Therapeutic inertia among real world population with T2DM from 2013-2016: Data from 33,203 patients across Europe and US

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Background & Aims

- Hyperglycaemia in people with diabetes is associated with increased risk of micro- and macrovascular complications,¹⁻³ myocardial infarction,³⁻⁵ stroke,⁶ cardiovascular mortality⁷⁻⁹ and all-cause mortality.¹⁰⁻¹⁴
- Risk of micro- and macro-vascular complications is increased by delaying intensification of treatment in people with poor glycaemic control,¹⁵ a condition occurring not only as a result of the complexity of the disease, long duration of diabetes or poor adherence,¹⁶ but also due to therapeutic inertia on the part of healthcare professionals (HCPs).
- Therapeutic inertia has recently been suggested to refer to failure of HCPs changing (either intensifying or de-intensifying) diabetes medications if it is clinically indicated.¹⁷
- Aside from system failures contributing to therapeutic inertia, clinician-related factors can be due to limited exposure to education emphasising treating to target levels and the need to act each time intensification of therapy is clinically indicated.¹⁸ Patient-related factors can include patient non-adherence, fear of needles and hypoglycaemia, technical challenges, and false concept by patients of ‘punishment for failing’ treatment.^{19,20}
- The aim of this analysis was to characterise patients and evaluate therapeutic inertia and HCP involvement among 3 groups of interest in the primary care physician (PCP) and diabetes specialist settings over 4 years – 2013-2016.

Methods

- Data were drawn from 4 waves of the Adelphi Diabetes Disease Specific Programme (DSP) conducted from 2013 to 2016 in the US/5EU (France, Germany, Italy, Spain and UK). The methodology is published and validated.²¹⁻²³
- Although not longitudinal in nature, each DSP survey provides independent point-in-time data which can be used to explore patterns over time.
- Specialists and PCPs completed physician-reported forms for 10 consecutive patients with T2DM. Data were collected on patients’ demographics, clinical assessments including HbA_{1c}, clinical outcomes, physician-perceived comorbidity risk, medication use and history (including therapy duration and existing concomitant conditions).
- The same patients were invited to complete an unassisted, voluntary questionnaire including patient-reported adherence measured using the validated Morisky Medication Adherence Scale (MMAS-8) and reported in 3 levels: low (<6), medium (6-7) or high (8) adherence.²⁴⁻²⁶
- Patients were pre-classified into 3 groups of interest:
 - Appropriately controlled (AC):** ≥65 years, ≥2 comorbidities, HbA_{1c} ≥7.0%, duration of diabetes ≥15 years and high risk of hypoglycaemia
 - Candidates for de-intensification of therapy (DE):** ≥65 years, ≥2 comorbidities, HbA_{1c} <7.0%, duration of diabetes ≥15 years and high risk of hypoglycaemia
 - Candidates for intensification of therapy (IN):** ≤65 years, <2 comorbidities, HbA_{1c} ≥7.0%, duration of diabetes <15 years and no risk of hypoglycaemia.
- High risk of hypoglycaemia was defined by occurrence of one or more of the following: ≥1 severe hypoglycaemic episode in last year, moderate chronic renal failure or exposure to insulin >5 years. Therapeutic inertia was defined by no treatment change in the past 12 months.
- Statistical methods included descriptive statistics and univariate tests. Pairwise comparisons were made using t-tests, χ^2 tests or Fisher’s exact tests, depending on variable tested (numeric/categorical).

Results

- 3,414 physicians provided records for 33,864 T2DM patients across 4 DSP waves. 33,203 T2DM patients qualified for this analysis and, of these, 3% were AC, 1% were DE, 11% were IN. 85% did not qualify for these 3 groups, highlighting many other potential groups for future analysis [Figure 1].
- No significant change in the size of the 3 patient groups of interest has been observed since 2013 [Figure 2].

Table 1: Patient characteristics, clinical characteristics, antidiabetic treatment: All T2DM patients versus T2DM stable, de-intensification and intensification groups of interest (5EU/US; 2013-2016)

