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Health Risk Assessments in Michigan's Medicaid Expansion: Early Experiences in Primary Care

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Abstract

Introduction—Michigan is one of three states that have implemented Health Risk Assessments (HRAs) for enrollees as a feature of its Medicaid expansion, the Healthy Michigan Plan. This study describes primary care providers' (PCPs') early experiences with completing HRAs with enrollees and examines provider- and practice-level factors that affect HRA completion.

Methods—All PCPs caring for 12 HMP enrollees ($n=4,322$) were surveyed from June to November 2015, with 2,104 respondents (55.5%). Analyses in 2016–2017 described provider knowledge, attitudes, and experiences with the HRA early in HMP implementation; multivariable analyses examined relationships of provider- and practice-level characteristics with HRA completion, as recorded in state data.

Results—Seventy-three percent of PCP respondents found HRAs very or somewhat useful for identifying and discussing health risks, although less than half (47.2%) found them very or somewhat useful for getting patients to change health behaviors. Most PCP respondents (65.3%) were unaware of financial incentives for their practices to complete HRAs. Nearly all PCPs had completed at least one HRA. The mean HRA completion rate (completed HRAs/number of HMP enrollees assigned to that PCP) was 19.6%; those who lacked familiarity with the HRA had lower completion rates.

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Conclusions—Early in program implementation, HRA completion rates by PCPs were low and awareness of financial incentives limited. Most PCP respondents perceived HRAs to be very or somewhat useful in identifying health risks and about half of PCPs viewed HRAs as very or somewhat useful in helping patients to change health behaviors.

INTRODUCTION

Michigan received a Section 1115 waiver from the Centers for Medicare and Medicaid Services to expand Medicaid under the Affordable Care Act with cost sharing and healthy behavior incentives for beneficiaries. The Healthy Michigan Plan (HMP) began enrolling adults up to 138% of the Federal Poverty Level in April 2014.¹ HMP enrollees are asked to complete a Health Risk Assessment (HRA) with questions on health characteristics and behaviors, and, in collaboration with their primary care provider (PCP), select healthy behaviors to pursue, such as getting an influenza vaccine or quitting smoking. Providers submit the HRA to the enrollee's health plan, which forwards it to the state and can use the information to offer health programs to enrollees. The initial HRA form included a section for providers to document biometric data; this portion of the HRA was later removed.² Primary care practices receive a financial incentive that varies by health plan: \$15–\$50 for each submitted HRA.³ Enrollees could receive a reduction in their cost sharing; early in implementation they could also receive \$50 for completing the HRA.

Lack of provider knowledge of health behavior programs was a key reason for low participation rates in those programs among patients in Iowa's Medicaid expansion.⁴ Few studies have examined how HRAs work in low-income or publicly insured populations,^{5–8} or the key role of providers.^{9–18} Michigan is one of three states that use a Section 1115 waiver to include HRAs; at least two other state Medicaid programs are awaiting HRA approval from the Centers for Medicare and Medicaid Services.^{19,20} As more states experiment with these risk assessments, understanding PCPs' early experiences incorporating HRAs into practice could provide important insights. This mixed-methods study characterizes provider knowledge, attitudes, and experiences with the HRA early in HMP implementation, and analyzes relationships of provider-and practice-level characteristics with HRA completion.

METHODS

The details of PCP interviews and survey have been described previously.²¹ Briefly, 19 semi-structured interviews were conducted with PCPs from December 2014 to April 2015 to collect qualitative data on their attitudes and experiences. Interviewees included physicians ($n=16$) and non-physician practitioners ($n=3$) working in diverse practice types. Interviewees were asked about their knowledge of and experiences caring for patients with HMP coverage including changes in their practice. Interviews were audio-recorded and transcribed verbatim. These interviews informed survey design and provided quotes to illustrate common themes (Statistical Analysis section).

Study Sample

The cohort of PCPs was drawn in April 2015, 1 year after HMP implementation. HMP enrollment files in the Michigan Department of Health and Human Services (MDHHS) data warehouse identified all providers listed as the PCP for 12 HMP enrollees, which represents at least one enrollee per month during the first year of the program. This criterion was used to assure sampling of PCPs who had sufficient contact with HMP patients to respond to questions about their experiences with the HRA and other features of HMP. PCPs with <12 enrollees ($n=2,813$) were excluded yielding a population of 4,547 PCPs. After linking each National Provider Identifier with the Centers for Medicare and Medicaid Services National Plan and Provider Enumeration System data, the following were excluded: 161 PCPs with only a pediatric specialty, 35 PCPs with addresses >30 miles from the Michigan border, 25 PCPs with a National Provider Identifier that did not reflect an individual or active provider (20 organizational National Provider Identifier, four deactivated, one was invalid), and four physicians who were part of the HMP evaluation team. The surveyed cohort included the remaining 4,322 PCPs (3,686 physicians and 636 nurse practitioners and physician assistants) (Table 1).

