Supplementary Online Content

Persell SD, Karmali KN, Lazar D, et al. Effect of electronic health record–based medication support and nurse-led medication therapy management on hypertension and medication self-management: a randomized clinical trial. *JAMA Intern Med.* Published online July 9, 2018. doi:10.1001/jamainternmed.2018.2372

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

eMethods 1. Diabetes Subgroup Analysis

We assessed additional metrics for participants who indicated that they had diabetes mellitus. We calculated several measures of disease control from the data in the health centers' electronic health record based of contemporary performance measures at the time of participant enrollment: 1) most recent hemoglobin A1c was measured in the past 1 year and the value was less than or equal to 9% (HbA1c ≤ 9 %), 2) most recent hemoglobin A1c was measured in the past 1 year and the value was less than to 8% (HbA1c < 8 %), and 3) most recent low-density lipoprotein cholesterol was measured in the past 1 year and the value was below 100 mg/dL (LDL-C <100 mg/dL). Each of these measures was assessed at the date of enrollment, and at three, six and twelve months following enrollment. In addition, we assessed medication reconciliation, knowledge of medication indications, understanding of medication instructions and dosing, and self-reported medication adherence for diabetes medications. The characteristics of the subgroup of participants with diabetes is shown in eTable 3. Outcomes for the subgroup with diabetes is shown in Supplemental eTable 4.

eMethods 2. Additional Details Regarding Medication Measures

Medication Reconciliation: When an EHR-listed medication was added or discontinued within 3 days of the interview date, we considered it reconciled if present or absent from the participant's list. Participants could consult pill bottles, or written lists used to track medications if available. We compared two physician raters' classifications for the medication reconciliation measures for comparisons of 200 classifications and found excellent agreement. For the hypertension medication reconciliation measure Kappa statistic = 0.95 (95% CI 0.91 to 0.99). For all chronic medications, Kappa = 0.88 (0.80 to 0.96). For diabetes medications, Kappa = 0.92 (0.86 to 0.98). For lipid medications, Kappa = 0.89 (0.82 to 0.97). For all medications, Kappa = 0.79 (0.66 to 0.92).

Knowledge of medication indications: This measure was assessed using the same approach as the one taken by Persell et al. Participants' explanations were rated using a 5-point scale: (1) definitely correct to, (5) definitely incorrect. Reponses were judged as incorrect when a respondent said they did not know why they took the medication or if the reviewer judged the response to be probably or definitely incorrect.[11] We tested two physician rater's classifications for 6000 medications and found excellent agreement, Kappa = 0.92 (0.91 to 0.94).

Understanding of medication instructions and dosing: Dosing intervals used to classify understanding of medication instructions and dosing were as follows. For each medication, participants were asked to indicate the times of day and the number of tablets taken by placing beads onto a tray with spaces for each hour of the day to represent the time of day and number of pills taken each time. They could indicate to study staff verbally when they did not take their medication the same way each day or used less than an entire pill (e.g., for once weekly medication or for medication with varying dosage). Understanding of medication instructions and dosing for a medication was considered correct if compared to the prescription sig, the participant demonstrated 1) the same number of administrations per day, 2) the same number of tablets taken per administration, and 3) dosing intervals that fell within specified lenient intervals. These intervals were as follows: for twice daily medications administrations separated by at least 8 and no more than 16 hours, for three times a day administrations separated by at least 4 and no more than 13 hours, and for four times a day administrations separated by at least 3 and no more than 8 hours. For example, a participant would be considered to have correct understanding of dosing for a three times a day medicine if she demonstrated taking it at 6 am, 11 am and 10 pm but would be considered incorrect if taken at 6 am 6 pm and 9 pm.

