Adoption, Reach, Implementation, and Maintenance of a Behavioral and Mental Health Assessment in Primary Care

Alex H. Krist, MD, MPH[1]
Siobhan M. Phillips, PhD, MPH[2]
Roy T. Sabo, PhD[3]
Bijal A. Balasubramanian, MBBS, PhD[4]
Suzanne Heurtin-Roberts, MA, PhD, MSW[5]
Marcia G. Ory, PhD, MPH[6]
Sallie Beth Johnson, MPH, CHES[7]
Sherri N. Sheinfeld-Gorin, PhD[8]
Paul A. Estabrooks, PhD[7,9]
Debra P. Ritzwoller, PhD[10]
Russell E. Glasgow, PhD[11]
For the MOHR Study Group

ABSTRACT

PURPOSE Guidelines recommend screening patients for unhealthy behaviors and mental health concerns. Health risk assessments can systematically identify patient needs and trigger care. This study seeks to evaluate whether primary care practices can routinely implement such assessments into routine care.

METHODS As part of a cluster-randomized pragmatic trial, 9 diverse primary care practices implemented My Own Health Report (MOHR)—an electronic or paper-based health behavior and mental health assessment and feedback system paired with counseling and goal setting. We observed how practices integrated MOHR into their workflows, what additional practice staff time it required, and what percentage of patients completed a MOHR assessment (Reach).

RESULTS Most practices approached (60%) agreed to adopt MOHR. How they implemented MOHR depended on practice resources, informatics capacity, and patient characteristics. Three practices mailed patients invitations to complete MOHR on the Web, 1 called patients and completed MOHR over the telephone, 1 had patients complete MOHR on paper in the office, and 4 had staff help patients complete MOHR on the Web in the office. Overall, 3,591 patients were approached and 1,782 completed MOHR (Reach = 49.6%). Reach varied by implementation strategy with higher reach when MOHR was completed by staff than by patients (71.2% vs 30.2%, $P < .001$). No practices were able to sustain the complete MOHR assessment without adaptations after study completion. Fielding MOHR increased staff and clinician time an average of 28 minutes per visit.

CONCLUSIONS Primary care practices can implement health behavior and mental health assessments, but counseling patients effectively requires effort. Practices will need more support to implement and sustain assessments.

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INTRODUCTION

A substantial burden of unhealthy behaviors leads to chronic diseases and mental health disorders among patients seen in primary care settings.[1] Health risk assessments (HRAs) can help identify and address factors that place a person at enhanced risk for morbidity or mortality. Primary care is a promising setting to conduct HRAs because risk identification can be linked to assistance from clinicians who have a long-standing and trusting relationship with the patient.[2] Unfortunately, many primary care practices are overwhelmed by competing demands, and typical office visits provide little time to address health risk information.[3,4]

As early as 1970, clinician manuals promoted sample HRA questionnaires, risk computations, and feedback strategies.[5] While HRAs were not widely adopted by the medical profession, they proliferated in workplaces and community-based programs.[6,7] In these settings, HRAs improved health indicators such as blood pressure, weight, physical activity, and general health status.[8,9] A critical finding was that merely administering an HRA questionnaire does not produce behavior change.[10-12] Comprehensive, well-resourced follow-up is essential to help individuals gain the skills they needed to change health habits.

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CORRESPONDING AUTHOR

Alex H. Krist, MD, MPH
PO Box 980101
Richmond, VA 23298
ahkrist@vcu.edu

Until recently, primary care settings conducted HRAs infrequently. One survey found that fewer than 20% of practices routinely administered HRAs, and these tended to be larger practices affiliated with health care systems.[13] However, the Affordable Care Act established a Medicare Annual Wellness Visit that mandates the inclusion of an HRA and a personal prevention plan.[14] The mandated HRA (1) may be completed before or as part of a visit; (2) must identify chronic diseases, injury risks, modifiable risk factors, and urgent health needs; and (3) may be furnished through an interactive telephonic or Web-based program.[15]

Despite these new policies, little is known about effective ways for practices to implement an HRA and the extent to which practices can routinely engage patients. This article reports on the feasibility of conducting behavior and mental health assessments in a diverse sample of real world primary care settings. Specifically, we report on practices' willingness to adopt the My Own Health Report (MOHR) tool, how practices implemented MOHR, the percentages and characteristics of patients completing a MOHR assessment based on implementation strategy, and whether practices maintained use of MOHR after study completion.