Measures

The survey aimed to assess PCPs' knowledge, attitudes, and experiences regarding the HRA. The survey included measures of PCP and practice characteristics and PCP experiences and perceptions drawn from prior national surveys. New items specific to HMP, including knowledge of the HRA, incentives for practices and patients, practice processes to complete and submit HRAs, and early experiences with HRAs, were developed from the PCP interviews and cognitively tested with PCPs.

The paper survey was mailed in June 2015 with a letter describing the project and the confidentiality of responses, a \$20 bill, and paid-postage envelope. A fact sheet outlined HMP eligibility and program characteristics to help PCPs distinguish between HMP and traditional Medicaid coverage. Follow-up mailings were sent in August and September 2015 to non-respondents, and PCPs could complete an online version of the survey. Survey responses were supplemented with data from the MDHHS data warehouse, linked at the PCP level.

Statistical Analysis

Descriptive statistics characterized PCPs' responses about their practices' experience with completing HRAs. Bivariate relationships between practice characteristics and HRA experiences reported by respondents were assessed with Pearson chi-square tests. HRA completion rate was defined as the number of HRAs with PCP attestation in the data warehouse divided by the number of HMP enrollees per PCP. After conducting bivariate associations between PCP characteristics and survey responses and HRA completion rate, multivariable regression models further examined individual- and practice-level associations with HRA completion. Because the rate of HRA completion was non-normal, a two-part model was used first, using logistic regression to test the associations with any HRA completion, and linear regression with log link among PCPs who had at least one HRA completion (which excluded 132 PCPs with no HRA completions recorded). Finally, a

generalized linear model with a gamma link was fitted including all PCP data. Predicted margins of HRA completion rates are presented from that analysis. Results were similar with both the two-part and generalized linear models. To address practice-level clustering where more than one PCP from a practice completed the survey, sensitivity analyses were performed for each regression model, adding practice ID as a random intercept in the model. Results from these analyses did not reveal any changes in significance or direction of associations. Quantitative analyses used Stata, version 14.

Semi-structured interviews were audio-recorded, transcribed, and coded iteratively by two or more researchers using grounded theory and standard qualitative analysis techniques, using Dedoose© software. As a government-mandated evaluation of a public program, this project was deemed exempt by the IRBs at the University of Michigan and the MDHHS.

RESULTS

Three of 19 PCP interviewees were nurse practitioners or physician assistants. Sixteen physicians included 14 in family medicine and two in internal medicine. Five interviewees had <10 years in practice, six had 10–20 years, and eight had >20 years. Five worked in Federally Qualified Health Centers (FQHCs), three in hospital-based practices, two in a free or low-cost clinic, seven in private practice, and two in rural health clinics.

Of surveys sent to 4,322 PCPs (3,686 physicians and 636 nurse practitioners or physician assistants), 501 mailed surveys were returned as undeliverable. Of the remaining 3,821, a total of 27 PCPs were ineligible (e.g., retired, moved out of state) and 2,104 responded (1,986 mail, 118 online). The final response rate was 56% (54% for physicians, 65% for nurse practitioners/physician assistants) (Appendix Figure 2).

Slightly more than half of respondents (55.4%) were men and almost 80% self-identified as white (Table 1). Among respondents, 83.2% were physicians, although 71.7% had non-physician providers in their practice. About half identified their specialty as family medicine (53.4%) and a quarter (24.1%) as internal medicine. More than half (57.5%) were in practices with five or fewer providers; 14.9% practiced in FQHCs. Three quarters of PCP respondents (75.3%) practiced in urban settings, including 31.2% in the Detroit region. More than one third (36.0%) reported Medicaid/HMP as their predominant payer. Comparing the 2,104 respondents and 1,690 non-respondents revealed no significant differences in sex, age, number of affiliated Medicaid managed care plans, or practice in an FQHC. Non-respondents were more likely to have a rural practice and be internal medicine physicians.

