

July 2016

Improving Type 2 Diabetes Therapy Compliance and Persistence in the Kingdom of Saudi Arabia

Appendix



Introduction

This Appendix document provides supporting material for the report entitled Improving Type 2 Diabetes Therapy Compliance and Persistence in the Kingdom of Saudi Arabia, How to Address Avoidable Economic and Societal Burden.

Research and analysis for this report was undertaken by the IMS Consulting Group with support from Lilly Diabetes.

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Appendix

Overview of methods

A number of key areas were addressed to understand how to improve T2D therapy compliance and persistence in Saudi Arabia. First of all, the current social, economic and political context surrounding T2D therapy compliance and persistence was analyzed. The different reasons and motivations for being compliant or non-compliant were then explored before understanding the challenges facing PwD. After creating a holistic picture of therapy compliance and persistence in T2D, a number of key recommendations to improve the current situation were then developed.

In order to build up this holistic viewpoint and subsequent recommendations, a multifaceted approach was taken. This comprised extensive literature and desk-based research, stakeholder interviews, online quantitative surveys and, the use of the IMS CORE Diabetes Model (CDM) – an economic model validated in peer-reviewed journal articles.

Assessing the current situation

The epidemiology of T2D, current strategies for treating and preventing T2D as well as the political context surrounding T2D and therapy compliance were investigated through stakeholder interviews and surveys, literature reviews and desk-based research of a variety of sources including scientific, governmental and charity publications. Complications and costs linked to T2D and sub-optimal compliance were then quantified using the CDM, based on data inputs gathered from a variety of sources, including proprietary data from the Saudi National Diabetes Registry.

The CDM was populated with a series of Saudi Arabia-specific inputs to build an average PwD risk profile for various diabetes-related complications, notably:

- The direct healthcare costs of various diabetes-related complications in Saudi Arabia (e.g. MI, stroke, amputation, blindness, renal disease, among others)
- The medical characteristics of the average PwD in Saudi Arabia (e.g. HbA1c levels, blood pressure, body mass index, age, duration of diabetes, co-morbidities, among others)

These risk profiles were built for three different age cohorts (25-44, 45-64, 65+ years old), while the 45-64 age profile was applied to newly diagnosed PwD.

However, one variable, HbA1c levels, of each PwD risk profile was left open to change in order to differentiate between compliant and non-compliant PwD in Saudi Arabia. The HbA1c of a compliant PwD and a non-compliant PwD was calculated by collecting the following information:

- The proportion of PwD in Saudi Arabia who are compliant and non-compliant, respectively
- The average HbA1c levels of all PwD in Saudi Arabia
- The relationship between T2D therapy compliance and HbA1c among PwD in Saudi Arabia

With all of this information, the model was then run twice on a per-patient basis:

- Once in a scenario for compliant PwD, where HbA1c levels are lower and therefore the risk of complications is lower
- Once in a scenario for non-compliant PwD, where HbA1c levels are higher and therefore the risk of complications is higher

Each scenario results in a per-patient cost, which was multiplied by the number of PwD who are compliant or non-compliant in Saudi Arabia, respectively. The total of these two scaled-up scenarios represents the total cost burden of PwD in Saudi Arabia.

Finally, in order to determine the avoidable cost due to sub-optimal T2D therapy compliance, the compliant per-patient scenario was multiplied by the total number of PwD in Saudi Arabia (representing a hypothetical scenario where all PwD in Saudi Arabia have adequate compliance levels and therefore lower rates of complications and costs) before subtracting it from the actual cost burden of PwD in Saudi Arabia. This difference captures the total avoidable cost due to T2D therapy non-compliance in Saudi Arabia and therefore the estimated cost saving were all PwD to reach an adequate level of compliance (generally defined in these papers as the PwD picking up 80% or more of their T2D medication as prescribed by the physician or, the PwD reaching a threshold level of adherence as scored in a self-reported adherence survey).

Characterizing PwD

PwD face a number of challenges, which can act as a barrier to compliance and persistence. The main barriers to T2D therapy compliance were identified through extensive literature searches before being validated in discussions with healthcare professionals and policy makers.

Creating the Recommendations

By analyzing the current situation, PwD behaviors and challenges facing them at the level of desk research, a number of recommendations to improve compliance and persistence in T2D were developed. These recommendations were then reviewed and optimized during qualitative interviews with healthcare professionals, payers, policy makers and patient association representatives thus ruling out all but the most important, effective and easily implementable solutions.