Medication adherence: Questions were used from the from the Patient Medication Adherence Questionnaire (PMAQ).[12,13] Participants were asked for each chronic (not only-as-needed) medication whether they missed any pills yesterday, any the day before, and any 3 days ago. If administered on Thursday through Saturday, they were also asked specifically about non-adherence on the prior weekend, "Some people have more trouble taking their pills on the weekend days. Did you miss any of this medicine last Saturday or Sunday?" If administered on Wednesday, they were specifically asked about last Saturday.[12,13] Classification of full adherence vs. not was made for each

medication class, meaning that if a participant indicated any missed doses for any of their antihypertensive medications that person would be classified as not meeting the hypertension medication adherence measure.

eMethods 3. Health Literacy Analyses

Intervention effects stratified by health literacy subgroup are shown in eTable 5. Terms testing for interactions between health literacy category and intervention arm were not significant.

eMethods 4. Exploratory Analysis

After observing study findings, we hypothesized that EHR-tools alone may have led to the identification of duplicate medications and/or medication self-discontinuation thereby leading participants in that group to use fewer total antihypertension medications. We analyzed the distribution of the number of participant-reported antihypertension medications used at baseline and 12 months, and examined whether changes in the number of antihypertension medications used accounted for observed changes in systolic blood pressure at 12 months.

The distribution of the number of antihypertensive medications taken was similar across study groups at baseline and at 12 months. The median change in the number of blood pressure medications over the 12-month study period was 0 in all three groups. Changes in the number of antihypertensive medications did not explain intervention group differences in systolic blood pressure at 12 months (eTables 6 and 7).

eTable 1. Medication Management Outcomes at 3, 6, and 12 Months by Study Group

	Usual care		EHR tools alone		EHR tools alone vs usual care		EHR tools plus education		EHR tools plus education vs usual care		EHR tools plus education vs EHR tools alone	
Medications reconciled	**N**	**%**	**N**	**%**	**Adjusted odd ratio (CI)**	***P* Value**	**N**	**%**	**Adjusted odd ratio (CI)**	***P* Value**	**Adjusted odd ratio (CI)**	***P* Value**
Hypertension, baseline	252	36.1	261	44.4	—		278	50.7	—		—	
Hypertension, 3 mo	228	43.0	245	50.6	1.3 (0.7, 2.6)	.45	255	62.0	1.9 (0.9, 3.9)	.072	1.5 (0.7, 3.0)	.30
Hypertension, 6 mo	230	43.0	250	52.8	1.5 (0.8, 2.8)	.20	261	58.2	1.5 (0.8, 2.8)	.19	1.0 (0.5, 1.9)	.98
Hypertension, 12 mo	252	36.1	261	51.0	1.8 (1.1, 2.9)	.014	278	55.4	2.0 (1.3, 3.3)	.0032	1.1 (0.7, 1.8)	.62
All chronic condition medications, baseline	252	10.7	261	26.4	—		278	26.6	—		—	
All chronic condition medications, 3 mo	228	16.2	245	29.4	1.6 (0.7, 3.4)	.26	255	34.5	2.1 (1.0, 4.5)	.064	1.3 (0.6, 2.8)	.45
All chronic condition medications, 6 mo	230	13.5	250	31.6	2.9 (1.2, 7.4)	.025	261	31.0	2.2 (0.9, 5.7)	.10	0.8 (0.3, 1.9)	.54
All chronic condition medications, 12 mo	252	11.9	261	27.6	2.5 (1.2, 5.2)	.017	278	25.5	2.5 (1.2, 5.2)	.016	1.0 (0.5, 2.0)	.98
All medications, baseline	252	1.6	261	11.1	—		278	11.2	—		—	
All medications, 3 mo	228	3.5	245	9.8	2.1 (0.9, 5.0)	.082	255	12.2	2.8 (1.2, 6.4)	.014	1.3 (0.7, 2.4)	.35
All medications, 6 mo	230	3.9	250	8.8	2.1 (0.8, 5.7)	.14	261	8.1	1.8 (0.6, 4.8)	.27	0.8 (0.4, 2.0)	.68
All medications, 12 mo	252	1.6	261	6.9	4.0 (0.7, 22.2)	.11	278	7.6	6.0 (1.1, 32.3)	.037	1.5 (0.4, 6.1)	.58
Knowledge of medication indication												
Hypertension, baseline	229	77.7	238	78.2	—		235	84.3	—		—	
Hypertension, 3 mo	216	78.7	239	84.1	2.1 (1.0, 4.6)	.051	237	86.9	1.9 (0.9, 4.3)	.10	0.9 (0.4, 2.0)	.81
Hypertension, 6 mo	221	79.6	246	82.9	1.8 (0.8, 3.8)	.14	245	87.4	1.5 (0.7, 3.3)	.33	0.8 (0.4, 1.9)	.67
Hypertension, 12 mo	240	80.8	255	83.1	1.3 (0.8, 2.4)	.32	267	87.3	1.4 (0.8, 2.5)	.30	1.0 (0.6, 1.9)	.95
All chronic condition medications, baseline	247	69.2	253	65.6	—		265	76.2	—		—	
All chronic condition medications, 3 mo	228	68.9	245	71.8	1.6 (0.9, 2.9)	.13	247	78.5	1.7 (0.9, 3.1)	.099	1.1 (0.6, 1.9)	.86
All chronic condition medications, 6 mo	229	69.0	251	67.3	1.0 (0.6, 1.8)	.88	259	77.2	1.3 (0.7, 2.2)	.37	1.2 (0.7, 2.1)	.44
All chronic condition medications, 12 mo	250	70.8	259	67.6	1.0 (0.6, 1.5)	.82	277	75.5	1.1 (0.7, 1.7)	.69	1.2 (0.7, 1.8)	.53