Most (61.2%) PCPs reported their practice had a process in place for submitting HRAs. One third (34.1%) reported their practice had a method of identifying patients who needed HRAs completed, while 40.7% did not know if their practice had a process for identifying patients who needed to complete an HRA (Appendix Figure 1). Nearly half (45.3%) did not know if they or their practice had been contacted by a health plan regarding HRA completion, and 65.3% did not know whether they or their practice had received a financial incentive for completing HRAs (Figure 1). PCPs were more likely to report their practice had a process to

identify patients who needed to complete an HRA if their payer mix was predominantly uninsured (72.7%) or Medicaid (47.4%) compared with private (22.5%), Medicare (30.7%), or mixed (33.1%) ($p<0.001$), if they reported co-locating mental health within the previous year (47.5% vs 31.6% who did not report co-locating, $p<0.001$), or if they recalled they or their practice received an incentive for HRA completion (69.3% vs 26.4% for those who replied *no* or *don't know*, $p<0.001$).

Interviewees reflected that range

“I would have to say we have not really done a good job of accommodating it...it’s one of those, at the end of a visit, after-the-fact type of thing....I’m thinking maybe one of the better ways to facilitate it is to actually ask the patient at the check-in, ‘Do they have any forms that need to be completed?’”

(Urban physician; large, hospital-based practice)

“I think the nurses help do it before I get in the room.”

(Rural physician, small private practice)

“Well, all of the plans are doing the health risk assessment, which is great and we’ve been able to set up a process here so that...If they’re patients that have been ours...we’re able to do the health risk assessment here with their first visit. If it’s a new patient, we do it at their second visit because we have some additional information that we can put into that to help set their goals.” (Urban physician, free/low-cost clinic)

The PCPs were typically involved in at least part of the process of HRA completion and discussion, although some just signed it.

“Eighty percent of the time I fill [the physician portion] out in the room with them, and then that leads to a conversation about some appropriate health screenings ... whether or not we want to check their cholesterol or, ‘Okay, I’m just looking at your BMI here.’”

(Urban physician, FQHC)

Among PCP survey respondents, 79.4% reported completing at least one HRA with a patient; 43% of those reported completing more than ten (Appendix Table 1). About half of PCPs reported that financial incentives for patients (50.6%) or practices (42.9%) had some or a great deal of influence on completing HRAs. Slightly more than half of PCPs (51.6%) reported that patients’ interest in addressing health risks had some or a great deal of influence on PCPs’ completion of the HRA (Figure 1).

Most PCPs found HRAs very or somewhat useful for identifying and discussing health risks (73%), persuading patients to address their most important health risks (65.4%), and documenting behavior change goals (61.6%). About half (47.2%) found them very or somewhat useful for getting patients to change health behaviors (Figure 2).

Many interviewed PCPs saw value in the completion of the HRA and discussion that it generated with patients.

“We usually will talk about strategies to improve their health. Usually with obesity, addressing some of the factors that may be contributing to obesity, cholesterol issues, and diabetes risk....Equally as high on the totem pole, I guess, would be tobacco use. We talk a lot about cessation, and I refer a lot of people over to Michigan Quitline as a result of us kind of sitting down and specifically talking about those kinds of areas of interest on the HRA forms.” (Urban physician assistant, FQHC)

“Having those tools to be able to help patients...do goal setting and move forward has been really helpful.”

(Urban physician, free/low-cost clinic)

Some PCPs saw little value in the HRA related to behavior change.

“So...Does this help me in a discussion with the patient? I don’t think so really whatsoever. Does it somehow tweak the patient that maybe they ought to get a flu shot this year? No. People either want it or they don’t want it. Like I said, filling out a questionnaire is not going to help them decide that kind of stuff, I don’t think.”

(Urban physician, free/low-cost clinic)

The mean HRA completion rate for surveyed PCPs was 19.6%. PCPs reporting private insurance as a dominant payer mix had slightly higher completion rates compared with those with a Medicaid predominant payer mix (21.3% vs 19.4%, $p=0.05$) (Table 2). PCPs practicing in urban settings had slightly lower completion rates than those practicing in other areas (19.7% vs 21.8%, $p=0.02$) (Table 2). A PCP was less likely to have recorded, in state data, any complete HRA (132 respondents) if their practice was located in an urban region ($p=0.03$), if Medicaid ($p=0.05$) or the uninsured ($p=0.04$) were the predominant payer, or if PCPs were a little or not familiar with completing HRAs ($p<0.05$) (Appendix Table 2).

