spending for the period 2014-2019 (see Figure 2).

It must be noted that the estimate on drug-treated patient numbers may provide different results than Social Security Institution’s (SSI) real-world patient number information, since SSI might have information on actual patients who are diagnosed and are continuing their treatment with anti-diabetic drugs.

Assess diabetes landscape

IMSCG asked KOLs in endocrinology to identify current issues and regulatory policies in diabetes. KOLs were then asked to describe their ideal diabetes treatment algorithm in Turkey and how this diverges from actual practice. For these discussions, diabetes treatment guidelines developed in Turkey and elsewhere were referenced to highlight key decision points in the treatment algorithm. In parallel, IMSCG discussed with regulatory officials the current status of the MoH’s ongoing diabetes initiatives.

Provide recommendations

On the basis of this research, IMSCG defined three main pillars and provided recommendations for achieving effective diabetes management:

- Establish disease management capabilities
- Implement ideal treatment
- Provide adequate funding for treatment
Figure 2: IMS Diabetes Model – forecasting approach and sources

**Patient-based - Top Down**
- Turkey Population: TUIK
- Diabetes Prevalence: IMS Diabetes Model
- Diabetes Diagnosis Rate: IMS Diabetes Model
- Diabetes Drug Treatment Rate: IMS Diabetes Model

**Drug Treated Patients**
- Concomitant Use: IMS Market Research
- Compliance Rate: WHO
- Average Days of Treatment: IMS Sales Data
- Average Daily Dose: IMS Sales Data
- Volume Sales: IMS Sales Data

**Sources**
- TUIK
- IMS Diabetes Model
- IMS Market Research
- WHO
- IMS Sales Data

Source: IMSCG analysis
Establishing disease management capabilities

Alignment of stakeholders

One of the benefits of MoH’s Health Transformation Program has been an increased policy focus on chronic diseases, with diabetes especially prominent. Building on the experience of the Diabetes 2020 project, the MoH undertook the Diabetes Prevention and Control Program with the participation of governmental and non-governmental organizations in 2009. The program aimed at improving the long-term health and quality of life of patients, while minimizing the burden of diabetes. The objectives of the program were defined as lifestyle changes in risk groups, earlier diagnosis in the disease lifecycle, more effective treatment of patients, and minimization of the complications of diabetes.

The roadmap of the program from 2011 to 2014 included initiatives to support these objectives. Developing a diabetes treatment guideline to consolidate an ideal treatment approach customized for Turkey was at the heart of the program. However, up to the publication of this paper, a guideline had yet to be finalized. On the other hand, there have been other initiatives focusing on training physicians and supporting healthcare professionals, and on patient education guidelines. Although progress against milestones in the action plan is not publicly available, according to KOLs and regulatory officials interviewed, it has been slower than originally planned.

Achieving progress in a program that requires the coordination of diverse sets of stakeholders from government and non-government institutions has its own challenges. In this respect, the alignment of the strongest decision makers, the Ministry of Health and the Social Security Institution (SSI), is a critical success factor. The primary objectives of these key stakeholders differ markedly from each other. As the major healthcare provider, the MoH’s goal is to improve health outcomes for the public at large and quality of life for patients. On the other hand, as the single payer in the system, the SSI aims to ensure the financial sustainability of healthcare provision. From an organizational standpoint, a common mission should be established and commitment of the key stakeholders with potentially conflicting objectives should be maintained.

Delivery excellence on critical path

Successful implementation of a disease management program depends on the timely delivery of key milestones along its critical path. The action plan of the Diabetes Prevention and Control Program included many initiatives on the critical path, such as the introduction of a diabetes treatment guideline and training programs (see Figure 3). At the time of going to press, neither of these initiatives had been finalized, although there has been progress on other initiatives such as the preparation of patient education guidelines. IMSCG’s assessment indicates that if the following key initiatives can be achieved in the short-term, the program may regain momentum:

- Finalization of a Turkey specific diabetes treatment guideline with a broad consensus among key governmental and non-governmental stakeholders
- Introduction of supplementary training programs tailored to needs of healthcare professionals across different institutions
- Finalization of the pilot for the Clinical Quality Program on Diabetes and rollout at national level

RECOMMENDATION 1

Develop a common mission with key stakeholders for disease management, establish joint organizational accountability and coordinate for success.
Coordinated execution of these initiatives is a critical success factor for implementing effective diabetes management. The treatment guideline would provide evidence-based guidance to physicians, especially family practitioners, on all aspects of treatment flow. It would help to align physician practice with the program’s goals on early diagnosis, lifestyle changes, improving treatment quality and reducing diabetes-related complications.

