**Supplementary Table 2.** Specification of target trial comparing the risk of DR between patients with T2DM receiving SGLT2i and GLP1-RA using real-world data from CGRD in Taiwan

| Component | Target trial | Emulated trial using real-world data |
|---|---|---|
| Aim | To compare the risk of DR between patients with T2DM receiving SGLT2i and GLP1-RA | Same |
| Eligibility | Patients aged ≥40 years with diagnosis of T2DM and no past history of retinal disorders and interventions | Same |
| Treatment strategies | 1. Receiving SGLT2i<br>2. Receiving GLP1-RA | Same |
| Treatment assignment | Eligible patients were randomly assigned to either treatment group with the same probability. | Using inverse probability of treatment weighting with propensity scores to establish similar probability of treatment assignment between two groups |
| Follow-up | Follow-up starts at treatment assignment and ends until occurrence of ocular outcomes, switch between study drugs, discontinuation of study drugs, death of patients, or December 31, 2019. | Same (treatment assignment and initiation occur at the same time due to real-world scenario) |
| Outcome | 1. Primary outcomes: DR, and retinal interventions<br>2. Secondary outcomes: Microvascular and macrovascular complications and death | Same |
| Causal contrast | The analysis may have intention-to-treat effect. The patients assigned to either SGLT2i or GLP1-RA group at baseline was followed up in the respective groups until the end of follow-up whether the patients continued their original treatments or not. | We used as-treated analysis. The combination therapy of SGLT2i and GLP1-RA was not indicated in Taiwan, and the follow-up ended until the switch between two drugs. |
| Statistical analysis | 1. Non-fatal outcomes: Fine and Gray subdistribution hazard model<br>2. Fatal outcomes: Cox proportional hazard model<br>3. Laboratory data: linear mixed model | Same |

DR, diabetic retinopathy; T2DM, type 2 diabetes mellitus; SGLT2i, sodium-glucose cotransporter-2 inhibitor; GLP1-RA, glucagon-like peptide-1 receptor agonist; CGRD, Chang Gung Research Database.