DISCUSSION

Approximately 18 months after the launch of the HMP, most PCPs had completed HRAs and reported value in doing so, with nearly three quarters reporting HRAs useful for identifying and discussing health risks, and nearly all having completed at least one HRA according to state records. A little less than half found them very or somewhat useful for getting patients to change health behaviors.

The role of frontline clinicians in health risk assessments has not been well studied.¹⁵ In one study, only one fifth of U.S. physician organizations routinely reported administering HRAs; information technology capacity and size and type of organization were associated with doing so.¹⁶ In the United Kingdom, uptake of the National Health Service Health Check, designed to address the high prevalence of cardiovascular disease among older adults, has been less than hoped, but has increased over time and seems to have increased prescribing of statins.²² Studies have shown that HRAs are associated with positive health behavioral change if combined with individualized counseling and feedback.^{23,24} However, HRAs and promoting health behavior changes in patients can be challenging for PCPs, with time

constraints commonly cited as a key factor.^{25–29} Importantly, the MDHHS streamlined the HRA form and submission process early in 2018 based on results of this survey and other feedback, which has improved completion rates.³⁰ Lack of confidence in influencing health behaviors, lack of familiarity with the expectation and form, and incomplete integration of health risk assessment into practice processes also pose obstacles to broad uptake.

Practices with predominantly Medicaid or uninsured payer mixes were slightly less likely to have any completed HRAs, and practices with more privately insured patients had higher HRA completion rates. Although practices with more Medicaid patients could be expected to have greater familiarity with HMP and other Medicaid programs, well-resourced practices may be better positioned to quickly adopt new practices, or they may be more familiar with health risk assessments implemented by payers or employers. How payer mix relates to HRA completion is unclear and warrants further study.

Although financial incentives are often used to influence patient, clinician, and organizational behavior, several factors could potentially explain why PCPs did not view incentives as a strong motivator for HRA completion. First, at the time of this survey, most PCPs said they were not aware of receiving financial incentives for HRA completion. Second, the dollar amount of the incentives for PCPs to complete HRAs (\$15–\$50) may not have been large enough to encourage HRA completion. Prior research on financial incentives for providers to promote healthy behaviors has demonstrated mixed effects. One meta-analysis including trials on smoking cessation showed that financial incentives for providers had an effect on PCP behaviors, such as higher referral rates to counseling services, but had no effect on patient measures of cessation.³¹ A systematic review of diabetes trials conducted in the U.S. and other developed nations showed inconsistent effects of physician financial incentives on screening and improvement of HbA1c.³²

Limitations

Self-reported survey data must be interpreted with some caution, because responses are susceptible to recall or social desirability bias.³³ Results were from surveyed PCPs caring for at least 12 HMP enrollees, so they may not generalize to providers with fewer Medicaid patients. Because the survey occurred 15–18 months following implementation, these findings highlight early perspectives and experiences that may change over time, with greater experience with the HMP program and processes.

The HRA completion rate in Medicaid administrative data was lower than self-reported HRA completion, a difference that could be explained both by recall bias and by the possibility that HRA forms were not fully completed, or not submitted or received or recorded properly, perhaps due to the multistep process required to submit an HRA in the early years.

CONCLUSIONS

Eighteen months after the start of Michigan's Medicaid expansion through the HMP, PCPs were often unaware of key aspects of the program's HRA completion and submission process. Although financial incentives were available to both patients and providers, no