Training programs for patients and family practitioners would reinforce the understanding and internalization of ideal treatment in line with the treatment guideline.

Additionally, clinical quality programs would improve the accountability of the practitioner by monitoring treatment outcomes for all patients. For example, the guideline would provide the best practice treatment flow to reduce long-term blood glucose levels (HbA1c) and the clinical quality program would monitor whether treatment applied by the physician helped patients achieve the target HbA1c level.

Real-world data for evidence-based policymaking

The establishment of a common mission among stakeholders is a prerequisite for success in disease management. Yet building consensus on policy decisions requires much more than a shared mission. Evidence-based analysis can be instrumental in building consensus. The information systems of the MoH and SSI have in-depth patient-based data that can be used for policymaking analysis. The MoH’s patient-based data for monitoring of clinical health outcomes is already used as part of the Clinical Quality Program. In addition, the SSI recently undertook a burden of diabetes study based on patient data. The comprehensive patient-based information from MoH and SSI systems can be leveraged further in disease epidemiology and cost of treatment studies to provide an up-to-date assessment of the effectiveness of diabetes management policies.

RECOMMENDATION 2
Implement key initiatives such as a treatment guideline, training program and clinical quality program that promote ideal treatment.

RECOMMENDATION 3
Leverage patient-based data to improve the quality of evidence-based analysis and achieve impartial policy decision making in diabetes disease management.
Implementing ideal treatment

IMSCG reviewed leading diabetes treatment guidelines in detail and underlined similarities and differences among them. Main features from guidelines were synthesized into a unified treatment pathway. Subsequent interviews conducted with KOLs revealed the priorities for ideal diabetes treatment in Turkey and barriers to implementation.

Features of ideal treatment

For the treatment of type II diabetes, IMSCG identified a pathway comprising five major steps (see Figure 4). The patient is initially diagnosed and different treatment options are offered depending on the severity of the patient’s condition, indicated by long-term blood glucose levels (HbA1c) and/or presence of diabetes-related complications.

The initial step in the treatment pathway is lifestyle management. Lifestyle changes focus on promoting better blood glucose control through better dietary choices. Since obesity is a major contributing factor to diabetes, moderate exercise is also a key component of lifestyle management of diabetic and pre-diabetic patients.

Owing to the progressive nature of diabetes, patients inevitably reach a level of disease severity that requires antidiabetic drug therapy. First and second line therapies are mostly driven by mono oral antidiabetic (OAD) and two-drug oral antidiabetic combined therapies, respectively. The recommended drug class for first line therapy is biguanides. In cases where the patient is contraindicated, sulphonylureas are mostly used as the alternative option. Both of these drug classes are old, established classes with relatively low costs.

In second line therapy, an additional oral antidiabetic complementing the first drug’s mechanism of action is introduced. Second line therapies can come from any of the OAD classes, including newer and more expensive agents such as glitazones and DPP-IV Inhibitors. In practice, an additional third OAD is mostly introduced in second line therapy.

“Primary care physicians have to be educated in diabetes for nutrition and essentials of diet. Diabetes Centers can be established in order to track patients”  

KEY OPINION LEADER
Third line therapy is characterized by the addition of insulin on top of OADs. Insulin therapy can be initiated with basal or premixed insulins (analog or human). The treatment can be intensified according to the patient needs.

**Bridging differences between practice and ideal treatment**

All interviewed KOLs emphasized the essential nature of lifestyle management in the prevention and management of diabetes. The introduction of changes to promote less sedentary lifestyles and improving diet are key success factors in reducing the prevalence of pre-diabetes and diabetes. Considering the progressive nature of the disease, prevention at pre-diabetes stage is not only the best option from a societal health perspective, but also from a cost effectiveness perspective. The transition of patients from the at risk stage to diabetes results in higher treatment and drug costs.

RECOMMENDATION 4

Promote lifestyle changes against diabetes for public, pre-diabetic and diabetic patients.