	Total n=33,864	AC n=1,037	DE n=413	IN n=3,613
Patient characteristics				
Age, (mean, years)	61.0	75.2	76.5	50.1
Gender: Male, (%)	53.9	48.5	47.9	57.6
Body Mass Index, (mean, kg/m ²)	30.1	30.5	30.3	30.0
Smoking status: Smoker, (%)	14.7	6.7	5.8	19.0
Adherence (MMAS-8): Low, (%)*	26.2	39.6	11.7	24.9
Patient management				
Years diagnosed, (mean, n)	5.8	21.0	20.6	2.9
HCP who first diagnosed: Specialist, (%)	18.8	14.5	13.3	20.0
HCP currently responsible for treatment decisions: Specialist, (%)	49.6	64.6	48.8	50.9
Diabetes consultations in the last 12 months, (mean, n)	3.2	3.3	3.7	2.7
Clinical characteristics				
Most recent HbA _{1c} (mean, %)	7.3	8.1	6.4	8.1
Satisfaction with current BG levels: No, better control can be achieved, (%)	36.6	43.4	4.7	60.7
Comorbidities, (mean, n)	2.8	6.2	5.4	0.4
Hypoglycaemic episodes on current regimen: Yes, (%)	11.4	37.4	22.2	6.8
Mild hypoglycaemic episodes per year, (mean, n)	33.1	36.2	24.8	36.5
Severe hypoglycaemic episodes requiring medical treatment without admission to hospital, (%)	1.2	2.5	1.6	0.0
Physician-perceived CV-risk: High-Very High, (%)	23.7	55.8	39.7	9.5
Established CV-risk (any of MI, unstable angina, stroke): Yes (%)	7.6	23.0	16.7	0.0
Developing/worsening macrovascular complications: High Risk, (%)	20.3	50.5	30.8	7.6
Developing/worsening microvascular complications: High Risk, (%)	18.3	50.0	28.9	7.1
Antidiabetic treatment				
Average duration since last treatment change, (years, mean, n)	1.8	2.6	3.3	1.1
Prescribed products for all comorbidities, (mean, n)	4.4	8.0	7.5	2.5
Current treatment regimen: OAD-only, (%)	71.2	29.2	59.8	79.5
OAD + injectable, (%)	20.9	39.7	22.8	15.8
Injectable-only, (%)	8.3	31.1	17.4	4.7

*patient-reported (all other variables physician-reported); T2DM=type 2 diabetes; AC=Appropriately controlled; DE=Candidates for de-intensification of therapy; IN=Candidates for intensification of therapy; HCP=Healthcare Practitioner; BG=Blood Glucose; CV=Cardiovascular; MI=Myocardial Infarction; OAD=Oral Antidiabetic; MMAS-8=Morisky Medication Adherence Scale; Use of the ©MMAS is protected by US copyright laws. Permission for use is required. A license agreement is available from: Donald E. Morisky, ScD, ScM, MSPH, Professor, Department of Community Health Sciences, UCLA School of Public Health, 650 Charles E. Young Drive South, Los Angeles, CA 90095-1772.

Figure 1: Global analysis population

Figure 2: Patient classification by analysis year

- Candidates for IN were most likely male (AC 49%; DE 48%; **IN 58%**), current smokers (AC 7%; DE 6%; **IN 19%**), receiving OAD-only therapy (AC 29%; DE 60%; **IN 80%**) with a physician belief that a high proportion of these patients could achieve better BG levels (AC 43%; **DE 5%**; **IN 61%**). Candidates for DE were perceived least likely to require any improvement with current BG levels.
- Compared with patients suitable for IN, those suitable for DE had a higher prevalence of hypoglycaemic episodes (**DE 22%**; IN 7%), physician-perceived high/very high CV-risk (**DE 40%**; IN 10%), established CV-risk (**DE 17%**; IN 0%), high macrovascular (**DE 31%**; IN 8%) and high microvascular risk (**DE 29%**; IN 7%) [Table 1].
- In just under half of patients suitable for IN, the patient did not receive (32%) or the physician was not aware of any therapy change (14%) highlighting a degree of therapeutic inertia [Figure 3].

Figure 3: Treatment change in past 12 months

- An even higher level of therapeutic inertia was reported among the DE patients (80%) [Figure 3].
- These potential DE and IN patients were more likely to be managed by PCPs (60% and 62% respectively).
- Adequately controlled patients were more likely to be managed by specialists (52% specialist) [Figure 4].

Figure 4: Patient management for inert patients (treatment change occurrence >12 months)

Discussion

- This analysis demonstrates that patients managed in a primary care setting are more likely to experience therapeutic inertia, especially those patients who are potential candidates for de-intensification and intensification of therapy.
- As the prevalence of diabetes continues to rise, specialist centres are unable to cope with a gradual shifting of care to primary and community care settings - so-called “left-shifting”.
- Simultaneously there has been a proliferation of new antidiabetic medications, with at least four new therapy classes since 2005, all with different extra-glycaemic benefits and side-effects. Keeping on top of the “left-shift” could be a daunting task for the generalist physician in primary care.
- Limited exposure to education emphasising treating-to-target levels and the need to act each time intensification of therapy is clinically indicated, is believed to be what leads to therapeutic inertia in the primary care setting.

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