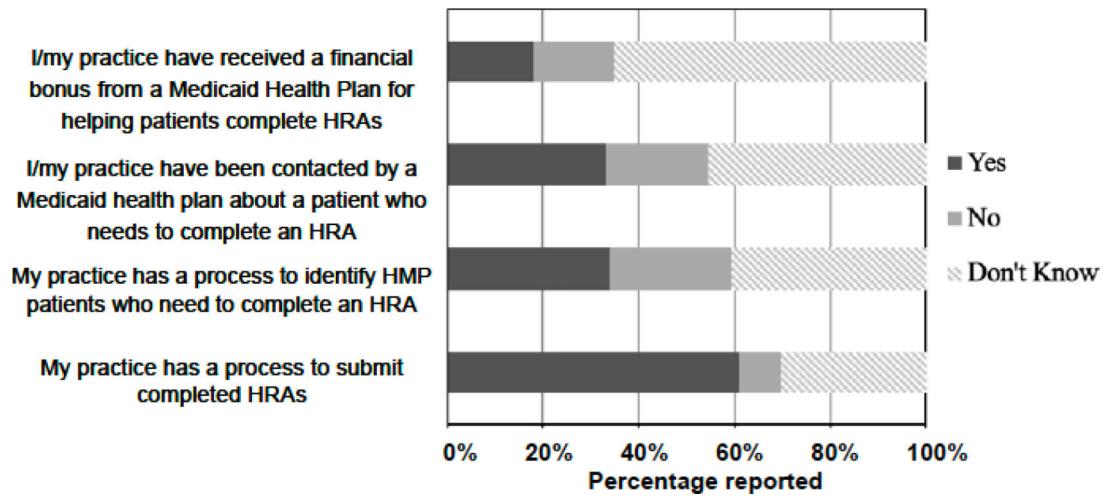
more than half felt that these influenced HRA completion and a minority of PCPs believed that the HRA would lead to improved health behaviors.

Results highlight the challenges providers face when incorporating new aspects of Medicaid expansion into clinical practice in the early years of implementation and the need for policymakers to learn from clinicians before, during, and after program implementation, as the state of Michigan did.³⁴ Medicaid managed care plans should also consider ways to improve engagement of PCPs and enrollees in HRAs, such as modifying financial incentives or promoting the potential for health improvement. Future research could assess how PCP understanding and experiences of the HRA have evolved, information that could be particularly important given completion of the HRA or a healthy behavior within the past year will be a requirement for continued enrollment for some HMP enrollees beginning in 2020.

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Appendix



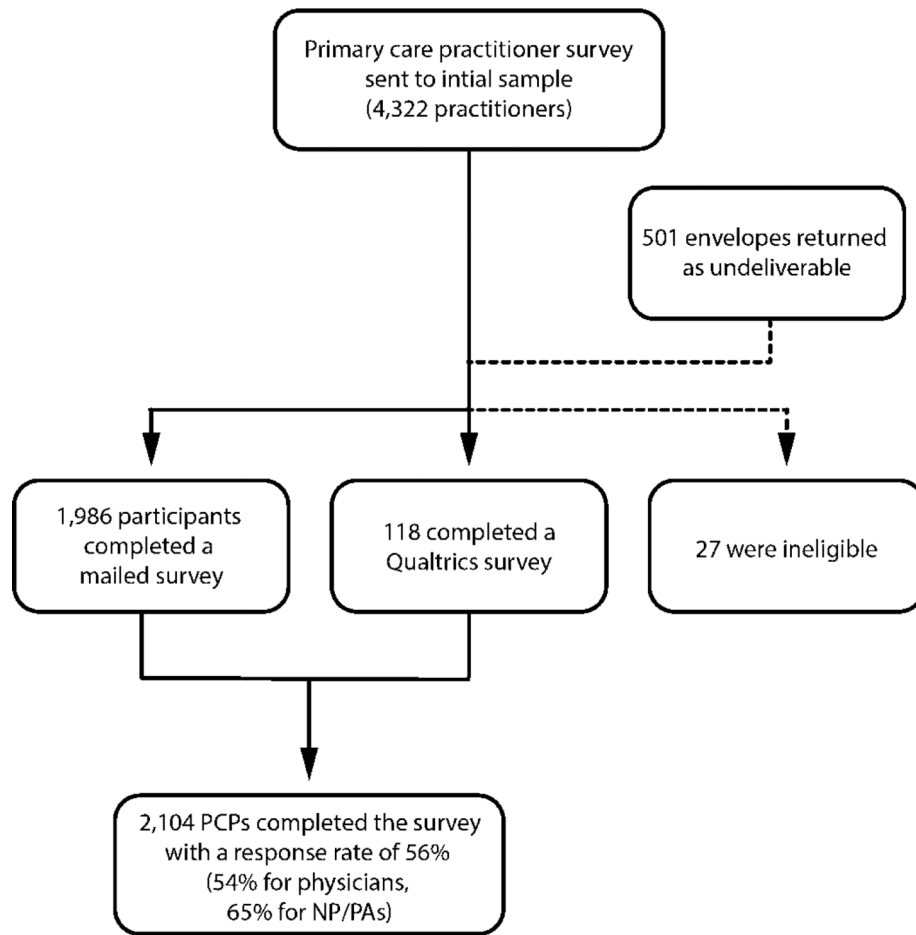
Appendix Figure 1.
 Primary care providers' experiences with health risk assessments.

