Supplementary Online Content

Sussman JB, Kerr EA, Saini SD, et al. Rates of deintensification of blood pressure and glycemic medication treatment based on levels of control and life expectancy in older patients with diabetes mellitus. *JAMA Intern Med*. Published online October 26, 2015. doi:10.1001/jamainternmed.2015.5110.

eAppendix. Detailed Definition of Deintensification

eFigure 1. Deintensification Schematic

eFigure 2. Patient Flow Diagram for Low Blood Pressure Cohort

eFigure 3. Patient Flow Diagram for Low HbA$_{1c}$ Cohort Without Insulin and Metformin

eFigure 4. Patient Flow Diagram for Low Index Blood Pressure

eFigure 5. Patient Flow Diagram for Low HbA$_{1c}$ Cohort

eTable 1. Relationship Between Baseline Blood Pressure, Baseline Life Expectancy, and Likelihood of Deintensification

eTable 2. Relationship Between Baseline HbA$_{1c}$, Baseline Life Expectancy, and Likelihood of Deintensification

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

eAppendix. Detailed Definition of Deintensification

Our definition of deintensification was meant to identify changes in care that occur because of a single laboratory value and clinical visit. The graph and explanation are meant to explain the precise definition used.

eFigure 1. Deintensification Schematic
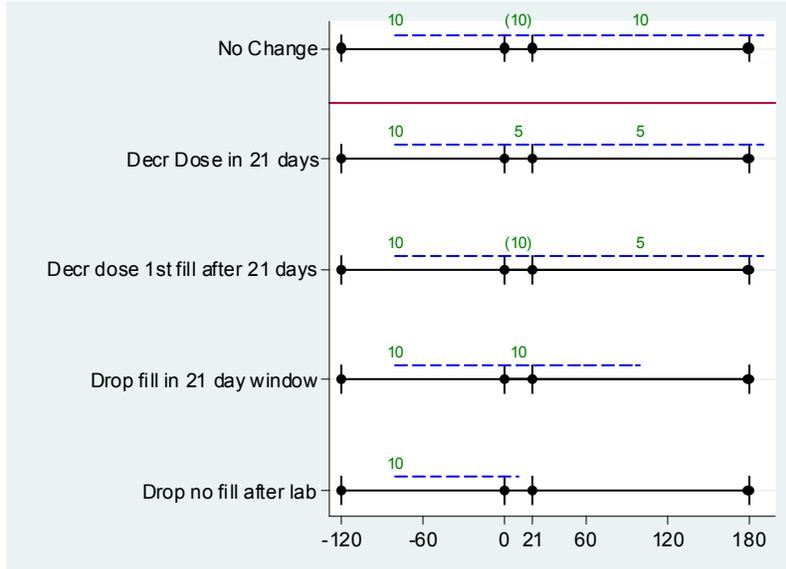
- Green Numbers are fills with daily dose of same medication