	All medications, baseline	254	46.1	262	48.1	—		277	50.2	—		—	
	All medications, 3 mo	231	54.6	246	58.9	1.3 (0.8, 2.1)	.37	254	63.4	1.6 (1.0, 2.5)	.078	1.2 (0.8, 2.0)	.38
	All medications, 6 mo	231	54.6	252	56.4	1.1 (0.6, 1.8)	0.86	260	65.0	1.6 (0.9, 2.8)	0.10	1.5 (0.9, 2.7)	0.15
	All medications, 12 mo	253	54.2	261	57.1	1.1 (0.6, 2.0)	0.71	277	63.5	1.3 (0.7, 2.4)	0.34	1.2 (0.6, 2.2)	0.57
Understanding of medication instructions and dosing													
	Hypertension, baseline	226	81.0	235	84.7	—		234	80.3	—		—	
	Hypertension, 3 mo	214	77.6	237	78.5	1.1 (0.4, 2.7)	.90	235	88.5	2.5 (0.9, 6.6)	.070	2.3 (0.9, 6.2)	.092
	Hypertension, 6 mo	221	76.9	244	76.6	1.2 (0.5, 3.0)	.73	243	83.1	1.8 (0.7, 4.9)	.23	1.5 (0.6, 4.1)	.38
	Hypertension, 12 mo	238	74.4	255	78.4	1.3 (0.6, 2.5)	.53	264	85.2	2.3 (1.1, 4.8)	.026	1.8 (0.9, 3.9)	.11
	All chronic condition medications, baseline	244	73.0	249	75.5	—		260	71.9	—		—	
	All chronic condition medications, 3 mo	224	66.1	241	69.3	1.2 (0.7, 2.0)	.45	244	76.6	2.0 (1.2, 3.5)	.0092	1.7 (1.0, 2.9)	.060
	All chronic condition medications, 6 mo	229	65.1	248	66.9	1.1 (0.5, 2.2)	.80	256	70.7	1.5 (0.7, 3.2)	.25	1.4 (0.7, 2.9)	.36
	All chronic condition medications, 12 mo	248	63.7	261	69.0	1.2 (0.7, 2.0)	.47	275	73.1	1.7 (1.0, 2.8)	.051	1.4 (0.8, 2.3)	.22
	All medications, baseline	252	61.1	259	69.9	—		275	64.7	—		—	
	All medications, 3 mo	227	56.0	243	63.0	1.3 (0.7, 2.2)	.44	248	65.3	1.6 (0.9, 2.8)	.13	1.2 (0.7, 2.2)	.47
	All medications, 6 mo	231	57.1	248	59.7	1.1 (0.4, 2.9)	.85	256	62.9	1.6 (0.6, 4.3)	.35	1.5 (0.5, 3.9)	.45
	All medications, 12 mo	253	56.5	261	62.8	1.2 (0.7, 2.0)	.54	276	67.4	1.7 (1.0, 2.9)	.047	1.5 (0.9, 2.5)	.17
Medication adherence, 4-day recall													
	Hypertension, baseline	229	61.1	238	67.2	—		236	56.8	—		—	
	Hypertension, 3 mo	215	68.4	239	74.9	1.2 (0.7, 2.3)	.53	237	63.7	0.8 (0.4, 1.5)	.52	0.7 (0.4, 1.3)	.21
	Hypertension, 6 mo	221	62.2	246	79.7	1.9 (1.1, 3.3)	.031	244	73.4	1.4 (0.8, 2.4)	.25	0.7 (0.4, 1.3)	.31
	Hypertension, 12 mo	239	74.5	256	73.8	0.9 (0.6, 1.4)	.64	267	71.5	0.9 (0.6, 1.4)	.59	1.0 (0.6, 1.5)	.94
	All chronic condition medications, baseline	247	53.4	252	58.7	—		264	47.0	—		—	
	All chronic condition medications, 3 mo	227	60.4	245	66.9	1.2 (0.7, 2.0)	.57	247	52.6	0.7 (0.4, 1.3)	.28	0.6 (0.4, 1.1)	.10
	All chronic condition medications, 6 mo	229	63.3	251	71.7	1.4 (0.7, 2.7)	.29	258	57.8	0.8 (0.4,1.6)	.56	0.6 (0.3, 1.1)	.11
	All chronic condition medications, 12 mo	249	63.9	261	61.3	0.8 (0.6, 1.2)	.34	277	59.2	0.8 (0.6, 1.2)	.33	1.0 (0.7, 1.4)	.99

