Online Appendix
Supplementary Files

for

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Improving Diabetes Care among Patients Overdue for Recommended Testing:
A Randomized Controlled Trial of Automated Telephone Outreach
Supplementary Table 1. Sample of Questions Included in Automated Telephone Outreach Calls.

| Sample of Questions Included in Automated Telephone Outreach Calls. |
|---------------------------------------------------------------|
| **Dilated eye examination:**                                  |
| • A dilated eye exam is performed by an ophthalmologist or optometrist by applying drops to the eye. Please tell me yes, no, or I’m not sure, have you had a dilated eye exam in the last 12 months? |
| • Are you planning to have a dilated eye exam soon, say in the next three months? |
| • Since getting a dilated eye exam is so important, we want to do our best to help make sure you have this exam. So we’ve partnered with [NAME OF VISUAL SERVICES PROVIDER] to waive the co-payment for your next office visit. Would you like to hear more? |
| • Would you like us to send you a coupon and other information explaining this special offer? |
| **Cholesterol-lowering medication:**                          |
| • Have you ever been told by a doctor that you need to take any medication for your cholesterol? |
| • Are you currently taking a statin medication? |
| **Microalbumin/nephropathy Testing:**                         |
| • A microalbumin test, which tests your urine for protein, is a key part of diabetes management. Have you had a urine test, also called a microalbumin test, in the past 12 months? |
| • Are you planning to get a microalbumin test soon, say in the next three months? |
| **Glycated Hemoglobin Testing**                               |
| • Your Hemoglobin A1C level, also called glycosylated hemoglobin or A1c, measures the amount of sugar in your blood over the last three months. Have you had at least one Hemoglobin A1c test in the past 12 months? |
| • Are you planning to have an A1c test soon, say in the next three months? |
Medication Adherence:

- Do you find that you are able to take your statin as prescribed all of the time, on most days, or not as regularly as you would like?

- Many people find that cost can be an issue in taking their medication exactly as prescribed. Please tell me, do you find this to be the case for you?

- Some people find that it’s a challenge to remember to take their medication everyday. Is this true for you?

- We can send you a pill box with a space for each day’s medication at no charge to you. Would that be helpful?

Scheduling Assistance:

- Sometimes people don’t receive all of their tests because they are having trouble scheduling them. Has this been true for you?

- If you would like, a Harvard Pilgrim Health Care scheduling assistant can give you a call back to help you schedule any tests that you may need. Would that be helpful?

Telephone Support:

- Our goal is to ensure that you have all the resources you need to help you manage your diabetes, and we have nurses and clinical pharmacists who are available to provide you with support that’s customized to your needs. Would you like one of these diabetes educators to give you a call back?
### Supplementary Table 2. Baseline characteristics of study subjects.

| Characteristic                                      | Intervention (N=600) | Control (N=600) | P Value |
|----------------------------------------------------|----------------------|-----------------|---------|
| Age, years (mean ± sd)                             | 50.3 ± 10.9          | 51.8 ± 10.8     | 0.02    |
| Female (%)                                         | 35.5                 | 41.2            | 0.04    |
| Black (%)*                                         | 4.2                  | 5.4             | 0.36    |
| Median household income (dollars)*                 | 56,924               | 55,870          | 0.41    |
| Taking oral hypoglycemic agents (%)                | 45.8                 | 44.5            | 0.64    |
| Taking insulin (%)                                 | 19.5                 | 20.0            | 0.83    |
| Dilated eye examination done (%)†                  | 17.7                 | 16.8            | 0.70    |
| Glycated hemoglobin testing done (%)‡              | 81.5                 | 81.5            | 0.99    |
| LDL-cholesterol testing done (%)‡                  | 76.3                 | 77.2            | 0.73    |
| Nephropathy testing done (%)‡                       | 75.7                 | 76.0            | 0.89    |

* Based on the census tract of the subject’s address of record.

† Percentage of subjects that completed the eye examination between the time of randomization and the commencement of the intervention.