- Numbers in parentheses are fills that may or may not exist. It doesn't change the result if the fill occurs at that value or not
- Blue dotted lines are the days the patient is on the medication according to days' supply plus the prescription date (currently not accounting for overstock)
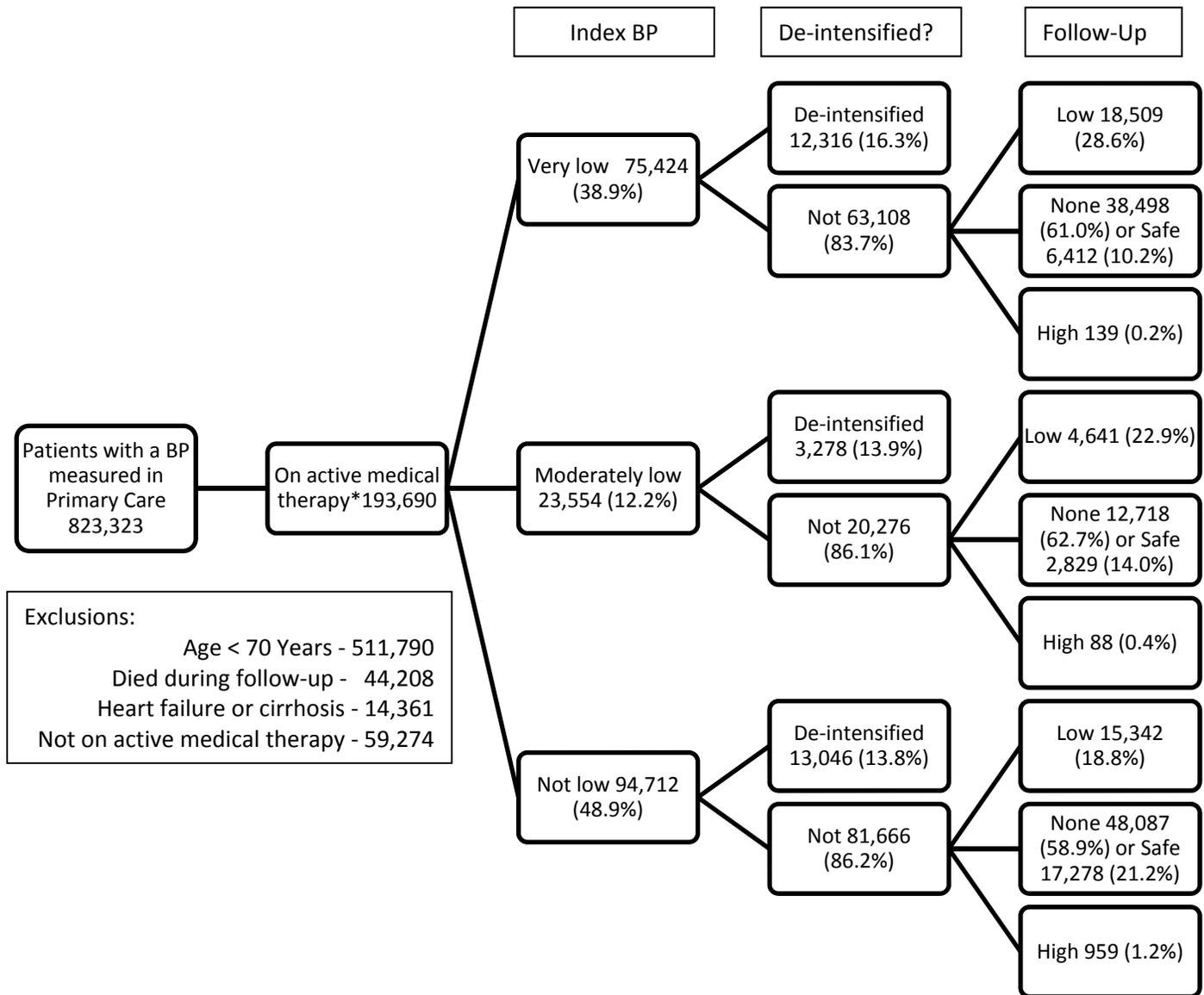
No Deintensification

- No Change – Patient has a first fill outside of the 21-day window following the laboratory date that is the same as the prelaboratory dose. Patient also didn't have a fill 21-day period that was less than the pre period.

Deintensification

- Decrease Dose in 21 days – Patient has a fill that is a decreased dose in the 21-day window following the laboratory date.
- Decrease dose first fill after 21 days – Patient has a fill that is a decreased dose in the first fill after the 2- day window. Patient could have a fill of the same dose as prior to the laboratory date in 21-day window.
- Drop fill in 21-day window – Patient only has a fill of the same daily dose in the 21-day window following the laboratory date. Patient has no fills in the 22 to 180 days after the laboratory date.
- Drop no fill after laboratory date – Patient has a fill prior to the laboratory date but none for the 6 months following the laboratory date
- Insulin's were not coded as a decreased dose. Insulin was considered dropped if the patient went from short-acting and long-acting to long-acting only, short-acting and long-acting to none, long-acting to none, or short-acting to none.

