

## Supplemental Online Content

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

**eTable 1.** List of Covariates Considered in the Analyses and Whether They Are Assumed to Be Associated With Outcomes or Exposure Decisions

Covariate	Outcome	Exposure	Time-dependent	Description
Alcohol.in.Preg	1	1	N	Indicator variable for alcohol during pregnancy
Depression	1	1	Y	Indicator variable for depression
Depression.0	1	1	N	Indicator variable for depression (baseline)
Diastolic	1	1	Y	Diastolic blood pressure
Diastolic.0	1	1	N	Diastolic blood pressure (baseline)
GA.GDM.Diagnosis	1	1	N	Gestational age at diagnosis of GDM (in weeks)
GA.Index	1	1	N	Gestational age at index date (in weeks)
GDM.Diagnosis	1	1	N	GDM diagnosis from OGTT Carpenter & Coustan criteria or doctor
GDM.Duration.Index	1	1	N	Gestational diabetes duration at index
Gestational.HTN	1	1	Y	Indicator variable for gestational hypertension
Gestational.HTN.0	1	1	N	Indicator variable for gestational hypertension (baseline)
HTN.Rx	1	1	Y	Indicator variable for fills of hypertension medications
HTN.Rx.0	1	1	N	Indicator variable for fills of hypertension medications (baseline)
Hypoglacemia	1	1	Y	Indicator variable for hypoglycemia
Hypoglacemia.0	1	1	N	Indicator variable for hypoglycemia (baseline)
Hypoglacemia.behav.1	1	1	Y	Indicator variable for hypoglycemia
IllegalDrug.in.Preg	1	1	N	Indicator variable for illegal drugs during pregnancy
Index.Year	1	1	N	Year of study entry
Median.House.Income	1	1	N	Median household income
Met.Glycemic.Control	1	1	Y	Indicator variable for optimal glycemic control achieved
Met.Glycemic.Control.0	1	1	N	Indicator variable for optimal glycemic control achieved (baseline)
Mom.Age.Index	1	1	N	Maternal age at index date
Parity	1	1	N	Parity (not including the index pregnancy)
Preeclampsia	1	1	Y	Indicator variable for preeclampsia
Preeclampsia.0	1	1	N	Indicator variable for preeclampsia (baseline)
PreExisting.HTN	1	1	N	Indicator variable for pre-existing hypertension
Prepregnancy.BMI	1	1	N	Pre-pregnancy BMI
Race.Ethnicity	1	1	N	Maternal race/ethnicity
Rate.of.Wt.Gain	1	1	N	Rate of weekly weight gain at index
Rate.of.Wt.Gain.time.updated	1	1	Y	Rate of weekly weight gain after index
Screening.Value	1	1	N	50-g glucose Screening test result
Severity	1	1	N	Marker for GDM Screening Value $\geq$ 140

Smoking.in.Preg	1	1	N	Indicator variable for smoking during pregnancy
Systolic	1	1	Y	Systolic blood pressure
Systolic.0	1	1	N	Systolic blood pressure (baseline)

**eTable 2.** Cutoff Values Used to Discretize Continuous Covariates

Variable	Cutoffs
Diastolic	80
Diastolic.0	80
GA.GDM.Diagnosis	24;29
GA.Index	26;33
GDM.Duration.Index	2;5;9
intnum	1;12;13;17;21;25
Median.House.Income	30000;50000;70000;90000
Mom.Age.Index	30;35;40
Parity	0;1;2
Prepregnancy.BMI	18.5; 25; 30; 35
Rate.of.Wt.Gain	0.05;.22;.31
Rate.of.Wt.Gain.time.updated	0.05;.22;.31
Screening.Value	140;155;200
Systolic	120
Systolic.0	120

**eTable 3.** Super Learner Estimator for the Probability of Glyburide Initiation in the First 7 Days After Study Entry Given Baseline Covariates