METHODS

The MOHR study is a cluster-randomized, mixed methods implementation trial. The design is purposefully pragmatic, allowing local tailoring of implementation to ensure that findings reflect real-life practice. Nine practice pairs were randomized with allocation concealment to implement MOHR (early implementation) or to provide usual care with a delayed option to implement MOHR (delayed implementation). Intervention practices were encouraged and helped to adapt their implementation workflow to fit local needs. The MOHR content and research data collection activities were standardized. Study methods and pilot data have been reported previously.[16,17]

The study was approved by the Virginia Commonwealth University (VCU) (#HM12746), (#12-0017900), and 5 other participating institutional review boards.

Setting

The MOHR study was a collaboration of 8 nationally distributed academic partners that manage practice based research networks (PBRNs) or participate in the Cancer Prevention and Control Research Network (CPCRN).[18,19] Academic partners and study practices were purposefully selected to represent the spectrum of primary care practice type, ownership, location, electronic health record infrastructure, and patient population. Virginia Commonwealth University (VCU) served as the national coordination center. VCU recruited and managed 2 matched pairs of primary care practices, and the other academic centers recruited and managed 1 each, for a total of 18 intervention and control practices. If a participating practice was part of a health system or federally qualified health center, it was paired with another practice from the same system or center. This report focuses on the experiences of the 9 intervention practices.

Most practices were small to medium size, with 1 to 6 clinicians and an annual practice patient panel of 1,500 to 10,000 adults (Table 1). One practice did not have an electronic health record (EHR) and 2 did not offer patients a personal health record (PHR). No practice systematically offered a health risk assessment, instead relying on clinicians to ask about health behaviors and psychosocial issues as part of care.

Intervention

Early intervention practices were asked to adopt, implement, and field MOHR routinely to a minimum of 300 patients between March and December 2013. Practices were encouraged to continue using MOHR after study completion. MOHR is available electronically at http://www.MyOwnHealthReport.org or on paper in both English and Spanish. While we attempted to fully integrate the electronic version of MOHR into practices' EHRs and PHRs, this was not feasible due to a variety of constraints.

The MOHR assessment asked patients 17 health behavior and psychosocial risk screening questions and 6 demographic questions previously identified by a consensus panel as brief, practical, and evidence-based.[20,21] The screening issues MOHR assessed were all recommended by the US Preventive Services Task Force with the exception of sleep, quality of life, and anxiety. In response to positive depression, anxiety, alcohol, and drug screening questions, MOHR asked the Patient Health Questionnaire (PHQ9),[22] Generalized Anxiety Disorder (GAD) questionnaire,[23,24] Alcohol Use Disorders Identification Test (AUDIT-C),[25] and the Drug Abuse Screening Test (DAST-10),[26] respectively.

The electronic version of MOHR scored and categorized patients' responses as being of "no concern," "some concern," or "high concern." For responses with some or high concern, patients were asked if they were ready to change and/or discuss the topic with their clinician.[27-30] If patients selected more than 1 topic to change and/or discuss, they were asked to identify the most important topic. MOHR then provided patients a summary containing motivational feedback, initial improvement steps, and space to create 3 "SMART" goals (ie, goals that are specific,

Table 1. Characteristics of Early Intervention Practices Fielding the My Own Health Report (MOHR) Assessment