All models contain baseline values for the outcome, study group and health center-level random effects.

eTable 2. Additional Outcomes at Baseline and 12 Months by Study Group

	Usual care N = 254	EHR tools alone N = 262	EHR tools alone vs usual care		EHR tools plus education N = 278	EHR tools plus education vs usual care		EHR tools plus education vs EHR tools alone	
	%	%	Adjusted odd ratio (CI)	*P* Value	%	Adjusted odd ratio (CI)	*P* Value	Adjusted odd ratio (CI)	*P* Value
PAM Level 4, Baseline [a]	53.5	61.1	—		52.5	—		—	
PAM Level 4, 12 mo. [a]	56.3	70.6	1.7 (0.98, 2.8)	.059	57.2	1.0 (0.6, 1.7)	.90	0.6 (0.4, 1.1)	.079
	Mean (SD)	**Mean (SD)**	**Model adjusted mean difference (CI)**	***P* Value**	**Mean (SD)**	**Model adjusted mean difference (CI)**	***P* Value**	**Model adjusted mean difference (CI)**	***P* Value**
Health-Related Quality of Life, SF-12 [b]									
Physical score, Baseline	40.8 (8.6)	41.6 (9.1)	—		43.8 (8.9)	—		—	
Physical score, 12 mo.	41.9 (8.6)	43.3 (8.7)	0.9 (-0.3, 2.1)	.14	44.4 (9.1)	0.8 (-0.4, 2.0)	.20	-0.1 (-1.3, 1.1)	.84
Mental score, Baseline	43.7 (11.0)	45.9 (12.0)	—		44.4 (11.7)	—		—	
Mental score, 12 mo.	45.2 (10.6)	47.9 (11.1)	1.7 (-0.6, 4.1)	.15	46.3 (11.2)	0.8 (-1.5, 3.2)	.50	-0.9 (-3.3, 1.4)	.44

All models contain baseline values for the outcome, study group and health center-level random effects.

CI: 95 % confidence interval. SD: standard deviation

[a] Patient Activation Measure. Level 4 indicates a score of 67.1-100 and indicates a patient is proactive about health.[15, 16]

[b] Using a modified version of the SF12v2.[14]