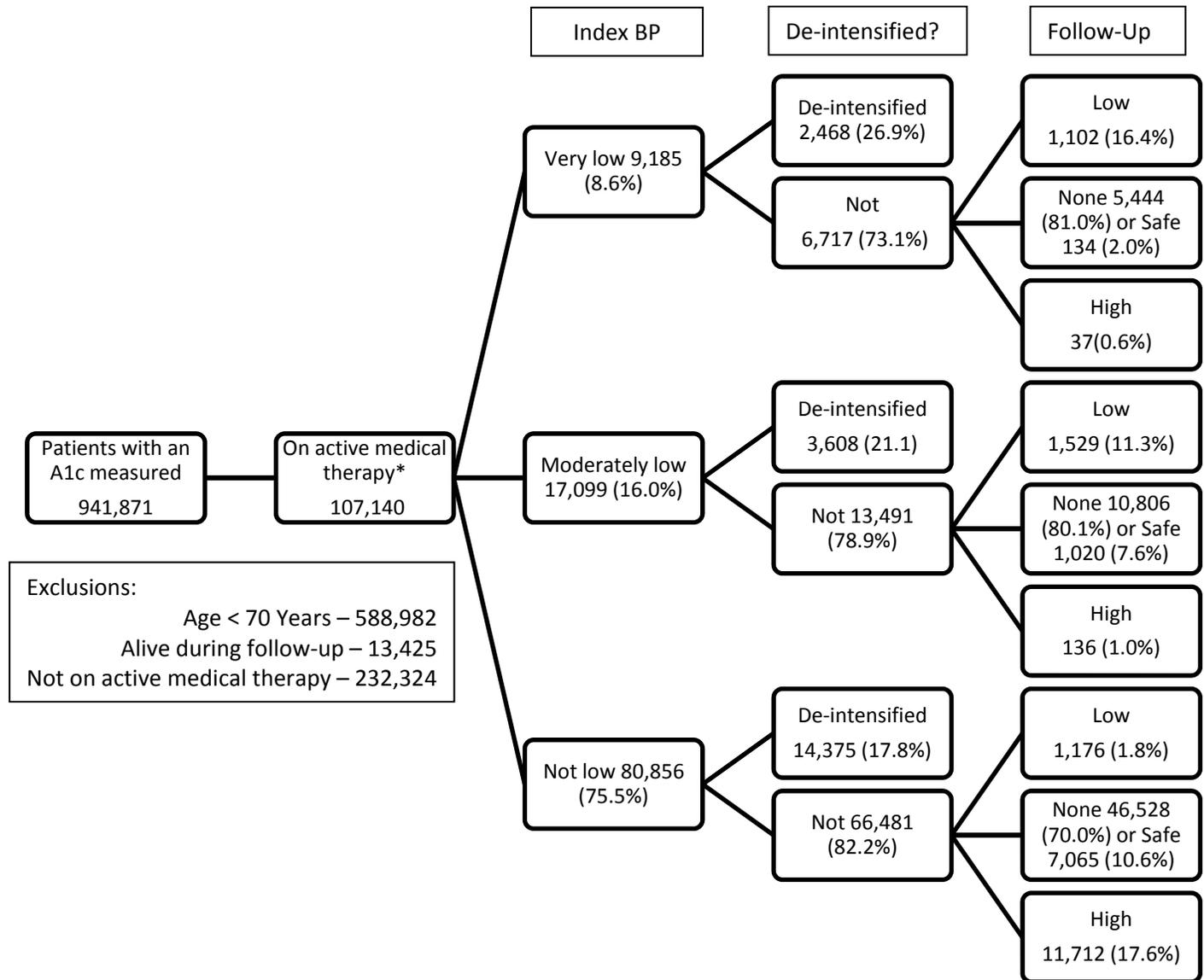**eFigure 2.** Patient Flow Diagram for Low Blood Pressure Cohort.

