**SAFEGUARD — Result In Brief**

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**Type 2 diabetes mellitus - drug safety and monitoring**

*Globally, over 366 million people suffer from type 2 diabetes mellitus (T2DM), a disease associated with cardiovascular, pancreatic and kidney disorders. European researchers looked into the side-effects of T2DM drugs using data from trials involving 1.8 million diabetes patients over the last decade.*

Currently, T2DM is treated with incretin-based drugs, amylin analogues and thiazolidinediones (TZDs), but the risks associated with their usage are still inadequately quantified. The EU-funded SAFEGUARD (Safety evaluation of adverse reactions in diabetes) project was set up to perform long-term benefit-risk assessments of T2DM drugs.

The SAFEGUARD consortium is a multidisciplinary collaboration of 14 partners in nine countries. Areas of expertise include pharmacoepidemiology, pharmacovigilance, pharmacology and diabetes supported by clinicians and statisticians for implementation of epidemiological studies.

An unprecedented amount of data from the largest project on safety evaluation of diabetes pharmaceuticals was collected for ten different outcomes on over 30 non-insulin glucose lowering drugs. Sources were published literature, spontaneous adverse event reports, epidemiological studies, and mechanistic trials. Literature included almost 7 000 articles describing randomised controlled trials and more than 2 400 articles describing observational studies for the SAFEGUARD drugs and outcomes.

From the European and United States pharmacovigilance databases, more than 217 000 case reports were analysed, confirming signals that have been published before. By using anonymous data from healthcare databases 1.8 million T2DM patients were studied to obtain estimates of risk of the ten adverse events (cardiovascular, stroke and pancreatic outcomes).

Mechanistic studies carried out in four clinical trials proved particularly novel with appropriate timing for the results on incretin-based therapies – two GLP-1 receptor agonists and two DPP-4 inhibitors. In these studies, no evident effects on cardiovascular, gastrointestinal or renal physiology were observed using state-of-the-art techniques.

Researchers adopted a new approach for assembly of the information and selected appropriate statistical and modelling tools for data analysis and validation. According to this approach one protocol is used and data are standardised between health care databases through a common data model and standardized analytical software.

SAFEGUARD activities have important implications for health care and patient safety, not only in Europe but also worldwide. Project data is published and made available to the European Medicines Agency to be used for regulatory decision-making.

**Related information**