eTable 3. Baseline Characteristics Diabetes Subgroup

Characteristic	Total (n = 348)	Study Group		
		Usual care (n = 130)	EHR tools alone (n = 111)	EHR tools plus education (n = 107)
Age, mean (SD)	53.6 (9.5)	54.4 (9.1)	53.7 (10.0)	52.3 (9.6)
Female sex, %	68.4	68.5	67.6	69.3
Race/Ethnicity, %				
Black, African American	87.1	90.0	89.2	81.1
White, non-Hispanic	3.5	2.3	4.5	3.7
Hispanic	4.9	4.6	1.8	8.4
Other or did not disclose	4.6	3.1	4.5	3.7
Education, %				
Less than Grade 12	32.2	36.2	33.3	26.2
High school graduate or equivalent	34.2	35.4	33.3	33.6
Some college	28.5	26.2	27.9	31.8
College graduate or greater	4.9	2.3	5.4	7.5
Income, %				
< $10,000	48.3	53.1	43.2	47.7
$10,000 to <$20,000	29.3	27.7	29.7	30.8
$20,000 or more	17.2	15.4	18.0	18.7
Did not disclose	5.2	3.9	9.0	2.8
Health Insurance, %				
Medicaid	52.0	52.3	39.6	64.5
Medicare	22.1	25.4	21.6	18.7
Commercial insurance	11.2	15.4	10.8	6.5
Self-pay, other or did not disclose	17.0	13.9	26.1	11.2
Marital status: married or partner, %	23.9	30.0	15.3	25.2
English speaker, %	97.1	98.5	96.4	96.3
# of total medications, median (IQR)	6 (4,7)	5 (4,7)	6 (4.8)	6 (4,7)
Blood pressure, mean, mm Hg (SD)				
Systolic	142.3 (17.6)	138.9 (16.7)	146.7(18.6)	141.8 (17.0)
Diastolic	85.0 (11.5)	84.0 (11.8)	86.0 (11.8)	85.3 (10.8)
HbA1c ≤ 9 %, %	53.4	49.2	56.8	55.1

HbA1c < 8 %, %	45.4	41.5	49.6	45.8
LDL-C <100 mg/dl, %	29.6	23.9	43.2	22.4
Health literacy, %				
Likely limited	48.0	58.5	46.0	37.4
Possibly limited	33.1	28.5	31.5	40.2
Adequate	19.0	13.1	22.5	22.4

eTable 4. Laboratory and Medication Outcomes in the Diabetes Subgroup at Baseline, 3, 6, and 12 Months by Study Group

	Usual care		EHR tools alone		EHR tools alone vs usual care		EHR plus eduction		EHR plus education vs usual care		EHR plus education vs EHR tools alone	
	N	%	N	%	Adjusted odd ratio (CI)	*P* Value	N	%	Adjusted odd ratio (CI)	*P* Value	Adjusted odd ratio (CI)	*P* Value
HbA1c ≤ 9 %, baseline	130	49.2	111	56.8	—		107	55.1	—		—	
HbA1c ≤ 9 %, mo 3	130	53.1	111	55.0	0.8 (0.3, 2.0)	.67	107	61.7	1.5 (0.6, 3.8)	.33	1.9 (0.7, 4.7)	.18
HbA1c ≤ 9 %, mo 6	130	53.1	111	54.1	0.8 (0.4, 1.5)	.52	107	64.5	1.6 (0.9, 3.1)	.13	2.0 (1.0, 4.0)	.031
HbA1c ≤ 9 %, mo 12	130	54.6	111	53.2	0.8 (0.4, 1.6)	.53	107	68.2	1.9 (0.9, 3.8)	.079	2.3 (1.1, 4.8)	.023
HbA1c < 8 %, baseline		41.5		49.6	—			45.8	—		—	
HbA1c < 8 %, mo 3	130	45.4	111	47.8	0.8 (0.3, 1.9)	.65	107	52.3	1.4 (0.6, 3.4)	.43	1.7 (0.7, 4.3)	.23
HbA1c < 8 %, mo 6	130	45.4	111	44.1	0.7 (0.4, 1.3)	.25	107	54.2	1.5 (0.8, 2.8)	.23	2.1 (1.1, 4.2)	.027
HbA1c < 8 %, mo 12	130	46.9	111	43.2	0.8 (0.4, 1.6)	.45	107	59.8	1.8 (0.8, 3.9)	.13	2.4 (1.1, 5.3)	.030
LDL-C <100 mg/dL, baseline		23.9		43.2	—			22.4	—		—	
LDL-C <100 mg/dL, mo 3	130	24.6	111	46.0	2.0 (0.9, 4.3)	.096	107	30.8	2.0 (0.9, 4.5)	.088	1.0 (0.5, 2.3)	.94
LDL-C <100 mg/dL, mo 6	130	28.5	111	40.5	1.1 (0.5, 2.4)	.85	107	31.8	1.3 (0.6, 3.0)	.51	1.2 (0.5, 2.8)	.85
LDL-C <100 mg/dL, mo 12	130	32.3	111	31.5	0.8 (0.4, 1.4)	.37	107	33.6	1.1 (0.6, 1.9)	.79	1.4 (0.8, 2.7)	.27
Understanding of medication instructions and dosing												
Diabetes medications, baseline	78	75.6	81	74.1	—		70	72.9	—		—	
Diabetes medications, 3 months	69	68.1	76	76.3	1.6 (0.7, 3.5)	.29	76	80.3	2.1 (0.9, 5.2)	.094	1.4 (0.6, 3.3)	.48
Diabetes medications, 6 months	72	63.9	77	72.7	2.0 (0.9, 4.4)	.10	77	68.8	1.9 (0.8, 4.4)	.13	1.0 (0.4, 2.2)	.95
Diabetes medications, 12 months	77	72.7	81	82.7	2.1 (0.9, 5.0)	.11	72	70.8	1.1 (0.5, 2.6)	.79	0.5 (0.2, 1.3)	.18
Self-reported medication adherence												
Diabetes medications, baseline	89	65.2	94	73.4	—		81	66.7	—		—	
Diabetes medications, 3 months	81	71.6	91	78.0	1.2 (0.6, 2.6)	.62	81	65.4	0.7 (0.3, 1.4)	.27	0.5 (0.3, 1.1)	.11