Diabetes patients >70 years old on active blood pressure treatment*. In this figure, all ACE/ARB use is not considered "active medical therapy," regardless of dose.

Index BP	De-intensified?	Follow-Up

Very low 75,424 (38.9%)
- De-intensified 12,316 (16.3%)
  - Low 18,509 (28.6%)
- Not 63,108 (83.7%)
  - None 38,498 (61.0%) or Safe 6,412 (10.2%)
  - High 139 (0.2%)

Patients with a BP measured in Primary Care 823,323

On active medical therapy*193,690

Moderately low 23,554 (12.2%)
- De-intensified 3,278 (13.9%)
  - Low 4,641 (22.9%)
- Not 20,276 (86.1%)
  - None 12,718 (62.7%) or Safe 2,829 (14.0%)
  - High 88 (0.4%)

Exclusions:
Age < 70 Years - 511,790
Died during follow-up - 44,208
Heart failure or cirrhosis - 14,361
Not on active medical therapy - 59,274

Not low 94,712 (48.9%)
- De-intensified 13,046 (13.8%)
  - Low 15,342 (18.8%)
- Not 81,666 (86.2%)
  - None 48,087 (58.9%) or Safe 17,278 (21.2%)
  - High 959 (1.2%)

* We defined *active medical therapy for BP* as being on medications other than angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin-receptor blockers (ARBs). *Very low* BP is defined as (SBP < 120 or DBP <65 mm Hg, *moderately low* SBP ≥120 and SBP <130 mm Hg, not low SBP ≥130 and DBP ≥65 mm Hg. *Low* is very low or moderately low (SBP <130 or DBP <65 mm Hg), *high* is SBP ≥140 and DBP ≥90 mm Hg, *safe* is the remaining population, and *none* is the population with no measured value in the following 6 months.
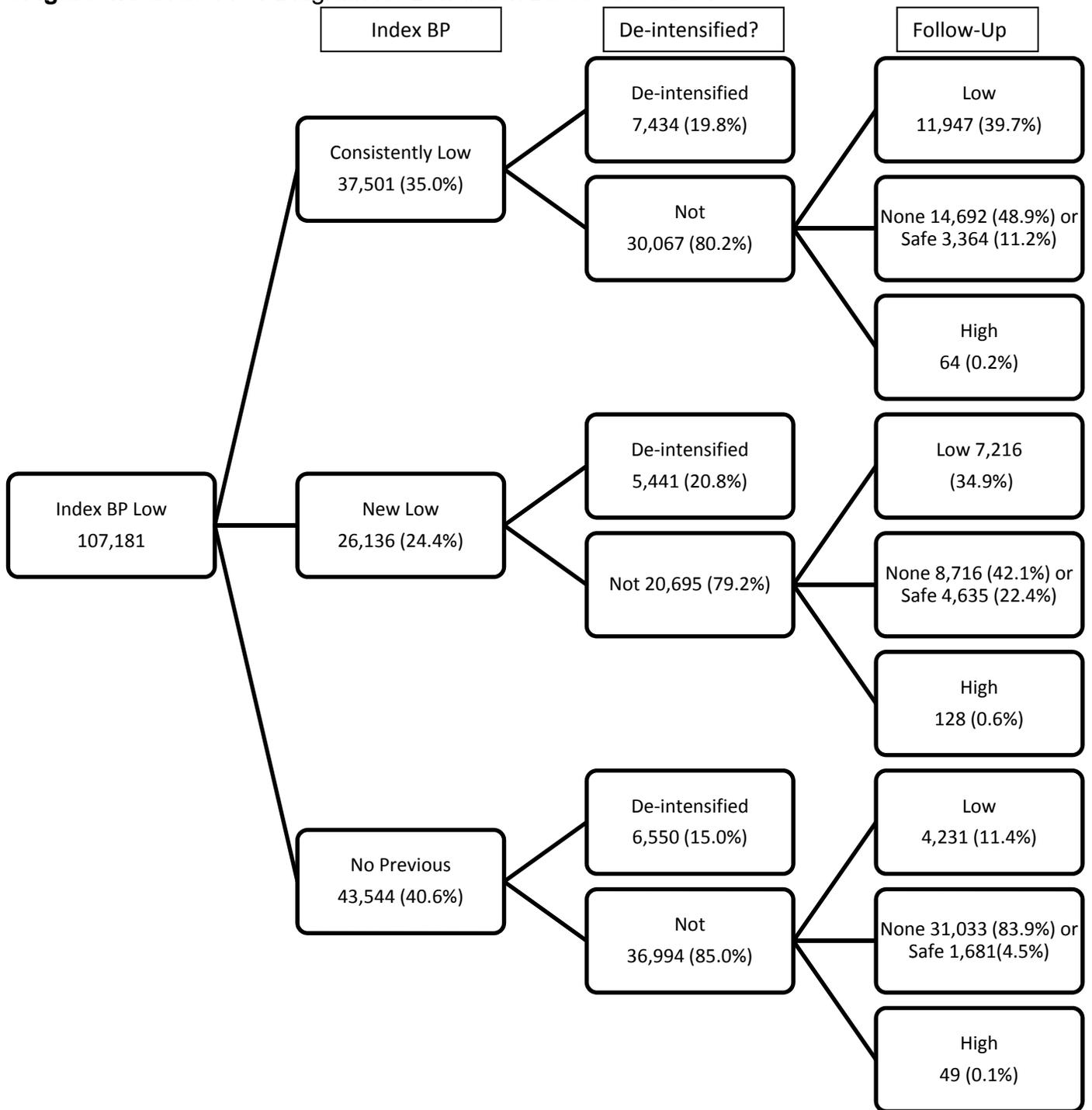
eFigure 3. Patient Flow Diagram for Low HbA$_{1c}$ Cohort Without Insulin and Metformin.