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Appendix Figure 2.
Survey respondent participation.

Appendix Table 1.

Provider Experiences With Health Risk Assessments

Variable	None	1–2	3–10	>10
Approximately how many Health Risk Assessments have you completed with Healthy Michigan Plan Patients? (n=2,032)	420 (20.7%)	235 (11.6%)	503 (24.8%)	874 (43.0%)
	Almost always	Often	Sometimes	Rarely/never
How often do your Healthy Michigan Plan patients bring in their Health Risk Assessment to complete at their initial office visit? (n=1,923)	215 (11.2%)	416 (21.6%)	720 (37.4%)	572 (29.7%)

Appendix Table 2.

Predictors of Any HRA Completion by Provider and Practice Factors

Variable	n	AOR (95% CI)	p-value
PCP familiarity with completing HRA			
Very familiar	928	–	
Somewhat familiar	440	0.50 (0.20, 1.24)	0.135
A little familiar	248	0.27 (0.10, 0.71)	0.008
Not at all familiar	282	0.23 (0.07, 0.76)	0.02
HRA useful for identifying health risks			
Very useful	453	–	
Somewhat useful	727	0.95 (0.27, 3.36)	0.94
A little useful	347	3.41 (0.42, 27.75)	0.251
Not at all useful	203	11.14 (0.35, 350.18)	0.171
HRA useful for discussing health risks			
Very useful	579	–	
Somewhat useful	696	0.56 (0.13, 2.52)	0.453
A little useful	288	0.04 (0.004, 0.485)	0.01
Not at all useful	164	0.04 (0.004, 3.828)	0.169
HRA useful for persuading patients to address risks			
Very useful	464	–	
Somewhat useful	674	2.95 (0.62, 14.06)	0.174
A little useful	424	26.95 (2.87, 253.14)	0.004
Not at all useful	229	8.34 (0.33, 210.86)	0.198
HRA useful for documenting patient behavior goals			
Very useful	391	–	
Somewhat useful	683	0.71 (0.18, 2.84)	0.628
A little useful	424	0.79 (0.14, 4.35)	0.788
Not at all useful	229	1.32 (0.01, 17.34)	0.835
HRA useful for getting patients to change behaviors			
Very useful	267	–	
Somewhat useful	551	1.03 (0.25, 4.19)	0.963
A little useful	620	0.87 (0.19, 3.94)	0.857
Not at all useful	284	0.28 (0.03, 2.50)	0.257
Provider type			
Non-physician	315	–	
Physician	1,657	0.89 (0.40, 2.01)	0.781
Practice location			
Non-urban	488	–	
Urban	1,484	0.39 (0.17, 0.93)	0.03
Predominant payer mix			
Private	610	–	
Medicaid	640	0.42 (0.18, 0.99)	0.05

Variable	n	AOR (95% CI)	p-value
Medicare	393	1.34 (0.54, 3.33)	0.534
Uninsured	11	0.05 (0.003, 0.830)	0.04
Mixed	133	0.71 (0.18, 2.84)	0.628

Notes: The number of responses to each statement varies based on the PCP self-report. Adjusted logistic regression with ORs predicting any completion of HRA from data warehouse records. Multivariate model was adjusted for all variables shown, as well as the number of HMP members assigned to the PCP.

PCP, primary care provider; HRA, health risk assessment.