	Diabetes medications, 6 months	85	84.7	91	85.7	0.9 (.3, 3.1)	0.93	85	67.1	0.4 (0.1, 1.3)	0.12	0.3 (0.1, 1.3)	0.14
	Diabetes medications, 12 months	90	75.6	97	79.4	0.8 (0.4, 1.7)	0.53	83	73.5	0.6 (0.3, 1.3)	0.21	0.8 (0.4, 1.6)	0.51
Medications reconciled													
	Diabetes medications, baseline	130	60.8	111	65.8	—		107	57.9	—		—	
	Diabetes medications, 3 months	117	62.4	105	66.7	1.3 (0.4, 3.8)	0.42	101	75.3	2.1 (0.8, 8.0)	0.11	2.0 (0.6, 6.4)	0.25
	Diabetes medications, 6 months	120	67.3	104	67.3	1.5 (0.7, 3.5)	0.29	102	68.6	1.7 (0.7, 3.8)	0.23	1.1 (0.5, 2.6)	0.86
	Diabetes medications, 12 months	130	50.0	111	64.0	1.8 (1.0, 3.2)	0.057	107	69.2	2.6 (1.4, 4.8)	0.0020	1.5 (0.8, 2.8)	0.22
Knowledge of medication indication													
	Diabetes medications, baseline	89	92.1	94	94.7	—		82	89.0	—		—	
	Diabetes medications, 3 months	81	92.6	91	95.6	2.3 (0.1, 103)	0.67	80	86.3	0.7 (0.02, 30)	0.86	0.3 (0.009, 11)	0.52
	Diabetes medications, 6 months	85	92.9	91	94.5	0.5 (0.02, 12)	0.68	85	89.4	0.6 (0.03, 12)	0.75	1.2 (0.1, 24)	0.90
	Diabetes medications, 12 months	93	92.5	99	92.9	1.2 (0.2, 7.0)	0.81	85	90.6	1.1 (0.2, 5.5)	0.95	0.9 (0.2, 4.7)	0.86

All models contain baseline values for the outcome, study group and health center-level random effects.

eTable 5. Systolic Blood Pressure Differences by Study Group Stratified by Health Literacy