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8	Site 9
State	VA	VA	VA	CA	VT	NC	CA	TX	TX
Setting	Suburban	Rural	Urban	Rural	Rural	Rural	Urban	Rural	Urban
Academic association	PBRN	PBRN	PBRN	PBRN	PBRN	CPCRN	CPCRN	CPCRN	CPCRN
Patients seen per year	1,500	2,500	4,770	3,500	9,500	12,800	2,180	4,800	2,518
Provider FTEs	1	1.6	5.3	5.5	5	4.5	2	2	1
Rooming staff FTE	1	7	14.9	15	13.5	12	6	6	2
Patient ethnicity or race									
Latino (%)	20	1	1	3	1	2	75	48	67
Black (%)	10	49	17	1	5	60	25	23	13
Insurance									
Medicare (%)	9	12	26	13	13	49	5	2	3
Medicaid (%)	0	1	42	3	1	10	45	15	22
None (%)	1	49	17	1	5	10	50	38	69
Practice ownership	Private	FQHC	Health system	FQHC	Health system	FQHC	FQHC	FQHC	FQHC
Year adopted EHR	-	2013	2001	2009	2010	2005	2011	2010	2010
Year adopted PHR	-	-	2012	2013	-	-	-	2010	-
PCMH designation	-	-	NCQA level 3	Applying	NCQA level 3	-	-	-	Joint commission
Prior/current HRA use	Wellness behavior form	-	-	New patient behavior form	-	-	Ask behavior and mental questions for wellness	Ask behavior questions for wellness	Tobacco and alcohol as vital sign
Onsite behavioral/ mental health staff	-	Social worker	Social worker	- (system referral)	Psychologist	Behavioral health specialist	Counselor and Nutritionist	Psychologist and Psychiatrist	Behavioral health specialist

FTE = full time equivalent; PBRN = practice based research network; CPCRN = Cancer Prevention and Control Research Network; EHR = electronic health record; PHR = personal health record; PCMH = patient centered medical home; FQHC = Federally Qualified Health Center; HRA = health risk assessment; NCQA = National Committee for Quality Assurance.

measurable, achievable, realistic, and timely).[31,32] A clinician summary was automatically faxed to the practice to be uploaded into the EHR. The paper version of MOHR replicated this process, but required manual scoring and lacked follow-up questions.

Practices were asked to decide which patients would be invited to complete MOHR, when and where MOHR would be completed, whether they would use the electronic or paper version, and who would counsel patients in response to summaries. Some practices received research team staff support to help perform tasks related to implementing MOHR. Practice champions and academic representatives were offered Web-based training and biweekly learning collaboratives to refine the MOHR tools, discuss implementation strategies, and share challenges and successes.[33,34] Practice champions from 6 practices attended the Web-based training. Learning collaboratives were primarily attended by academic representatives, who shared experiences with their practices.

Data Sources

Data were collected from PBRN and CPCRN records, field and learning collaborative notes, the MOHR tool, and practice interviews. From PBRN and CPCRN records, we identified characteristics of practices approached for participation. From learning collaborative and field notes, we prospectively tracked each practice's implementation strategy. Field notes included number of patients approached to complete MOHR. The electronic and paper version of MOHR included date and time information for patients completing MOHR. For each practice, after 100, 200, and 300 patients in the practice had completed MOHR, the practice was interviewed about their implementation workflow as well as the time and staff required to complete tasks.

Outcomes Assessment

We used a pragmatic application of the Reach Effectiveness Adoption Implementation Maintenance

(RE-AIM) framework to evaluate outcomes.[35-37] This report focuses on the adoption, implementation, reach, and maintenance of MOHR. We defined *adoption* as the percentage of practices approached for study participation who agreed to participate, with descriptions of why practices declined; *implementation* as a description of how practices integrated MOHR into their workflow and the time and staff needed to carry out implementation steps; *reach* as the proportion of eligible patients approached who completed a MOHR assessment; and *maintenance* as whether early intervention practices continued to use MOHR after the study.[37-40]

For reach, we assessed the overall reach for the study and for each practice as well as tracking variation by week, by implementation strategy, and by practice and patient characteristics. We calculated the variability in reach using a generalized linear random effect model including a random practice effect. We used a logit link and binomial distribution. We calculated the relationship between reach and implementation strategy, practice characteristics, and patient demographics using logistic regression. We used SAS version 9.4 (SAS Institute) for all analyses, with the PROC GLIMMIX procedure for random effects modeling and PROC LOGISTIC for logistic regression models.