According to KOLs, lifestyle changes are currently not promoted effectively. Important barriers mentioned by KOLs are lack of diabetes disease education and ineffective monitoring of the lifestyles of patients by healthcare professionals. Suggestions by KOLs focus on the reassignment of roles among healthcare professionals involved in diabetes treatment, empowering those who can devote more time to patient education and patient monitoring.

“Diabetes diet has to be followed by a dietician — most of the doctors are giving dietary advice by writing on a piece of paper — but it’s not possible to control patients’ diet like that”

KEY OPINION LEADER
The recommended monitoring frequency for pre-diabetic and diabetic patients is similar in all treatment guidelines. Diabetic patients should have regular physician visits every quarter unless there are other complications and pre-diabetics should visit every six months. Regular visits enable physicians to check that prescribed treatment can control the patient’s long-term blood glucose levels and make sure the patient is not developing complications.

In practice, there is currently a barrier to achieving the ideal patient monitoring frequency and disease education: lack of qualified healthcare professionals. If all diabetic patients had a 20 minute physician visit every three months, as recommended in the guidelines, these visits would overload physicians currently working in Turkish healthcare system. Regular visits alone would create a workload equal to 3250 full-time physicians in 2013 and 4360 physicians by 2019. As there are currently about 6000 internal medicine specialists and 500 endocrinologists in Turkey, they would need to spend approximately 50% of their time on diabetes patients only.

Patient monitoring of the diabetic population therefore pushes the limits of healthcare provision that can be provided at secondary and tertiary care institutions. Possible solutions include increasing the number of physicians responsible for diabetes treatment and increasing the role of family practitioners in monitoring diabetes. Other healthcare professionals can also take part in patient monitoring and education. For example, diabetes nurses can play a bigger role in patient training and take some of the load from physicians – assuming they are given the necessary training to improve knowledge of treatment and monitoring.

KOLs suggested that the other critical barrier to ideal diabetes treatment is the late insulinization of patients as significant numbers remain on combined OAD therapies for too long. Reluctance to move to insulin therapy means that patients’ blood glucose levels may be uncontrolled for extended periods, posing a significant threat as more severe complications are likely to develop.

KOLs attribute the delay to patients’ fear of insulin and physicians’ reluctance to prescribe it. Lack of experience with insulin therapy and the difficulty of following up with patients are the most common factors affecting physicians’ decisions. In this context, empowering other healthcare professionals such as family practitioners and diabetes nurses is seen positively as it frees up time for specialist physicians to focus primarily on more difficult, insulin treated patients.

**RECOMMENDATION 5**
Empower healthcare professionals further to achieve effective patient monitoring and training.

**RECOMMENDATION 6**
Ensure timely transition to insulin to minimize the risk of diabetes complications.

“It is estimated that about 10-20% of total diabetic patients are currently mistreated with OAD therapies whereas they should be on insulin therapy”  
**KEY OPINION LEADER**
In a recent study in 2012, IMS estimated the potential savings to be achieved by timely insulinization in the overall share or national diabetes spend of major European countries. The potential savings from national diabetes spend ranged from 4% to 13% (see Figure 5). Benchmarking the minimum savings from this study (4%) against estimated diabetes overall diabetes spending in Turkey from another study conducted in 2010 (TL 12.8 billion, €5.1 billion), IMSCG estimates potential savings of TL 512 million (€206 million) from the introduction of timely insulin treatment.

**Figure 5: Complications and spending that can be avoided with timely insulin treatment**

![Diagram showing diabetes prevalence and estimated avoidable costs in Germany, France, and UK](Image)

Source: Advancing the Responsible Use of Medicines – Applying Levers for Change, IMS Institute for Healthcare Informatics, 2012

“Some physicians are increasing dosage instead of switching into another drug or insulin. A drug should not be prescribed more than its maximum effective dosage” KEY OPINION LEADER
Providing adequate funding for treatment

Overall costs of diabetes

The rising burden of diabetes is not unique to Turkey; it is a global issue affecting both developed and developing countries. The financial cost of diabetes can be assessed using health economics studies that take into account two main components:

1. direct costs which include drug costs and costs associated with in-patient and out-patient treatments
2. indirect costs which include the costs of absenteeism, early retirement and social benefits provided

A study conducted by the London School of Economics (LSE) in 2010 covering the EU5 (France, Germany, Italy, Spain and the UK) found that indirect costs can be higher than direct costs. Direct costs were estimated at a maximum of €43 billion for Germany and €5.4 billion for Spain. Diabetes drug costs comprised a relatively small proportion of total costs ranging from 6.2-10.5%, while the majority of direct costs came from non-drug treatments (54-75%). Among these costs, in-patient costs, such as hospitalizations, which are mostly related to diabetes complications, had the highest share. In Germany, 34% of direct costs were in-patient costs compared with 28% out-patient costs. Italy had the highest proportion of in-patients costs at 57%, compared with out-patient costs of 14%.