Estimators derived based on 11321 observations from 11321 unique patients. Seven learners were considered: A logistic model (glm), splines (poly), a random forest (ranger), an xgboost (xgb), a generalized additive model (gam), a lasso model (glmnet), and a bayesian additive regression tree (bart), a logistic model with all two-way interaction terms (glm.int), a neural network regression with a single hidden layer (nnet). Screeners (i.e. feature selection denoted by 'Rank') were considered for all learner sand were defined by the top 30, 20, 10, and 5 variables most associated (i.e., with smallest p-values in a univariate regression) with the exposure (A). The weighted average (SL weights) of these 45 learners that define the super learner is based on 10-fold cross-validation (CV).

	glm	glm Rank 5	glm Rank 10	glm Rank 20	glm Rank 30
CV risk	0.07814	0.08061	0.07924	0.07876	0.07869
SL weights	0	0	0	0	0

poly	poly Rank 5	poly Rank 10	poly Rank 20	poly Rank 30
0.07863	0.07991	0.07908	0.07887	0.07878
0.01695	0	0	0	0

rngr	rngr Rank 5	rngr Rank 10	rngr Rank 20	rngr Rank 30
0.07906	0.08043	0.07945	0.07993	0.07973
0.1292	0	0	0	0.10792

xgb	xgb Rank 5	xgb Rank 10	xgb Rank 20	xgb Rank 30
0.08449	0.08144	0.08094	0.0834	0.08355
0	0	0.0624	0	0.01412

gam	gam Rank 5	gam Rank 10	gam Rank 20	gam Rank 30
0.07802	0.08052	0.07901	0.07838	0.07834
0.47769	0	0	0	0

glmnet	glmnet Rank 5	glmnet Rank 10	glmnet Rank 20	glmnet Rank 30
0.07811	0.08063	0.07926	0.07876	0.07857
0	0	0	0	0

bart	bart Rank 5	bart Rank 10	bart Rank 20	bart Rank 30
0.76667	0.76088	0.76412	0.76712	0.76665
0	0	0	0	0

glm.int	glm.int Rank 5	glm.int Rank 10	glm.int Rank 20	glm.int Rank 30
0.25899	0.08049	0.0791	0.07989	0.09816
8.49e-03	0	0.03601	0.14722	0

nnet	nnet Rank 5	nnet Rank 10	nnet Rank 20	nnet Rank 30
0.09743	0.09743	0.09743	0.09743	0.09743
0	0	0	0	0

**eTable 4.** Super Learner Estimator for the Probability of Insulin Initiation in the First 7 Days After Study Entry Given Baseline Covariates Among Patients Who Did Not Initiate Glyburide at Study Entry Estimators derived based on 1103 observations from 1103 unique patients. Seven learners and 4 screeners were considered (see caption of Appendix Table 3 for details).

	glm	glm Rank 5	glm Rank 10	glm Rank 20	glm Rank 30
CV risk	0.0412	0.02968	0.03005	0.03127	0.03191
SL weights	0	0	0	0	0

poly	poly Rank 5	poly Rank 10	poly Rank 20	poly Rank 30
0.02934	0.02934	0.02935	0.02935	0.02934
0	0	0	0	0

rngr	rngr Rank 5	rngr Rank 10	rngr Rank 20	rngr Rank 30
0.02986	0.03016	0.0303	0.03105	0.03049
0	0	0.02229	0	0

xgb	xgb Rank 5	xgb Rank 10	xgb Rank 20	xgb Rank 30
0.0304	0.0299	0.02984	0.03013	0.03025
0	0	0	0.04303	0

gam	gam Rank 5	gam Rank 10	gam Rank 20	gam Rank 30
0.04223	0.02966	0.02997	0.03129	0.03236
0	0	0.09886	0.06211	0

glmnet	glmnet Rank 5	glmnet Rank 10	glmnet Rank 20	glmnet Rank 30
0.0292	0.02943	0.02967	0.0301	0.03004
0	0.13188	0	0	0