RESULTS

Adoption

Overall, 30 practices were approached to recruit 18 study sites, for a 60% adoption rate. Among 7 of 9 practice pairs, the first 2 practices approached agreed to participate. The local teams had to approach 10 and 2 practices before recruiting practice 6 and 9, respectively. These 12 practices declined because they were doing other studies, were concerned about workload, or routinely did health risk assessments.

Implementation

Implementation strategies of the early intervention practices are detailed in Table 2. Most (8 of 9) opted to use the Web-based tool, expressing interest in the automated scoring, feedback, and follow-up. Practice 2 elected to use the paper-based version due to concerns about patients' Web access. Four practices (practices 1, 3, 4, and 5) mailed invitations for patients to complete MOHR at home online before a visit. Due to unusually low response rates, practice 3 converted to an internal nurse-staffed calling center to contact patients by telephone, ask the questions, and enter responses on the MOHR website. The remaining practices (practices 6-9) had concerns similar to those of practice 2 and had practice or academic staff administer MOHR in the lobby or exam room and enter patient responses. With the exception of practice 9, which initially attempted to administer MOHR to all patients, practices targeted a combination of patients

Table 2. MOHR Implementation Strategy Developed by Practices and Time to Complete Additional Tasks

Site	Implementation Strategy	Target Population
Patients mailed an invitation to complete MOHR on the Web before an office visit		
1[a]	Patients mailed invitation to complete MOHR on the Web 2 weeks before appointment	Scheduled wellness and diabetes visits
3[b]	Patients mailed invitation to complete MOHR on the Web 2 weeks before appointment with in office help on a kiosk for non-completers	30 scheduled chronic or wellness visits per week (randomly selected)
4	Patients mailed invitation to complete MOHR on the Web 2 weeks before appointment	Any appointment scheduled 3 weeks in advance
5	Patients mailed invitation to complete MOHR on the Web 2 weeks before appointment	Scheduled chronic and wellness visits
Patients called and completed MOHR on phone before an office visit		
3[c]	Health system call center called patients and asked MOHR questions over phone before a visit and entered patient responses on the Web site	All chronic and wellness visits
Patients approached in the office to complete MOHR on the Web		
6	Academic staff approached patients, asked MOHR questions in waiting room, and entered responses on tablet	Chronic and wellness visits (if consented)
7	Academic staff approached patients and helped them complete MOHR on a kiosk in the waiting room	Chronic and wellness visits
8[d]	Practice rooming staff approached patients, asked MOHR questions in waiting room, and entered responses on tablet	Chronic visits
8[e]	Academic staff approached patients, asked MOHR questions in waiting room, and entered responses on tablet	Chronic and wellness visits
9[f]	Medical assistant approached patients, asked MOHR questions in waiting room, and entered responses on tablet	All patient visits Wellness visits
9[g]	Academic staff approached patients, asked MOHR questions in waiting room, and entered responses on tablet	Chronic and wellness visits
2	Front desk staff approached patient, patient completed paper version of MOHR in the waiting room; when needed the clinician helped the patient answer MOHR questions	Chronic and wellness visits

[a]Task completed by academic staff.
[b]Study weeks 4-16, when site 3 mailed MOHR invitations to patients.
[c]Study weeks 14-19, when site 3 phoned patients to complete MOHR.
[d]Study weeks 1-17, when site 8 practice staff administered MOHR but only for chronic care visits.

presenting for wellness and/or chronic care visits, representing fewer than a third of patients seen daily.

All but 1 practice relied on the clinician to counsel patients during office visits in response to MOHR-identified topics. Clinicians reported spending an average of 5 to 17 minutes per patient in counseling. No practice used ancillary staff (eg, mental health or health behavior counselors) for counseling. Six practices reported no additional patient follow-up. The remaining practices had 10% to 20% of patients return for a follow-up office visit. Practice 6 reported delays delivering the summaries to clinicians for visits and accordingly provided no additional clinician counseling at visits or follow-up (Table 2).

With the exception of practice 2, no practice was able to field MOHR without support from the academic team or external health system resources. Support included querying appointment records to identify eligible patients (practices 4 and 5), mailing MOHR invitations (practices 1, 4, and 5), identifying eligible patients before appointments (practices 6-9), or administering MOHR (practices 6-9) (Table 2). Fielding MOHR, including clinician counseling, resulted in an average increase of 28 minutes per office visit (range 16-31 minutes). In our study, 17 minutes of tasks were performed by practice staff and 11 minutes by the academic staff.

