

Appendix Table S1: Weighted baseline characteristic comparisons

	Continuers (N = 299) [A]	Interrupters (N = 349) [B]	P-value [A vs. B]	Discontinuers (N = 179) [C]	P-value [A vs. C]
Demographics					
Age on index date, mean (SD)	49.4 (9.8)	49.9 (9.8)	0.564	49.8 (10.4)	0.725
Gender (male), %	66.4	71.0	0.214	67.1	0.872
Mode of delivery of index basal insulin, %					
Pen	94.9	94.5	0.806	93.6	0.555
Cartridge	5.1	5.5	0.806	6.4	0.555
Index basal insulin, %					
Insulin glargine	78.1	74.9	0.339	79.2	0.764
Insulin detemir	14.7	17.8	0.281	15.1	0.905
NPH	6.5	6.5	0.967	5.7	0.717
Insulin degludec	0.7	0.9	0.843	0.0	0.250
Index year, %					
2006 (May – December)	2.0	1.7	0.760	0.6	0.220
2007	1.4	1.2	0.824	0.3	0.252
2008	4.9	5.3	0.825	9.1	0.074
2009	15.3	14.8	0.853	11.1	0.195
2010	16.8	18.0	0.684	18.4	0.654
2011	21.2	20.9	0.917	22.2	0.815
2012	28.9	28.4	0.878	29.4	0.919
2013 (January – April)	9.3	9.6	0.890	8.9	0.880
Select comorbidities, %					
Retinopathy	0.2	1.1	0.189	1.9	0.056
Diabetic foot	0.4	0.2	0.690	0.0	0.417
Nephropathy	8.5	8.1	0.876	9.4	0.711
Hypertension	44.9	45.0	0.977	42.9	0.670
Dyslipidemia	60.6	61.3	0.859	62.7	0.645
Cardiovascular disease	18.3	19.8	0.615	13.7	0.192
Congestive heart failure	12.8	11.6	0.637	13.1	0.944
Peripheral vascular disease	16.2	15.8	0.887	12.5	0.260
Stroke	13.5	11.9	0.544	10.6	0.358
Depression	5.9	6.3	0.831	4.2	0.401
Obesity	1.8	1.8	0.982	1.5	0.778
Other neurological disorders	4.6	5.0	0.824	3.2	0.473
Hypoglycemic event	2.5	2.5	0.957	2.3	0.911
Dementia	0.5	0.6	0.840	0.0	0.348
CCI, mean (SD)	3.1 (2.3)	3.0 (2.4)	0.731	3.1 (2.4)	0.793

(contd.)

	Continuers (N = 299) [A]	Interrupters (N = 349) [B]	P-value [A vs. B]	Discontinuers (N = 179) [C]	P-value [A vs. C]
Medical resource use (% with ≥ 1 visit)					
Inpatient	28.1	28.6	0.875	30.7	0.543
Outpatient	96.7	97.2	0.681	97.7	0.498
Primary care visits, mean (SD)	4.1 (2.5)	3.8 (2.4)	0.079	3.9 (2.4)	0.430
Non-insulin antihyperglycemic prescription use					
Number of unique classes, mean (SD)	2.1 (1.5)	2.1 (1.5)	0.939	2.1 (1.5)	0.999
At least one prescription fill, %	76.8	77.9	0.734	72.9	0.341
Any oral antihyperglycemic drug	76.8	77.9	0.734	72.9	0.341
Any injectable	4.3	4.5	0.873	3.8	0.805

Notes: CCI = Charlson comorbidity index, SD = standard deviation; *Statistically significant at $p < 0.05$; P-values estimated relative to continuers cohort using weighted chi-squared tests for categorical variables and weighted t-tests for continuous variables. Weights were estimated as the inverse of propensity scores. Propensity scores were estimated among the full sample of continuers, interrupters, and discontinuers using a multinomial logistic regression that accounted for observed differences in demographics, index basal insulin (type and mode of delivery), year of index date, select baseline comorbidities, Charlson comorbidity index, select non-insulin antidiabetic and other prescription drug use in baseline, inpatient resource use in baseline (at least one visit), and baseline costs; Any injectable includes amylin analogues and GLP-1 receptor agonists.

Appendix Table S2: Prescription drug use during the first gap in therapy among interrupters and discontinuers

	Interrupters (N=349)	Discontinuers (N = 179)
At least one prescription, %	84.8	84.4
Non-basal insulin	18.6	12.3
Any oral antihyperglycemic agent	73.6	78.8
Sulfonylurea	39.8	33.0
Biguanide	36.1	44.7
Thiazolidinedione	21.5	11.7
DPP-4 inhibitor	26.1	44.7
Meglitinide analogue	9.5	8.9
Alpha-glucosidase inhibitor	31.8	25.7
Any non-insulin injectable	1.1	10.1

Notes: Only those classes of medications that were used by at least 5% of interrupters or discontinuers are reported. Any non-insulin injectable includes GLP-1 receptor agonists and amylin analogues. Prescriptions filled prior to the start of the first gap but with days of supply that overlap with the first gap were included.

Appendix Table S3: Basal insulin persistence in the year after treatment initiation – sensitivity analyses

	Continuers	Interrupters	Discontinuers
Duration of maximum allowable gap, %			
30 days (Core analyses)	36.2	42.2	21.6
60 days	59.3	15.8	24.9
90 days	67.7	7.9	24.4
120 days	73.3	4.1	22.6
<90 th percentile of days between two prescriptions, stratified by quantity dispensed	30.8	48.9	20.3