bart	bart Rank 5	bart Rank 10	bart Rank 20	bart Rank 30
0.91148	0.91253	0.91097	0.91187	0.91343
0	0.15695	0	0	0

glm.int	glm.int Rank 5	glm.int Rank 10	glm.int Rank 20	glm.int Rank 30
0.49608	0.03161	0.03359	0.11555	0.22591
0	0	0	0	0

nnet	nnet Rank 5	nnet Rank 10	nnet Rank 20	nnet Rank 30
0.02992	0.02992	0.02992	0.02992	0.02992
0.48488	0	0	0	0



**eTable 5.** Super Learner Estimator for the Probability of Continuing Glyburide After the First Follow-up Interval Given Past Covariates Among Patients Who Were Continuously Exposed to Glyburide Previously

Estimators derived based on 83466 observations from 10042 unique patients. Seven learners and 4 screeners were considered (see caption of Appendix Table 3 for details).

	glm	glm Rank 5	glm Rank 10	glm Rank 20	glm Rank 30
CV risk	0.01559	0.01566	0.01564	0.01563	0.01563
SL weights	0	0	0	0	0

poly	poly Rank 5	poly Rank 10	poly Rank 20	poly Rank 30
0.01541	0.01541	0.01545	0.01546	0.01546
0.0564	0	0	0	0

rngr	rngr Rank 5	rngr Rank 10	rngr Rank 20	rngr Rank 30
0.0151	0.01541	0.01543	0.01527	0.01535
0.20883	0	0	0.07018	0.09879

xgb	xgb Rank 5	xgb Rank 10	xgb Rank 20	xgb Rank 30
0.01551	0.01537	0.01582	0.0155	0.01558
0.25095	0.05134	0	0.06975	0.03662

gam	gam Rank 5	gam Rank 10	gam Rank 20	gam Rank 30
0.01558	0.01566	0.01564	0.01563	0.01563
0	0	0	0	0

glmnet	glmnet Rank 5	glmnet Rank 10	glmnet Rank 20	glmnet Rank 30
0.01558	0.01567	0.01565	0.01563	0.01563
0	0	0	0	0

bart	bart Rank 5	bart Rank 10	bart Rank 20	bart Rank 30
0.95494	0.95387	0.95385	0.95552	0.95546
0	0	0.13971	0	0

glm.int	glm.int Rank 5	glm.int Rank 10	glm.int Rank 20	glm.int Rank 30
0.32922	0.01539	0.01534	0.01554	0.11825
4.5e-04	0	0	0.01411	1.66e-03

nnet	nnet Rank 5	nnet Rank 10	nnet Rank 20	nnet Rank 30
0.01645	0.01645	0.01645	0.01645	0.01645
1.22e-03	0	0	0	0

**eTable 6.** Super Learner Estimator for the Probability of Continuing Insulin After the First Follow-up Interval Given Past Covariates Among Patients Who Were Continuously Exposed to Insulin Previously

Estimators derived based on 8311 observations from 1041 unique patients. Seven learners and 4 screeners were considered (see caption of Appendix Table 3 for details).

	glm	glm Rank 5	glm Rank 10	glm Rank 20	glm Rank 30
CV risk	0.04203	0.04166	0.04156	0.04158	0.04171
SL weights	0	0	0	0	0

poly	poly Rank 5	poly Rank 10	poly Rank 20	poly Rank 30
0.03528	0.03536	0.03526	0.03533	0.03536
0.34827	0	0.22101	0	0

rngr	rngr Rank 5	rngr Rank 10	rngr Rank 20	rngr Rank 30
0.03987	0.03584	0.03644	0.03749	0.03859
0	0.03734	0	0.05356	0

xgb	xgb Rank 5	xgb Rank 10	xgb Rank 20	xgb Rank 30
0.04337	0.03594	0.03745	0.03917	0.04146
0.07854	0.1261	0	0.12776	0