Reach

Of 3,591 patients offered MOHR, 1,782 completed the assessment, for an overall reach of 49.6% (Table 3). We observed significant variation in reach (P <.001) based on implementation approach: 2.6% to 45.6% for mailed invitations (mean 26.2%), 64.2% for phone completion, 43.9% when completed in the office by the patient on paper, and 56.8% to 94.4% (mean 73.7%) when completed with staff assistance in the office on the Web. While this study was not designed to compare the reach of different implementation strategies, in general, completion rates were higher when completed by practice or research staff than by patients (71.2% vs 30.3%; P <.001). This is exemplified by the dramatic increase in reach when practice 3 converted from mailed invitation to phone completion (Figure 1).

Maintenance

Among the early intervention practices, none continued to use MOHR after study completion. Six practices have embedded elements of MOHR into their patient portal or pre-visit patient paperwork as part of a standardized HRA process.

Minutes per Visit Beyond Usual Care, by Task Completed

Query Visit Records	Mail Invitation	Match Summary to Visit	Counsel Patients	Follow-up	Other Tasks	Total
2	8[a]	3	11	2	-	25
2	2	2	5	-	10 (In-office help at kiosk)	20
2.5[a]	2[a]	5	10	5	-	27
1[a]	8[a]	5	15	-	8 (review summary)	29
2	-	5	10	-	10 (ask MOHR by phone)	19
Identify Eligible Patients	**Complete MOHR**	**Match Summary to Visit**	**Counsel Patients**	**Follow-up**	**Other Tasks**	**Total**
1[a]	15[a]	-	-	-	-	16
3.5[a]	16[a]	2	5	-	-	26.5
2	10	2	17	-	-	31
2[a]	10[a]	2	17	-	-	31
1	12	3	14	-	-	30
1[a]	8[a]	3	14	-	-	26
	10	5	9	5	-	28

[e]Study weeks 18-30, when site 8 academic team staff administered MOHR for wellness and chronic care visits.
[f]Study weeks 1-13, when site 9 practice staff administered MOHR to all patients (weeks 1-3) and then only chronic and wellness visits (weeks 4-13).
[g]Study weeks 14-33, when site 9 academic team staff administered MOHR for wellness and chronic care visits.

DISCUSSION

A diverse range of primary care practices were able to implement and systematically field a comprehensive behavior and mental health assessment with their patients. Practices were willing to do the MOHR assessment as exemplified by the high study adoption rate. For many practices, MOHR aligned

Table 3. Total Number of Patients Who Were Offered and Who Completed MOHR by Practice and Implementation Strategy