Diabetes patients >70 years old on active glucose-lowering treatment*. In this figure, insulin and metformin are both considered not to be "active therapy."

Index BP	De-intensified?	Follow-Up

Very low 9,185 (8.6%)
- De-intensified 2,468 (26.9%) → Low 1,102 (16.4%)
- Not 6,717 (73.1%) → None 5,444 (81.0%) or Safe 134 (2.0%); High 37 (0.6%)

Patients with an A1c measured 941,871 → **On active medical therapy* 107,140**

Exclusions:
Age < 70 Years – 588,982
Alive during follow-up – 13,425
Not on active medical therapy – 232,324

Moderately low 17,099 (16.0%)
- De-intensified 3,608 (21.1) → Low 1,529 (11.3%)
- Not 13,491 (78.9%) → None 10,806 (80.1%) or Safe 1,020 (7.6%); High 136 (1.0%)

Not low 80,856 (75.5%)
- De-intensified 14,375 (17.8%) → Low 1,176 (1.8%)
- Not 66,481 (82.2%) → None 46,528 (70.0%) or Safe 7,065 (10.6%); High 11,712 (17.6%)

* *Active medical therapy for blood glucose* was defined as being on any diabetes medication other than metformin alone, insulin alone, or only insulin and metformin. *Very low HbA$_{1c}$* is defined as <6.0%, *moderately low* as 6.0% to <6.5%, *not low* as ≥6.5%. *Low* is very low or moderately low (HbA$_{1c}$ <6.5%), *high* is HbA$_{1c}$ ≥7.5%, *safe* is the remaining population, and *none* is the population with no measured value in the following 6 months.

eFigure 4. Patient Flow Diagram for Low Index Blood Pressure*.