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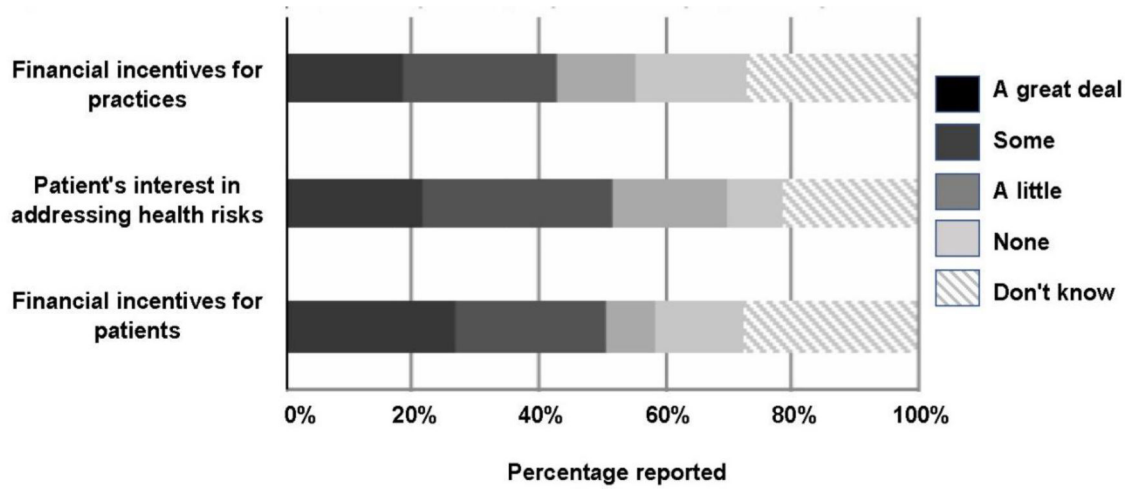


Figure 1. Influence on primary care providers' completion of Health Risk Assessments.
Notes: Not all survey questions were answered resulting in missing data. The number of responses per statement are as follows: *My practice has a process to submit completed HRAs* (n=2,041); *My practice has a process to identify HMP patients who need to complete an HRA* (n=2,042); *I/my practice have been contacted by a Medicaid health plan about a patient who needs to complete an HRA* (n=2,040); and *I/my practice have received a financial bonus from a Medicaid health plan for helping patients complete HRAs* (n=2,033).

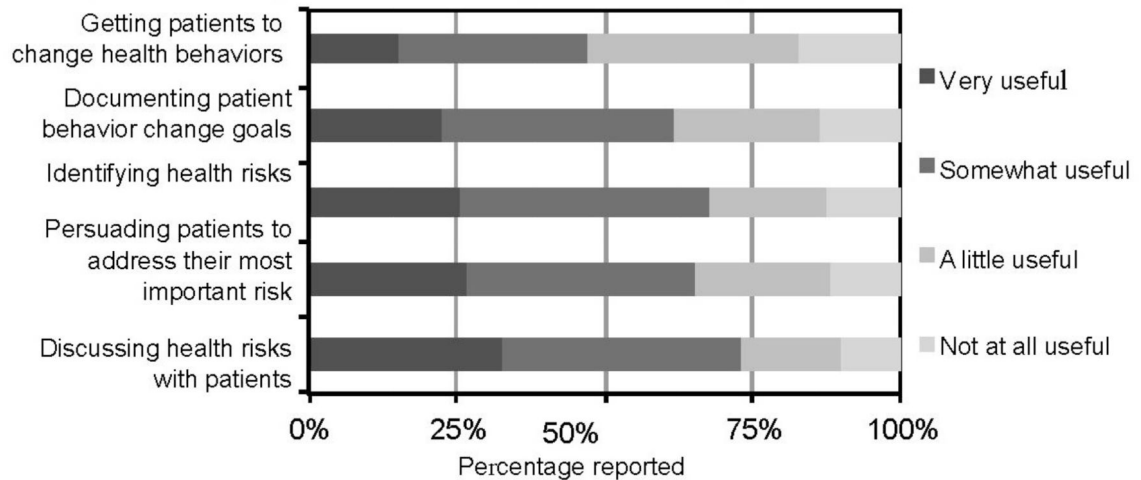


Figure 2.

Primary care providers' perceived utility of Health Risk Assessments.

Notes: Not all survey questions were answered resulting in missing data. The number of responses per statement are as follows: *Getting patients to change health behaviors* (n=1,828); *Documenting patient behavior change goals* (n=1,828); *Identifying health risks* (n=1,833); *Persuading patients to address their most important health risk* (n=1,826); and *Discussing health risks with patients* (n=1,821).

In Figure 3 in response to the question "How much influence do the following have on completion and submission of the Health Risk Assessment?", the number of responses were as follows: "Financial incentives for patients" (n = 2046), "Patients' interest in addressing health risks" (n = 2046), and "Financial incentives for practices" (n = 2044).

Table 1.