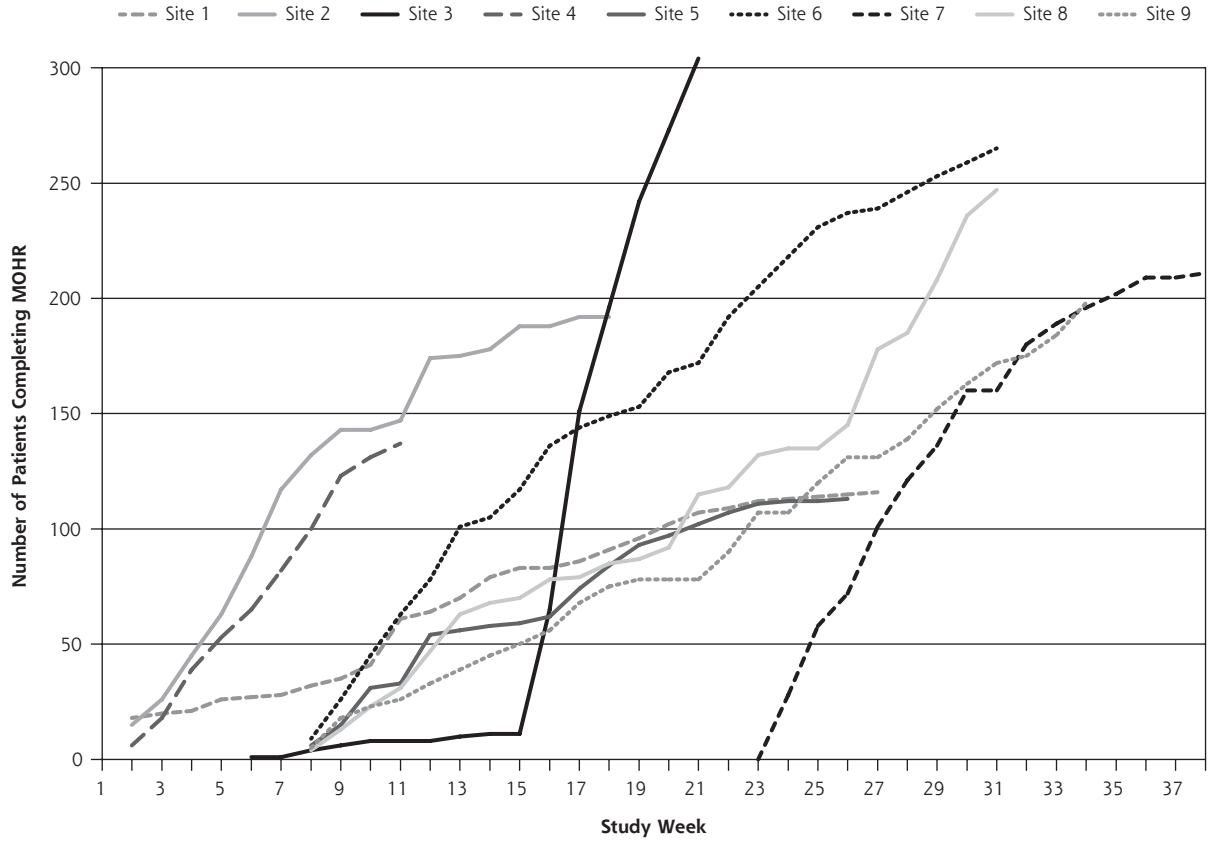
Site	Number of Patients Offered MOHR	Number of Patients Completing MOHR	Implementation Reach (% of Patients Offered MOHR Who Completed It)
Staff mailed patients an invitation to complete MOHR on the Web			
1	344	116	33.7
3[a]	420	11	2.6
4	444	141	31.7
5	248	113	45.6
Staff called patients and completed MOHR over the phone			
3[b]	453	291	64.2
Staff assisted patients completing MOHR on the Web in the office			
6	287	271	94.4
7	306	214	69.9
8	323	246	76.1
9	329	187	56.8
Patients completed MOHR on paper in the office			
2	437	192	43.9
Total	3,591	1,782	49.6

[a]Study weeks 4-16, when site 3 mailed patients invitations to complete MOHR.
[b]Study weeks 14-19, when site 3 phoned patients to complete MOHR.

with ongoing initiatives focused on patient-centered care and population health management.

By tailoring and integrating MOHR into their workflow, practices got a substantial proportion of patients to complete the assessment. Our observed reach of approached patients (49.6%) was double the HRA completion rates previously published by large health systems (22.4%) and on par with worksite completion rates coupled with economic incentives (40% to 64%).[41,42] Diverse practices were successful in getting patients of all ethnic, racial, and socio-economic levels to participate in MOHR. The value of coupling MOHR with primary care visits was supported by the finding that patients had an average of 6 concerning behaviors and mental health issues. These findings are fully addressed in a separate manuscript.[43]

Figure 1. Number of patients completing the MOHR assessment each week by practice.



While many have suggested that advances in health information technology may help to automate HRA administration and relieve practice resource burdens,[2,15] we found that some element of patient assistance more than doubled MOHR completion rates. As expected, providing assistance required substantially more staff time. Whether practices would be able to maintain this level of support over time is unclear.