Index BP	De-intensified?	Follow-Up

Index BP Low
107,181

Consistently Low
37,501 (35.0%)

- De-intensified 7,434 (19.8%)
  - Low 11,947 (39.7%)
- Not 30,067 (80.2%)
  - None 14,692 (48.9%) or Safe 3,364 (11.2%)
  - High 64 (0.2%)

New Low
26,136 (24.4%)

- De-intensified 5,441 (20.8%)
  - Low 7,216 (34.9%)
- Not 20,695 (79.2%)
  - None 8,716 (42.1%) or Safe 4,635 (22.4%)
  - High 128 (0.6%)

No Previous
43,544 (40.6%)

- De-intensified 6,550 (15.0%)
  - Low 4,231 (11.4%)
- Not 36,994 (85.0%)
  - None 31,033 (83.9%) or Safe 1,681(4.5%)
  - High 49 (0.1%)

* *Low* is very low or moderately low (SBP <130 or DBP <65 mm Hg), *high* is SBP ≥140 and DBP ≥90 mm Hg, *safe* is the remaining population. *Consistently low* is all blood pressure days from the 6 months prior to index had SBP <130 or DBP <65 mm Hg. *New low* is having 1 day of blood pressure measured in 6 months prior to index that had SBP ≥130 and DBP ≥65 mm Hg. *No previous* means no blood pressure measured in the previous 6 months.

eFigure 5. Patient Flow Diagram for Low HbA$_{1c}$ Cohort.
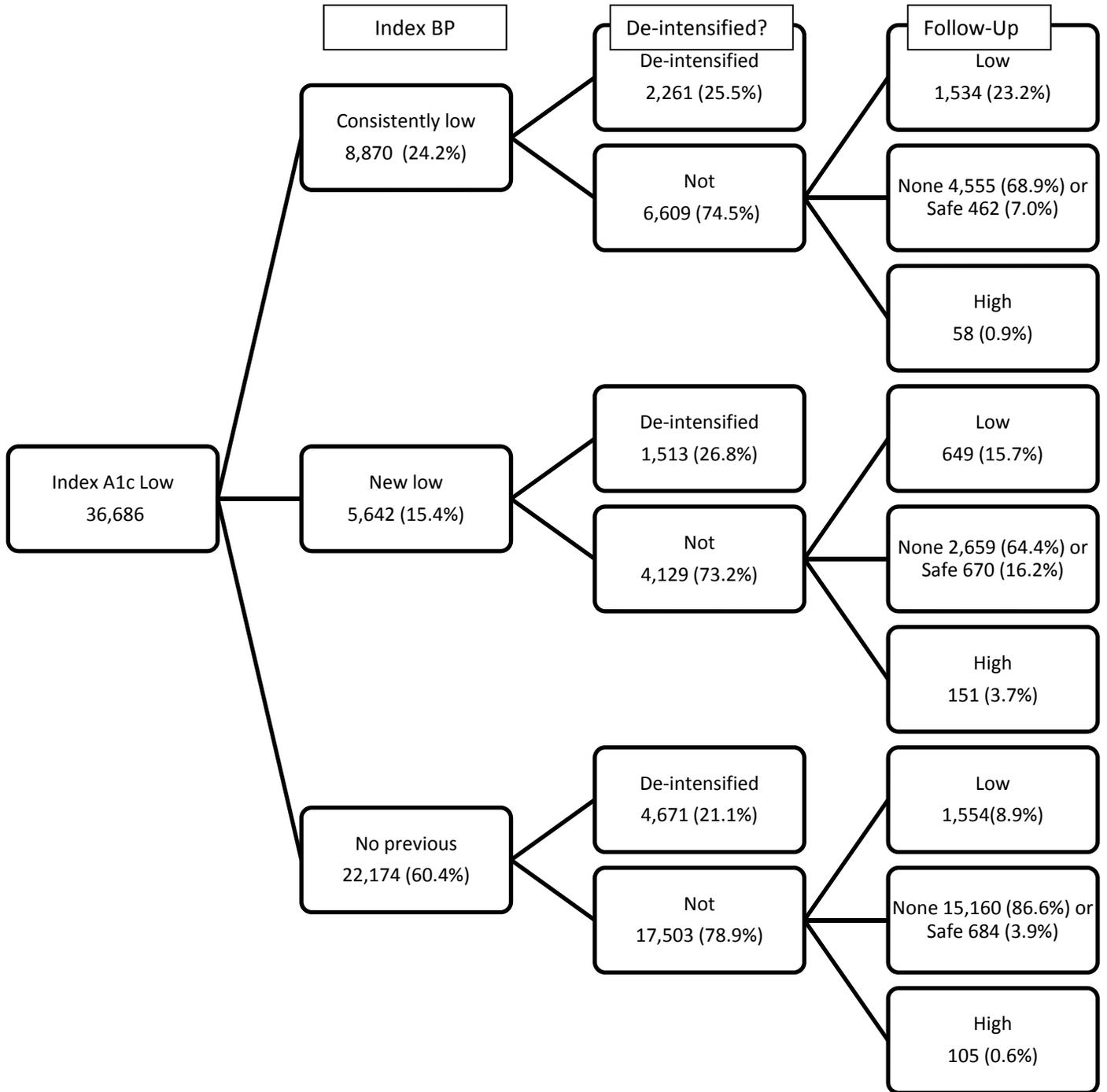
Low is very low or moderately low (HbA$_{1c}$ < 6.5%), *high* is HbA$_{1c}$ ≥7.5%, and *safe* is the remaining population. *Consistently low* is all HbA$_{1c}$ values from the 6 months prior to index <6.5%. *New low* is having any HbA$_{1c}$ ≥6.5% in the 6 months prior to index. *No previous* represents no HbA$_{1c}$ values in the previous 6 months.