gam	gam Rank 5	gam Rank 10	gam Rank 20	gam Rank 30
0.04166	0.04138	0.04127	0.0413	0.04139
0	0	0	0	0

glmnet	glmnet Rank 5	glmnet Rank 10	glmnet Rank 20	glmnet Rank 30
0.04138	0.04165	0.04152	0.04148	0.04148
0	0	0	0	0

bart	bart Rank 5	bart Rank 10	bart Rank 20	bart Rank 30
0.88687	0.89308	0.89206	0.89243	0.89189
0	0	0	0	0

glm.int	glm.int Rank 5	glm.int Rank 10	glm.int Rank 20	glm.int Rank 30
0.5015	0.04193	0.04304	0.05007	0.18032
0	0	0	7.42e-03	0

nnet	nnet Rank 5	nnet Rank 10	nnet Rank 20	nnet Rank 30
0.04368	0.04368	0.04368	0.04368	0.04368
0	0	0	0	0

**eTable 7.** Super Learner Estimator for the Probability of Glyburide Initiation on Index Date Given Baseline Covariates

Estimators derived based on 11321 observations from 11321 unique patients. Seven learners and 4 screeners were considered (see caption of Appendix Table 3 for details).

	glm	glm Rank 5	glm Rank 10	glm Rank 20	glm Rank 30
CV risk	0.07604	0.07853	0.07713	0.07685	0.07658
SL weights	0	0	0	0	0

poly	poly Rank 5	poly Rank 10	poly Rank 20	poly Rank 30
0.07639	0.07782	0.07692	0.07685	0.07661
0.07399	0	0	0	0

rngr	rngr Rank 5	rngr Rank 10	rngr Rank 20	rngr Rank 30
0.07702	0.07838	0.07734	0.07823	0.07781
0.18527	0	0	0	1.17e-03

xgb	xgb Rank 5	xgb Rank 10	xgb Rank 20	xgb Rank 30
0.08216	0.0793	0.07866	0.08131	0.08211
3.86e-03	0	0.09829	2.5e-03	0

gam	gam Rank 5	gam Rank 10	gam Rank 20	gam Rank 30
0.07595	0.07845	0.07693	0.07649	0.07625
0.45177	0	0	0	0

glmnet	glmnet Rank 5	glmnet Rank 10	glmnet Rank 20	glmnet Rank 30
0.07595	0.07855	0.07716	0.07688	0.07653
0	0	0	0	0

bart	bart Rank 5	bart Rank 10	bart Rank 20	bart Rank 30
0.77292	0.76711	0.77049	0.77277	0.77258
0	0	0	0	0

glm.int	glm.int Rank 5	glm.int Rank 10	glm.int Rank 20	glm.int Rank 30
0.26349	0.07842	0.07703	0.07797	0.11557
4.34e-03	0	0	0.15631	0.02249

nnet	nnet Rank 5	nnet Rank 10	nnet Rank 20	nnet Rank 30
0.09469	0.09469	0.09469	0.09469	0.09469
0	0	0	0	0

**eTable 8 .** List of Covariates With Counts and Proportions of Missing Values at Baseline

Covariate	N Missing values	% Missing values
Depression.0	0	0.0%
Diastolic.0	192	1.7%
Gestational.HTN.0	0	0.0%
HTN.Rx.0	0	0.0%
Hypoglycemia.0	0	0.0%
Median.House.Income	93	0.8%
Met.Glycemic.Control.0	1031	9.1%
Mom.Age.Index	0	0.0%
Parity	160	1.4%
Preeclampsia.0	0	0.0%
PreExisting.HTN	0	0.0%
Prepregnancy.BMI	654	5.8%
Race.Ethnicity	20	0.2%
Rate.of.Wt.Gain	940	8.3%
Severity	971	8.6%
Systolic.0	192	1.7%