Recommendations

Exhibit A: Recommendations and Associated Interventions to Improve T2D Therapy Compliance and Persistence in the Saudi Population

Recommendation	Intervention description	Possible intervention assessment metrics	Key Partners / Target Audience	Outcomes
IDENTIFY AND PROFILE				
Use predictive analytics to identify PwD at risk of low compliance and persistence	Collection of health data to be used to perform “predictive analytics”, a process whereby software algorithms mine compiled data based on set criteria to identify PwD having or at risk for having low compliance and persistence	Better prediction of patient activation degrees in public institutions, predict high risk patients	Private partners, pharmaceutical companies, MoH-NCD, providers of predictive analytics capabilities	Reliable, time- and cost-effective identification of individuals having or at risk for having low compliance and persistence; holistic and personalized care; lower and optimized healthcare service use
Use validated psychometric assessment models to evaluate identified PwD activation as related to their diabetes care	Implement psychometric questionnaires, such as the Patient Activation Measure (PAM), to provide insights into a range of health-related attributes (attitudes, motivators, behaviors, or logistical challenges) and measure degree of PwD activation	Tool uptake in PHCs, diabetes clinics and hospitals (number of questionnaires sent); questionnaire completion rates; changes in PwD activation degrees; fewer emergency admissions, medical visits or prescriptions	Management of PHCs, Diabetes Centres, MoH hospitals, IT support vendors, pharmaceutical companies	Holistic and personalized care; better T2D self-management (including therapy compliance and persistence); lower and optimized healthcare service use
ACTIVATE				
Offer educational courses to PwD (and if applicable caregivers) tailored to PwD degree of activation	“Prescribe” educational interventions (including where applicable to caregivers) according to PwD level of health knowledge and aptitude to self-manage their condition. Provide a range of formats (e.g. human and technology interventions and mix thereof) based on PwD preferences and degree of activation	Measure disease and medication knowledge (teach back method or questionnaire); improvements in PwD activation degrees and compliance	Management of PHCs, Diabetes Centres, MoH hospitals, e-learning program providers	Improved health literacy and health knowledge; increased PwD engagement; better T2D self-management (including therapy compliance and persistence); reduction in T2D-related complications; optimized healthcare service use

Recommendation	Intervention description	Possible intervention assessment metrics	Key Partners / Target Audience	Outcomes
Introduce trained & certified diabetes educators in PHCs	Train existing nurses (or a subset of nurses) in PHCs on T2D management, dieting and physical activity as well as on methods to engage PwD based on their degree of activation	Presence of diabetes educators in PHCs; ability to dispense T2D education and T2D education tailored upon PwD degrees of activation	PHCs, MoH, NCD, nursing schools (e.g. King Saud University), other training institutes	Improved health literacy and health knowledge; increased PwD engagement; better T2D self-management (including therapy compliance and persistence); reduction in T2D-related complications; optimized healthcare service use
Improve the capability of physicians in PHCs to provide T2D education tailored to PwD degree of activation	Provide family physicians and internal medical physicians in PHCs with a refresher course on T2D management and local treatment guidelines, Ramadan guidelines, best practices and latest trends/technology in diabetes. Provide a range of formats e.g. mix of conferences and e-learning courses	Better management of T2D in PHCs; optimal balance of number of patient visits between PHCs, Diabetes Centers and hospitals; improvements in PwD activation degrees	PHCs, MoH, NCD, KOLs, trainers, e-learning program providers	Improved PwD health literacy and health knowledge; increased PwD engagement; better T2D self-management (including therapy compliance and persistence); reduction in T2D-related complications; optimized healthcare service use
Engage pharmacists in PHCs and MoH hospitals in PwD management and activation	Train pharmacists on educating PwD in relation to medicine compliance, including dosing	Measure medication knowledge; improvements in PwD activation degrees and compliance	PHCs, MoH, NCD, pharmaceutical companies, trainers, e-learning program providers, hospitals and chain pharmacies e.g. “NAHDI and Dawaa”	Improved medicine knowledge; increased PwD engagement; better T2D self-management (including therapy compliance and persistence); reduction in T2D-related complications

Recommendation	Intervention description	Possible intervention assessment metrics	Key Partners / Target Audience	Outcomes
Run T2D management awareness campaigns before and during Ramadan	Three months before Ramadan, leverage technology and mass media (television, billboards, SMS) to raise awareness of T2D management, including medicine dosing during fasting	Changes in awareness of T2D management during Ramadan; improvements in PwD compliance and persistence during Ramadan	PHCs, MoH, NCD, KOLs, mass media companies, local TV channels like Al Arabia, chain pharmacies	Improved compliance to medication, diet and exercise during the fasting period of Ramadan
SUSTAIN				
Monitor PwD activation and repeat or adapt activation strategy for PwD with dropping activation or diabetes control	Review clinical outcomes such as HbA1c levels, infection rates, hypoglycemic events, number of hospitalizations every 90-120 days to cost-effectively identify PwD experiencing setbacks in activation	Improvements in PwD clinical outcomes, therapy compliance and activation levels	PHCs, Diabetes Centres, MoH hospitals	Holistic and personalized care; improved PwD engagement; improved health status; lower and optimized healthcare service use
Leverage technology and digital offerings to maintain PwD activation	Leverage technology for T2D therapy tracking, T2D management support, refresher education and reminders to reduce need for human intervention	Improvements in PwD activation degrees and compliance	MoH, NCD, Management of PHCs, Diabetes Centres, MoH hospitals, HIS vendor services integrated with mobile messaging, mobile service providers (STC educators to frame messages), pharmaceutical companies	Better T2D self-management; reduced costs to healthcare system; optimized healthcare service use

Source: IMS Consulting Group research and analysis

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