In Turkey, a 2010 study estimated the total direct costs of diabetes at TL12.8 billion (€5.1 billion) (see Figure 6). Costs of complications comprised the majority of direct costs accounting for 71% of the total. Diabetes drugs costs were estimated at TL1.3 billion (€540 million), amounting to a much smaller share of total costs with 11%.

Studies on the cost of diabetes in Turkey and elsewhere demonstrate that the costs of hospitalization, especially owing to the treatment of diabetes related complications, are the single most important factor driving total costs.

Disease management policies that minimize the number of diabetic patients who develop diabetic retinopathy, diabetic foot, cardiovascular or renal disease therefore have the highest potential impact on keeping direct diabetes costs under control. As demonstrated previously, the timely transition to insulin is among the best examples of such policies.

RECOMMENDATION 7
Emphasize policies that target the reduction of diabetic patients who develop complications in order to minimize the overall direct costs of diabetes.
IMSCG estimates on the total cost of diabetes in Turkey have to rely on other studies since there are no registries of diabetic patients and no access to patient-based treatment data at national level. However, the highly centralized structure of healthcare provision and reimbursement, along with government health information systems, provide a unique opportunity to account for diabetes costs with more accuracy. The MoH's prescription and SSI's provision data can be used to identify the actual number of diabetes patients, their observed complications and associated treatment costs.

To date, however, there are no published studies that leverage MoH and SSI's existing data. Yet, an estimate of diabetes related future drug spending can be undertaken with high accuracy by leveraging IMS Health's national sales data in Turkey and the IMS Diabetes Model. Projecting disease epidemiology with current antidiabetic drug consumption trends, IMSCG can estimate the number of patients, volume of drugs by class and associated governmental drug spending for diabetes over the next five years (see Figure 7).

### Estimated pharmaceutical spending

According to IMS Diabetes Model forecasts, 9.4 million people are expected to be diabetic in Turkey by 2019. Of this group, 6.4 million are expected to be diagnosed, with 5.1 million receiving drug therapy on a regular basis. A significant proportion of the 5.1 million treated people are expected to receive multiple diabetic drug therapies, bringing the total number of drug therapies to 8.1 million. The distribution of insulin versus non-insulin therapies is expected to change slightly over the next five years, with insulin therapies increasing from 23% in 2013 to 25% in 2019 (see Figure 8).

IMSCG also estimated the associated antidiabetics pharmaceutical spending assuming that the current pricing policies of Euro/TL ratio of 1.95 and institutional discounts will remain in place until 2019. IMSCG’s estimate suggests that government's antidiabetics

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**Figure 7: IMS diabetes model results**

<table>
<thead>
<tr>
<th>IMS Diabetes Model Results</th>
<th>2013</th>
<th>2019</th>
<th>CAGR (%)</th>
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<tbody>
<tr>
<td>Prevalence</td>
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<td></td>
<td></td>
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<tr>
<td>Patients (million)</td>
<td>7.6</td>
<td>9.4</td>
<td>3.6</td>
</tr>
<tr>
<td>Rate (%)</td>
<td>14.8</td>
<td>16.6</td>
<td>1.8</td>
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<tr>
<td>Diagnosis</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Patients (million)</td>
<td>4.8</td>
<td>6.4</td>
<td>4.4</td>
</tr>
<tr>
<td>Rate (%)</td>
<td>63.0</td>
<td>68.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Treatment</td>
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<td></td>
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</tr>
<tr>
<td>Patients (million)</td>
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<td>5.3</td>
</tr>
<tr>
<td>Rate (%)</td>
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<td>80.6</td>
<td>0.5</td>
</tr>
<tr>
<td>Pharma. Expenditure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Million TL</td>
<td>1065</td>
<td>1406</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Source: IMS Diabetes Model