Survey Respondent Characteristics

Provider characteristics	n (%)
Sex	
Male	1,165 (55.4)
Female	939 (44.6)
Race	
White	1,583 (79.3)
Black/African American	93 (4.7)
Asian/Pacific Islander	224 (11.2)
American Indian/Alaska Native	10 (0.5)
Other	86 (4.3)
Ethnicity	
Non-Hispanic/Latino	1,978 (97.7)
Hispanic/Latino	46 (2.3)
Provider type	
Physician	1,750 (83.2)
Non-physician	354 (16.8)
Specialty	
Family medicine	1,123 (53.4)
Internal medicine	507 (24.1)
Medicine—Pediatrics	67 (3.2)
General practice	24 (1.1)
Obstetrics/Gynecology	12 (0.6)
Nurse practitioner	192 (9.1)
Physician's assistant	165 (7.8)
Other	14 (0.7)
Board certification	
Yes	1,695 (81.6)
No	383 (18.4)
Years in practice	
<10 years	520 (25.9)
10–20 years	676 (33.7)
>20 years	810 (40.4)
Practice characteristics	
5 practitioners	157 (57.5)
>6 practitioners	855 (42.5)
Non-physician providers in practice	1,275 (71.7)
Practice type	
Federally qualified health center	311 (14.9)
University/Teaching hospital practice	276 (13.1)
Non-teaching practice	643 (30.7)

Provider characteristics	n (%)
Predominant payer mix	
Private	522 (27.4)
Medicaid/HMP	686 (36.0)
Medicare	645 (33.9)
Uninsured	15 (0.8)
Mixed	37 (1.9)
Location	
Non-urban	520 (24.7)
Urban	1,584 (75.3)

HMP, Healthy Michigan Plan

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Table 2.

Predicted HRA Completion Rates From GLM Regression

Variable	Completion rate ^a (%) (95% CI)	p-value
PCP views of HRA		
PCP familiarity with completing HRA		
Very familiar	23.3 (22.1, 24.4)	–
Somewhat familiar	18.2 (16.8, 19.5)	<0.001
A little familiar	17.0 (15.4, 18.6)	<0.001
Not at all familiar	13.7 (12.1, 15.2)	<0.001
HRA useful for identifying health risks		
Very useful	18.9 (17.0, 20.9)	–
Somewhat useful	20.7 (19.4, 22.1)	0.162
A little useful	20.5 (18.4, 22.6)	0.357
Not at all useful	21.0 (16.8, 25.1)	0.413
HRA useful for discussing health risks		
Very useful	21.2 (18.8, 23.5)	–
Somewhat useful	19.8 (18.5, 21.1)	0.334
A little useful	19.8 (17.5, 22.0)	0.481
Not at all useful	20.5 (15.2, 25.8)	0.841
HRA useful for persuading patients to address risks		
Very useful	19.8 (17.6, 22.0)	–
Somewhat useful	19.8 (18.4, 21.1)	0.986
A little useful	21.9 (19.7, 24.2)	0.267
Not at all useful	19.6 (15.3, 24.0)	0.951
HRA useful for documenting patient behavior goals		
Very useful	18.5 (16.6, 20.5)	–
Somewhat useful	20.7 (19.3, 22.0)	0.104
A little useful	20.8 (19.7, 22.6)	0.145
Not at all useful	21.0 (17.5, 24.5)	0.250
HRA useful for getting patients to change behaviors		
Very useful	20.1 (17.0, 23.2)	–
Somewhat useful	20.7 (19.1, 22.2)	0.761
A little useful	20.1 (18.8, 21.4)	0.994
Not at all useful	19.8 (17.2, 22.5)	0.900
Provider and practice characteristics		
Provider type		
Non-physician	21.0 (19.2, 22.8)	–
Physician	20.0 (19.2, 20.9)	0.344
Practice location		
Non-urban	21.8 (20.2, 23.3)	–
Urban	19.7 (18.8, 20.5)	0.02
Predominant payer mix		

Variable	Completion rate ^a (%) (95% CI)	p-value
Private	21.3 (20.0, 22.7)	–
Medicaid	19.4 (18.3, 20.6)	0.05
Medicare	20.4 (18.7, 22.1)	0.385
Uninsured	20.4 (12.7, 28.0)	0.815
Mixed	19.2 (16.7, 21.7)	0.171

^aPredicted HRA completion rates from GLM regression with gamma distribution. Link function was reciprocal and SEs calculated using the observed information matrix. Model predicts rate of completed HRAs using data warehouse records. Multivariate model was adjusted for all variables shown, as well as the number of HMP members assigned to the PCP.

PCP, primary care provider; HRA, health risk assessment; GLM, generalized linear model.

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