‡ Percentage of subjects that completed each of the measures during the 12-month period prior to the intervention.

Abbreviations: sd = standard deviation; LDL= low density lipoprotein.
### Supplementary Table 3. Factors associated with call participation among subjects randomized to the intervention group (N=600).

| Characteristic                          | Participants* (N=232) | Non-Participants (N=368) | P Value |
|-----------------------------------------|-----------------------|--------------------------|---------|
| Age (mean ± sd)                         | 51.7 ± 9.95           | 50.8 ± 11.4              | 0.28    |
| Female (%)                              | 43.1                  | 30.7                     | 0.002   |
| Black (%)†                              | 3.3                   | 4.9                      | 0.37    |
| Median household income (dollars) †     | 58,136                | 56,136                   | 0.28    |
| Taking oral hypoglycemic agents (%)     | 41.4                  | 48.6                     | 0.08    |
| Taking insulin (%)                      | 19.4                  | 19.6                     | 0.96    |

* Participants were defined as having had verbal interaction with the system, as detailed in the text.

† Based on the census tract of the subject’s address of record.

Abbreviation: sd = standard deviation.
Supplementary Figure 1. Flow diagram of participants in the study.

35,065 Patients screened for eligibility

- 33,865 Excluded
  - 17,185 Not continuously enrolled in HMO
  - 914 Missing phone number in database
  - 9,076 Eye examination not overdue
  - 968 Other testing not overdue
  - 400 On do-not-call list
  - 1,382 Participating in other outreach program
- 9,200 Randomly excluded to achieve sample size

1,200 Randomized

- 600 Randomized to receive intervention
  - 232 Received intervention as assigned
  - 368 Did not receive intervention as assigned
    - 26 Opted-out prior to first call
    - 155 Unreachable
    - 152 Message left
    - 35 Answered call, declined to proceed
- 600 Randomized to receive usual care

600 Included in primary analysis

600 Included in primary analysis

- a Study excluded individuals not enrolled in commercial health plan (i.e., excluded Medicare patients), excluded patients with enrollment in preferred provider organization (PPO) insurance plan, and those without 12 months of continuous enrollment pre-randomization.
- b Study sample limited to individuals overdue for dilated eye examination and at least one of the following tests: glycated hemoglobin, LDL-cholesterol, microalbumin.
- c Health plan members who had previously instructed the health plan not to contact them for research or quality improvement programs.
- d For these individuals, the system left a recorded message on voice mail or answering machine, or left a message with a non-participant, asking the participant to call back.
- e Individual answered the phone and confirmed correct identity, but did not reply affirmatively when the system sought permission to proceed with interaction.
Supplementary Figure 2. Intention-to-Treat Analyses. Effect of automated telephone outreach intervention: intention-to-treat analysis. The graphs show Kaplan-Meier curves for the intervention and control subjects for the primary outcome of dilated eye examination (Panel A) and each of the secondary outcomes: glycated hemoglobin testing (Panel B); LDL-cholesterol testing (Panel C); and microalbumin testing (Panel D). At any time point along the x-axis, the probability of remaining untested (i.e., the value on the y-axis) corresponds approximately to the proportion of eligible subjects who had not received the recommended test up to that point in time. As noted in the text, in proportional hazards models adjusting for available covariates and the likelihood of being tested prior to randomization, there was no difference between intervention and usual care groups for any of the study outcomes.
B. Time to first glycated hemoglobin test

\[ p = 0.63 \text{ by Log-rank test} \]

- Intervention started
- Intervention (N=102)
- Usual care (N=102)

Probability of remaining untreated vs. Days since randomization.
C. Time to first LDL cholesterol test

- Usual care (N=60)
- Intervention (N=62)

p = 0.04 by Log-rank test

Probability of remaining untested vs. Days since randomization
D. Time to first microalbumin test

\[ p = 0.50 \text{ by Log-rank test} \]

- Probability of remaining untested
- Days since randomization
- Intervention started
- Intervention (N=262)
- Usual care (N=271)