

SUPPLEMENTARY DATA

Supplementary Table S1. List of antihyperglycemic medications

Drug type	Antihyperglycemic medication
Metformin	Metformin
Sulfonylureas	Glimepiride, Glyburide, Glipizide, Tolazamide
Alpha-glucosidase inhibitors	Acarbose, Miglotol
Amylin analogs	Pramlintide
DPP-4 inhibitors	Sitagliptin, Saxagliptin, Linagliptin
GLP agonists	Exenatide, Liraglutide, Albiglutide, Dulaglutide
Insulin	Insulin
Meglitinides	Natelinide, Repaglinide
SGLT2 inhibitors	Dapagliflozin, Canagliflozin, Empagliflozin
Thiazolidinediones	Pioglitazone, Rosiglitazone
Combination medicine	Metformin and Thiazolidinediones, Metformin and Sulfonylureas, Metformin and DPP-4 inhibitors, Metformin and Meglitinides, Sulfonylureas and Thiazolidinediones, Thiazolidinediones and DPP-4 inhibitors

Supplementary Table S2. List of ICD-9 codes of heart failure, chronic obstructive pulmonary disease, liver diseases, renal diseases and metformin-related gastrointestinal side effects

Diseases	ICD-9 codes	References
Heart failure	428.*	(1)
Chronic obstructive pulmonary disease	491.*, 492.*, 493.2*, 496	(2)
Liver diseases	155.0, 155.1, 155.2, 456.0, 456.1, 456.2*, 571.2, 571.5, 571.6, 571.8, 571.9, 572.2, 572.3, 572.4, 572.8, 567.0, 567.2*, 567.8*, 578.*, 782.4, 789.5*	(3)
Renal diseases	585.*, 586, 996.73, 996.81, V42.0, V45.1*	(4)
GI event		
Gastroparesis	536.3	(5,6)
Constipation	564.0*	(7,8)
Nausea and vomiting	787.0*	(9,10)
Flatulence eructation, and gas pain	787.3*	(11)
Other symptoms involving digestive system	787.9*	(11)
Unspecified adverse effect of drug medicinal and biological substance not elsewhere classified	995.2*	(11)

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SUPPLEMENTARY DATA

Supplementary Figure S1. Flow diagram of patients with diabetes receiving second-line medication for diabetes without evidence of recommended use of metformin for the prior 60 days