Systolic blood pressure, mm Hg	Usual care	EHR tools alone	EHR tools alone vs usual care		EHR tools plus education	EHR tools plus education vs usual care		EHR tools plus education vs EHR tools alone	
	Mean (SD)	Mean (SD)	Model adjusted mean difference, mm Hg (CI)	*P* Value	Mean (SD)	Model adjusted mean difference (CI)	*P* Value	Model adjusted mean difference, mm Hg (CI)	*P* Value
Likely Limited Health Literacy	**N = 145**	**N = 126**			**N = 104**				
Baseline	142.3 (15.3)	147.0 (16.1)	—		145.5 (18.1)	—		—	
3 mo.	132.5 (20.1)	140.2 (20.0)	5.0 (0.8, 9.2)	.020	134.1 (19.4)	-0.3 (-4.7, 4.2)	.91	-5.2 (-9.8, -0.7)	.024
6 mo.	133.7 (21.4)	140.5 (20.6)	4.6 (0.0, 9.2)	.048	134.8 (18.8)	-0.4 (-5.2, 4.4)	.87	-5.0 (-10.0, -0.1)	.047
12 mo.*	135.5 (20.7)	141.7 (20.0)	4.3 (-0.8, 9.4)	.10	133.8 (18.8)	-3.3 (-8.7, 2.0)	.22	-7.6 (-13.2, -2.1)	.0069
Possibly Limited Health Literacy	**N = 75**	**N = 90**			**N = 98**				
Baseline	150.4 (18.2)	150.4 (18.2)	—		145.6 (17.5)	—		—	
3 mo.	141.2 (19.0)	141.2 (19.0)	0.3 (-4.8, 5.4)	.91	135.9 (18.1)	-2.1 (-7.0, 2.9)	.41	-2.3 (-7.0, 2.3)	.32
6 mo.	137.7 (21.4)	137.7 (21.4)	-2.2 (-8.3, 3.8)	.47	133.6 (20.8)	-4.0 (-9.9, 1.9)	.18	-1.7 (-7.3, 3.9)	.54
12 mo.*	138.4 (22.4)	138.4 (22.4)	0.5 (-5.3, 6.3)	.86	132.2 (19.4)	-3.2 (-8.8, 2.4)	.26	-3.7 (-9.0, 1.6)	.17
Likely Adequate Health Literacy	**N = 34**	**N = 46**			**N = 76**				
Baseline	141.8 (14.8)	149.4 (19.6)	—		145.5 (16.7)	—		—	
3 mo.	135.3 (20.4)	144.1 (19.6)	2.8 (-5.5, 11.0)	.51	135.6 (22.8)	-2.7 (-10.2, 4.8)	.48	-5.4 (-12.2, 1.3)	.11
6 mo.	135.0 (19.8)	142.8 (21.8)	2.7 (-5.7, 11.1)	.52	136.3 (22.6)	-1.2 (-8.8, 6.4)	.75	-4.0 (-10.9, 2.9)	.26
12 mo.*	135.5 (20.1)	148.1 (25.7)	8.0 (-1.1, 17.0)	.084	138.9 (21.5)	1.1 (-7.1, 9.3)	.79	-6.9 (-14.3, 0.5)	.069

All models contain baseline values for the outcome, study group and health center-level random effects.

* Primary study outcome

eTable 6. Exploratory Analysis Examining Changes in the Number of Hypertension Medications by Study Group

	Total	Study Group		
Characteristic		Usual care	EHR tools alone	EHR tools with education
Number of different antihypertensive medications used at baseline, median (IQR)	2 (1,2)	2 (1,2)	2 (1,2)	2 (1,2)
Number of different antihypertensive medications used at 12 months, median (IQR)	2 (1,3)	2 (1,3)	2 (1,3)	2 (1,2)
Change between baseline and 12 months in the number of antihypertensive medications used, median (IQR)	0 (0,1)	0 (0, 1)	0 (0, 1)	0 (0, 1)
Proportion of participants with a decrease between baseline and 12 months in the number of antihypertensive medications used, %	9.8	10.6	8.4	10.4

eTable 7. Model Adjusted Mean Difference in Systolic Blood Pressure at 12 Months by Study Group in Models With and Without Changes Between Baseline and 12 Months in the Number of Antihypertensive Medications Used

	EHR tools alone vs usual care		EHR tools plus education vs usual care		EHR tools plus education vs EHR tools alone	
Systolic blood pressure, mm Hg at 12 months	**Model adjusted mean difference (CI)**	***P* Value**	**Model adjusted mean difference (CI)**	***P* Value**	**Model adjusted mean difference (CI)**	***P* Value**
Model 1: baseline SBP, study arm, and health-center level random effects	3.6 (0.3, 6.9)	.034	-2.0 (-5.2, 1.3)	.23	-5.6 (-8.8, -2.4)	.001
Model 2: baseline SBP, study arm, change between baseline and 12 months in the number of antihypertensive medications used, and health-center level random effects	3.5 (0.2, 6.9)	.037	-2.1 (-5.3, 1.2)	.21	-5.6 (-8.8, -2.4)	.0006

eFigure 1. Sample Medication List Review Sheet

Please Review Your Medicines

It is very important that your doctor knows all the medicines you are taking.