eTable 1. Relationship Between Baseline Blood Pressure, Baseline Life Expectancy, and Likelihood of Deintensification.

Baseline values are low BP and life expectancy >10 years. *Very low* is defined as SBP <120 mm Hg or DBP < 65 mm Hg. *Moderately low* is defined as SBP 120-29 mm Hg. *Not low* is defined as SBP≥130 mm Hg and DBP ≥65 mm Hg

Rate of deintensificiation	Coefficient	95% CI	*P* value
BP moderately low	-0.15	-0.22 to -0.07	<.001
BP not low	-0.20	-0.25 to -0.15	<.001
Life expectancy 5-10 years	0.21	0.16 to 0.25	<.001
Life expectancy <5 years	0.37	0.32 to 0.43	< 0.001
Potential interaction effects			
BP moderately low, life expectancy 5-10 years	-0.06	-0.15 to 0.2	.15
BP moderately low, life expectancy <5 years	0.08	-0.04 to 0.20	.19
BP not low, life expectancy 5-10 years	-0.07	-0.13 to -0.01	.03
BP not low, life expectancy <5 years	-0.03	-0.11, 0.05	.39

eTable 2. Relationship Between Baseline HbA_{1c}, Baseline Life Expectancy, and Likelihood of Deintensification.

Baseline values are low HbA_{1c} and Life expectancy >10 years. *Very low* is defined as <6.0%, *moderately low* is defined as 6.0%-6.4%, and *not low* is defined as ≥6.5%.

Rate of deintensificiation	Coefficient	95% CI	*P* value
HbA_{1c} Moderately low	-0.32	-0.42 to -0.21	<.001
HbA_{1c} not low	-0.52	-0.62 to -0.43	<.001
Life expectancy 5-10 years	0.10	0.003 to 0.20	.004
Life expectancy <5 years	0.32	0.21 to 0.44	<.001
Potential interaction effects			
HbA_{1c} moderately low, life expectancy 5-10 years	-0.03	-0.16 to 0.09	.62
HbA_{1c} moderately low, life expectancy < 5 years	0.01	-0.15 to 0.16	.93
HbA_{1c} not low, life expectancy 5-10 years	-0.01	-0.12 to 0.09	.80
HbA_{1c} not low, life expectancy <5 years	-0.08	-0.21 to 0.05	.23