**Supplementary File 1.** Pre-visit EHR-linked online questionnaire

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| Do you or a close blood relative (parent, sibling, child, aunt, uncle, niece, nephew, or grandparent) have: |
| breast cancer diagnosed before age 46 |
| breast cancer and Jewish ancestry |
| ovarian cancer diagnosed at any age |
| male breast cancer diagnosed at any age |
| colorectal cancer diagnosed before age 50 |
| uterine cancer diagnosed before age 50 |
| 3 or more relatives on same side of family with breast cancer and/or pancreatic cancer at any age |
| 3 or more relatives on same side of family with colorectal and/or uterine cancer at any age |
| none |

**Supplementary File 2.** Genetic Cancer Screening Tool (GCST)

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| Does patient or a close blood relative (parent, sibling, child, aunt, uncle, niece, nephew, or grandparent) have: |
| breast cancer diagnosed before age 46 |
| breast cancer and Jewish ancestry |
| ovarian cancer diagnosed at any age |
| male breast cancer diagnosed at any age |
| colorectal cancer diagnosed before age 50 |
| uterine cancer diagnosed before age 50 |
| 3 or more relatives on same side of family with breast cancer and/or pancreatic cancer at any age |
| 3 or more relatives on same side of family with colorectal and/or uterine cancer at any age |
| none |

**Supplementary File 3.** Images from the screening tool: provider and patient interfaces.

1. Pre-screening was positive if there was any previous documentation of a family history of cancer in the EHR family history tab, as in this example.
2. Patients with an online health account could also complete pre-screening through a pre-visit online questionnaire (questions listed in Supplementary File 1).
3. If a family history of cancer was reported via either of the pre-screening methods, the PCP saw this BestPractice Advisory during the wellness visit with the patient, prompting the provider to complete the Genetic Cancer Screening Tool (GCST; shown in D).
4. The GCST asked whether the patient or a close blood relative meet certain criteria (Table 1; Supplementary File 2).
5. If any criterion was selected, this secondary BestPractice Advisory appeared for the provider to either place an order for referral to genetic counseling or select a reason for not placing the order.