Follow these steps:

Step 1. Remove any medicines you are not currently taking by drawing a line through the drug's name.

Step 2. For medicines you are currently taking, place a check (□) in the **Taking as directed?** column next to the correct box indicating if you are taking the medication as directed in the instructions.

Step 3. Place a check (□) in the **Concerns** column next to any concern you may have about the medication.

Your Current Medications Are

Medication	Instructions	Taking as directed?	Concerns
AmLODIPine Besylate 2.5 MG TABS (NORVASC)	Take 1 pill by mouth every morning	□ yes □ no □ only as needed	□ None □ Need Refill □ Cost □ Side Effects □ Other
lisinopril 10 MG TABS (PRINIVIL; ZESTRIL)	Take 1 pill by mouth every morning	□ yes □ no □ only as needed	□ None □ Need Refill □ Cost □ Side Effects □ Other
MetFORMIN HCl 500 MG TABS (GLUCOPHAGE)	Take 1 pill in the morning and 1 pill in the evening	□ yes □ no □ only as needed	□ None □ Need Refill □ Cost □ Side Effects □ Other
Atorvastatin Calcium 80 MG TABS (LIPITOR)	Take 1 pill every evening	□ yes □ no □ only as needed	□ None □ Need Refill □ Cost □ Side Effects □ Other

Step 4. Add the names of any other medicines you are currently taking that are not on the list. This includes prescription drugs, over-the-counter medicines, vitamins, and other supplements. For each drug, provide the dose and the instructions on how you take it. *Please don't worry if you have the exact spelling of your medications.*

Step 5. Place a check (□) in the Concerns column next to any concern you may have about the medication listed.

Your Additional Medications Are

Medication Name	Dose (i.e. 20 mg)	How you take it	Concerns
			□ Need Refill □ Cost □ Side Effects □ Other
			□ Need Refill □ Cost □ Side Effects □ Other
			□ Need Refill □ Cost □ Side Effects □ Other

eFigure 2. Sample Medication Information Sheet

SOME IMPORTANT THINGS TO KNOW ABOUT YOUR MEDICATION

Generic name	LISINOPRIL + HYDROCHLOROTHIAZIDE [HCTZ]
Brand name	Prinizide®, Zestoretic®
Purpose	This medicine helps lower blood pressure. It takes away extra water and salt in your body. Lisinopril is also called an ACE inhibitor and HCTZ is a diuretic (water pill).
Benefit	Treating high blood pressure can help prevent stroke, heart attack, heart failure, and kidney disease. This medicine can also reduce swelling, help protect the kidneys in people who have diabetes, and treat heart failure.
How to take	• Take this medicine by mouth as directed. Try to take it the same time each day. • This medicine can be taken with or without food. • If you miss a dose, take the missed dose as soon as you remember it. However, if it is almost time for the next dose, skip the missed dose and continue your regular dosing schedule. Do not take a double dose to make up for a missed one.
For how long	Refill and keep taking this medicine until your doctor tells you to stop.
Important!	**Do NOT use this medication if** you are pregnant, may become pregnant, or are breastfeeding. **Do NOT use this medication if:** • you are allergic to hydrochlorothiazide (HCTZ) or another thiazide diuretic • you are allergic to lisinopril (Prinizide, Zestoretic), or another ACE inhibitor • you have ever had angioedema (severe swelling of deep skin tissues or other organs)
Stop taking and call us or seek medical care	**Stop taking this medicine and call us right away or seek medical care if you have:** • hoarseness • swelling of the face, throat, tongue, lips, eyes, hands, feet, ankles, or lower legs • difficulty breathing or swallowing • rash • fainting
Call us	**Call us if these side effects are severe, last longer than one week, or if you feel concerned.** • cough • lightheadedness • drowsiness • new symptoms or problems
Remember	**Talk to your doctor about:** • whether you should avoid salt substitutes or limit foods that are high in potassium • concerns you have about paying for the medicine **Follow up is important** • remember the date of your next appointment • follow up is important to see how well the medicine is working and to check blood tests when needed

You will get more detailed information from your pharmacy. You may find the following website useful: www.nlm.nih.gov/medlineplus.