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**Figure 8: Diabetes drug therapies (million patients)**

<table>
<thead>
<tr>
<th></th>
<th>2013</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insulin</td>
<td>5.9</td>
<td>25%</td>
</tr>
<tr>
<td>Non-Insulin</td>
<td>23%</td>
<td>+37%</td>
</tr>
</tbody>
</table>

2013-2019 CAGR
Insulin: 6.5%  Non-Insulin: 5.1%  8.1%

Source: IMS Diabetes Model
pharmaceutical spending will increase to TL1.4 billion in 2019, from nearly TL1.1 billion in 2013 (see Figure 9).

The recent increases in € exchange rate up to 3.0 TL/€ has put even more pressure on drug company’s profitability. If the discrepancy between actual and policy exchange rate continues, there is a risk that innovative antidiabetics drugs may not enter the market or existing innovative drugs may not be provided in the market. However, IMSCG has not factored such events into its analysis.

Throughout this period, the distribution of spending between insulins and non-insulins is expected to be maintained with a slight increase of 3% in the share of non-insulins. A more detailed examination of insulin and non-insulin drug types is necessary to understand how prescription preferences and associated government spending will evolve over the next five years.

The growth of insulins will be driven over the next five years by analog insulins – all of which are forecast to grow, with basal long-acting and fast/short-acting analogs expected to do particularly well (see Figure 10).

The entry of biosimilars after 2015 is expected to slightly reduce the prices within this drug class and limit spending for this drug class compared to its volume growth. The number of patients treated with human insulins is already low compared with analog insulins. This gap is expected to grow even further, with just 96,000 patients forecast to be on human insulin by 2019.

In terms of non-insulin therapies, first line therapies such as biguanides and sulphonylureas will remain the most commonly used drugs (see Figure 11). Drugs usually preferred for second line or drugs with physician prescription restrictions, such as glitazones and DPP-IV Inhibitors, will be used in much smaller patient populations (given that restrictions are maintained).

A transition from mono glitazones to glitazone + biguanide combinations is also expected in line with the perceived advantages of combination therapies which include biguanides. Similar shifts are also expected with DPP-IV Inhibitors in combination with biguanides. Unlike mono glitazone therapy, however, mono forms of DPP-IV Inhibitors are also forecast to continue growing.

**RECOMMENDATION 8**

Provide sustainable pricing and reimbursement conditions to ensure availability of innovative anti-diabetic drugs.
Figure 10: Patients on insulin therapy

Historical vs. Forecasted

Pre-Mixed (Analog) 5.4%
Basal (Long) 7.3%
Fast & Short Acting (Analog) 7.8%
Fast & Short Acting (Human) 5.3%
Pre-Mixed (Human) -0.2%
Basal (Regular) 1.9%

Source: IMS Diabetes Model

Figure 11: Patients on non-insulin therapy

Historical vs. Forecasted

Biguanide 4.3%
Sulphonylurea 5.5%
Glinide 4.7%
Glitazone & Biguan 11.4%
Glitazone 0.0%
DPP-IV INH & Biguan 18.4%
A-Glucosidase INH 4.1%
DPP-IV INH 7.7%

Source: IMS Diabetes Model
In 2019, analog insulins, DPP-IV Inhibitors and biguanide combinations, and mono biguanides will constitute the top five in terms of expected government spending (see Figures 12 and 13). If glitazones and their combinations with biguanides are combined, they will account for higher spending than sulphonylureas. In terms of spending, the growth of pre-mixed and basal analog insulins will be limited by the expected reduction in their prices following biosimilar entry.

Overall, the government’s antidiabetics spending is expected to increase with 4.7% CAGR between 2013 and 2019 (see Figure 14). The government needs to find adequate funding and be prepared to increase yearly spend on antidiabetics in order to ensure that the growing diabetic population is properly covered.
Figure 14: IMSCG estimate and forecast of antidiabetics spending (billion TL)

Source: IMSCG analysis

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About IMS Consulting Group

IMSCG is the leading global consulting firm focused exclusively on life sciences.

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We believe we can help pioneer new approaches to healthcare by understanding and challenging current pathways. Our senior team is intimately involved in every project, which means that clients partner with the people who create and propose the work we do at every stage of the process. Seniors do not merely steward, they do.

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