Asking practices to conduct a behavior and mental health assessment like MOHR is not an insignificant request. Despite their interest, most practices lacked capacity and infrastructure to field MOHR independently and required external assistance. Accordingly, no practices chose to maintain MOHR after study completion when academic staff was no longer available. Most sites, however, integrated elements of MOHR into their workflow. Still more substantial practice transformation will be necessary to integrate MOHR-like assessments routinely into primary care, and current incentives, such as the mandate to include HRAs as part of wellness care, are insufficient to facilitate this practice change.[14,15]

HRAs hold great promise for primary care. The high prevalence of unhealthy behaviors and mental health concerns that we observed is supported in the literature.[1,43] Once such concerns are identified, primary care clinicians are well suited to initiate the counseling process. A large body of evidence demonstrates, however, that without intensive counseling, follow-up activities, and monitoring of progress toward achievement of health improvement goals (collectively termed an "HRA-plus process"), merely collecting HRA data will not change patient outcomes.[10,44-48] While the greatest practice time investment was clinician counseling, it is interesting that no practices used existing co-located health behavior counselors or referred patients to community resources. Many psychosocial and health behavioral counseling interventions require more intensive counseling over an extended period of time than primary care clinicians can provide. More effectively using co-located multidisciplinary teams and developing local community resources to refer patients for intensive counseling will be essential to help patients make difficult life changes.[49,50]

This study has several limitations. We were not able to integrate MOHR fully into the practices' EHRs, despite initial plans to do so. While the participating practices were very diverse, they may not have been fully representative of primary care nationally. We had a high proportion of Federally Qualified Health Centers that served more disadvantaged populations. MOHR was designed as a comprehensive psychosocial and health behavior assessment, resulting in more risk assessment questions and positive screens for practices to address. The length likely influenced our findings, and shorter assessments may prove to be more effective. Finally, this initial study addressed only an initial offering of MOHR to patients and did not assess the longitudinal management of patients over time. Future papers will address the patient experience (receipt of counseling and goal setting) and the costs of implementing MOHR.

While the MOHR study offers an initial understanding of the HRA-plus model for behavioral and mental health in primary care, additional study is needed. Further efforts are necessary for practices to gain the capacity to adopt the HRA-plus process. Practices need HRA tools that can be easily integrated into their workflows with content locally tailored to specific patient populations, that can be incorporated into existing EHRs and patient portals, and that provide automated feedback and support for both patients and clinicians. The optimal content and length of HRAs needs to be determined to maximize their feasibility and benefit. Practices need adequate resources to invest in infrastructure and staff to help patients complete an HRA and provide counseling. Future efforts will need to explore the roles of co-located health behavioral and mental health personnel and the integration of care between primary care practices and existing community resources.[49,51] Merely mandating that HRAs be added to an already packed wellness visit simply increases the chances that that practices will do this poorly or not at all.

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Author affiliations: Department of Family Medicine and Population Health, Virginia Commonwealth University, Richmond, Virginia (A.H.K.); Implementation Science Team, Division of Cancer Control and Population Sciences, National Cancer Institute, Rockville, Maryland (S.M.P.); Department of Biostatistics, Department of Family Medicine and Population Health, Virginia Commonwealth University, Richmond, Virginia (R.T.S.); Division of Epidemiology, Human Genetics, and Environmental Science, University of Texas, School of Public Health, Dallas, Texas (B.A.B.); Implementation Science Team, Division of Cancer Control and Population Sciences, National Cancer Institute, Rockville, Maryland (S.H-R.); Department of Health Promotion and Community Health Sciences, Texas A&M Health Sciences Center School of Public Health, College Station, Texas (M.G.O.); Department of Family and Community Medicine, Carilion Clinic, Roanoke, Virginia (S.B.J. & P.A.E.); Leidos Biomedical Research, Inc, Division of Cancer Control and Population Sciences of the National Cancer Institute, New York Physicians Against Cancer (NYPAC), Herbert Irving Comprehensive Cancer Center, New York, New York (S.N.S-G.); Department of Human Nutrition, Foods, and Exercise, Virginia Tech, Blacksburg, Virignia (P.A.E.); Institute for Health Research, Kaiser Permanente Colorado, Denver, Colorado (D.P.R.); Department of Family Medicine, University of Colorado School of Medicine, Denver, Colorado (R.E.G.)

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