Supplemental Online Content

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eMethods.

This supplemental material has been provided by the authors to give readers additional information about their work.

eMethods

Cohort identification

We identified all products containing glucagon-like peptide-1 (GLP-1) receptor agonists using annual editions of the Food and Drug Administration's (FDA's) Approved Drug Products with Therapeutic Equivalence Evaluations (Orange Book) from 2006 to 2023. Products containing both GLP-1 receptor agonists and insulin were included.

GLP-1 receptor agonists are generally regulated as small-molecule drugs. Two GLP-1 receptor agonists, dulaglutide (Trulicity) and albiglutide (Tanzeum), however, have been regulated as biologics from the time of their approval and therefore do not appear in the Orange Book. We excluded these products from our analysis since our focus was on patent listings in the Orange Book. Lixisenatide (Adlyxin) and two insulin-containing products (Xultophy and Soliqua) were removed from the Orange Book after 2020 by FDA rule. These products are now regulated as biologics but are included in our analysis since their key patents were listed in annual editions of the Orange Book through 2020. Any patents added later to these products would not be observable and would therefore not be included in our analysis.

Review of patent claims

We searched the claims for all device patents in the cohort for the products' active ingredients, chemical structures, therapeutic class, and clinical indications. The specific search terms used were: "liraglutide," "exenatide," "semaglutide," "lixisenatide," "tirzepatide," "insulin," "degludec," "glargine," "victoza," "bydureon," "saxenda," "adlyxin," "xultophy," "soliqua," "ozempic," "mounjaro," "incretin mimetic," "glucagon-like peptide-1," "GLP-1," "gastric inhibitory polypeptide," "GIP,", "diabetes," "weight loss," and "obesity."