Type 2 diabetes treatment patterns across Europe

Edith Heintjes 1, Jetty Overbeek 1, Patrick Blin 2, Gillian Hall 3, Francesco Lapi 4, Daniel Prieto Alhambra 5,6, Irene Bezemer 1

1 PHARMO Institute for Drug Outcomes Research, Utrecht, The Netherlands; 2 Bordeaux, France; 3 Grimsdyke House, London, UK; 4 Health Search, Italian College of General Practitioners; 5 idap Jordi Gol Primary Care Research Institute, Universitat Autònoma de Barcelona, Barcelona, Spain; 6 Nuffield Dept of Orthopaedics, Rheumatology, and Musculoskeletal Sciences, University of Oxford, UK

Background
Type 2 diabetes (T2DM) treatment patterns differ between countries due to different treatment guidelines and prescribing practices. With an increasing demand for European wide studies, insight into these differences is crucial.

Objective
To describe patterns of sequential antidiabetic treatment classes of T2DM patients initiating antidiabetic drug therapy in the Netherlands (NL), United Kingdom (UK), Spain (ES), Italy (IT) and France (FR). To describe treatment scaling (intensiﬁcation or de-intensiﬁcation) in the overall T2DM population.

Methods
• Antidiabetic drug use during a 5-year study period (2007-2011/2008-2012) was obtained from electronic healthcare databases: PHARMO (NL), THIN (UK), SIDIAP (ES), HSD (IT) and EGB (FR).
• A standardized analytic tool performed treatment pattern analyses in each database for the overall population and those initiating treatment.
• Patients were followed over time, from the first prescription during the study period until end of follow-up (or end of study period) to assess treatment changes. Treatment with specific drug classes was considered uninterrupted in case of repeat prescriptions within 8 months.
• Oral monotherapy was deﬁned as ﬁrst line, oral dual therapy as second line, multiple oral treatments or oral in combination with an injectable as third line and injectables only as fourth line therapy.

Results
• The total T2DM study population included 637,557 patients: 48,479 from NL, 152,544 from UK, 348,572 from ES, 67,751 from IT and 20,211 from FR. Of these patients, 33-42% initiated T2DM treatment during the study period.

Sequential treatments:
• Metformin monotherapy was the most common starting therapy (65%-87%). Around 35% (NL, IT, UK) to 45% (ES, FR) of newly treated patients switched treatment within the study period. The ﬁrst switch was most often to metformin plus sulfonylurea (SU) in NL (47%), UK (45%), ES (22%) and IT (17%), but to DPP4 inhibitors (mostly add-on to metformin) in FR (15%) (Fig 1).
• Metformin use increased at the expense of SU use over time (Fig 2).
• TZD use increased in IT, but decreased elsewhere due to withdrawal of rosiglitazone in 2010-2011 in all countries (Fig 2). In FR, pioglitazone was also withdrawn in 2011.
• DPP4 inhibitors were introduced during the study period: use increased in FR (up to 27%), UK and ES (up to 9%) but remained limited in NL (4%) and IT (2%).
• GLP1 uptake is limited (<3%), but stronger in FR and UK (2-3%) compared to other countries (<0.5%) (Fig 2).
• Insulin use is very limited in FR compared to other countries (Fig 2).

Line of treatment:
• First line treatment was most prevalent over all the years in all countries (around 50%) (Fig 3).
• Injectable only therapy, usually insulin only, was uncommon in FR (1-2%) but accounted for up to 10% in the other countries (Fig 3).
• About 75% of all patients had a change in treatment line during the study period. Intensiﬁcation was the most common switch. Switching patients mostly stepped up or down one line of treatment at a time, but larger steps were also observed (Fig 4).

Conclusion
During the study period SU remained the most common add-on treatment to metformin in most European countries while DPP4 inhibitor use as add-on therapy to metformin was more common in France and increased in other countries. Most T2DM patients are treated with oral monotherapy.

Figure 1 Percentage of patients on specific T2DM treatments per treatment sequence. Percentages relate to all except “unchanged” in previous sequence.

Figure 2 Percentage of each T2DM drug class per year per country (any treatment sequence).

Figure 3 Distribution of treatment lines per country in 2011.

Figure 4 Switching destinations per line of therapy during study period.

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