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Glucose Testing for Adults Receiving Antipsychotics: A Population-Based Prescriber Survey on Behaviors, Attitudes and Barriers in Medicaid

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Abstract

Objective—To assess provider attitudes about glucose testing for adults prescribed antipsychotic medication

Methods—Missouri Medicaid prescribers of antipsychotics in 2011 were surveyed (N=924, 25% response rate). Pearson's chi-square test compared responses between prescriber specialty-setting. Multivariable log-binomial regression evaluated the association of factors hypothesized as barriers with screening intent.

Results—Prescribers in Community Mental Health Centers (CMHCs) were more likely to report they would definitely order baseline testing (57% vs. 39%, $p<.001$) and were greater promoters of screening with colleagues (76% vs. 49%, $p<.001$) than primary care providers. The strongest predictor of screening intent was disagreeing strongly that “metabolic screening is not a priority for me or my organization” (94% more likely to screen at drug initiation and 74% more likely at annual evaluation, both $p<.001$).

Conclusion—Establishing organizational priority across all treatment settings will be important for achieving population-based diabetes screening goals for all Medicaid patients receiving antipsychotics.

Improvements in primary prevention offer the largest potential for reducing CVD mortality in individuals with severe mental illness (1). Risk factors like obesity, hypertension, type 2 diabetes, and dyslipidemia prevalence rates are 1.5 to 2 times higher in adults with serious mental illness, yet have been historically under-diagnosed and under-treated. Moreover, the use of antipsychotic medication contributes to increased metabolic risk.

Metabolic risk information on antipsychotic medications has been widely disseminated over the last decade. Several studies among Medicaid and privately-insured patients and within integrated systems of care, like the Veteran Health Administration, have previously shown low rates of screening following the drug warnings. These findings triggered health system quality-improvement initiatives. Diabetes screening has is now a key HEDIS[®] performance measures for adults served by Medicaid with serious mental illness receiving antipsychotic medication (2).

Taking a population health perspective, this study examined knowledge, behaviors, and attitudes regarding diabetes screening among all Missouri Medicaid providers who prescribed antipsychotic medications to adults. Population-based studies have primarily examined patient factors associated with screening; provider and system factors remain understudied. Knowledge about attitudes of primary care and non-behavioral health prescribers, who have been estimated to start antipsychotic therapy in half of patients, is particularly limited. The purpose of this survey was to understand underlying mechanisms and gaps affecting diabetes screening so performance improvement interventions could be better targeted.

METHODS

The survey was fielded among 4,863 providers who prescribed oral second-generation antipsychotic medication (hereto referred to as “antipsychotic medication”) to patients served by Missouri Medicaid in 2011. Provider identification and addresses were obtained from Missouri Medicaid administrative data and supplemented with publicly-available physician market data. Surveys were mailed using established protocols (3) in two waves: CMHC providers (late 2011–2012) and all providers (2013). CMHCs were re-surveyed with a supplemental survey in 2013. For each wave, up to three survey attempts were made to each provider over the initial six week recruitment period. A final attempt to reach non-responders was made via fax/phone.

The survey instrument assessed a range of physician, practice, and patient factors hypothesized to independently affect metabolic screening. Attitudinal questions included: screening intention, responsibility, knowledge, beliefs that screening will reduce risk (response efficacy), confidence in ordering and interpreting results (self-efficacy), and barriers. Screening advocacy was assessed using the Net Promoter Score, an index used in the consumer industry to measure advocacy (4). Promoters are defined as providers who responded 9 or 10 (on a 10 point scale, with 10 being “Extremely Likely”) to “How likely are you to recommend glucose testing for adults taking antipsychotics to a colleague?”

Providers were categorized into four specialty-setting groups as: behavioral health in a community mental health center (CMHC); behavioral health (non-CMHC); primary care providers; and all others. Prescriber demographics, practice and setting characteristics, antipsychotic prescribing practices, and diabetes screening intent and advocacy were compared between specialty groups (the primary independent variable of interest) using Pearson’s chi-square test of association and adjusted for multiple comparisons.

The principal outcome measure was metabolic screening intent: “How likely would you be to order a blood glucose test?” when the provider first prescribed an antipsychotic and at annual follow-up. Prescriber factors associated with screening intent were assessed using log-binomial regression adjusted for differences in provider, practice, and prescribing characteristics and screening attitudes and perceived barriers. To identify providers with the strongest beliefs, responses to survey questions were dichotomized as “definitely”, “agree strongly”, or “very confident” versus other responses. Secondary modeling examined factors associated with specific attitudes as the outcome measure. To evaluate survey response bias, provider and practice demographic data were obtained from ProviderPRO, a publically available healthcare provider database(5), and compared between survey respondents and non-respondents.

The study received approval from the Colorado Multiple Institutional Review Board and adhered to Data Use Agreements with the State of Missouri. All statistical analyses used SAS® software version 9.4 (SAS Institute Inc., Cary, NC, USA). The Appendix includes the survey instrument and conceptual framework, information on respondent characteristics, analysis of respondents vs. non-respondents, and model results for attitudinal measures.

RESULTS

All survey respondents who prescribed antipsychotics to adults (N=924) were included in the descriptive analysis. The subset of respondents with complete survey responses (N=669) were included in the multivariable analysis. The effective survey response rate was 25%.

The majority of respondents were primary care providers (499/924, 54%) followed by CMHC providers (156/924, 17%), psychiatrists in non-CMHC settings (136/924, 15%), and all others (133/924, 14%). A subset of respondents (13%) treating Missouri Medicaid patients practiced in the states bordering Missouri. The majority of respondents (74%) used an electronic medical record system and a minority (24%) practiced in shared mental health and medical care facilities.

CMHC providers were more likely to report that the majority of their patients were served by Medicaid compared to behavioral health (non-CMHC), primary care and other providers (68% vs. 36%, 15%, and 25% respectively, $p<.001$). CMHC providers were also more likely to report that the majority of patients they treated in a typical week were receiving antipsychotic medication compared to behavioral health (non-CMHC), primary care and other providers (71% vs. 36%, 4%, and 11% respectively, $p<.001$).

With regard to screening intent, CMHC providers were more likely to report they would “definitely” order a glucose test when initiating antipsychotic therapy in an adult patient (57%) compared to primary care (39%) or other providers (24%) (p -value $<.001$). At patients’ one-year follow-up visits, CMHC providers were more likely to report they would “definitely” order a glucose test (78%) compared to behavioral health (non-CMHC) (61%), primary care (60%) or other (31%) providers (p -value $<.001$). The majority of CMHC (76%) and behavioral health (non-CMHC)(62%) providers reported they were “extremely likely” to recommend screening for adults receiving antipsychotic medication to a colleagues compared to 49% of primary care providers and 33% of other providers who also prescribed antipsychotics (p -value $<.001$).

After controlling for provider, practice, and prescribing characteristics, behavioral health (non-CMHC), primary care and other providers were less likely to “disagree strongly” that metabolic screening was not a priority for them or their organization (51%, 33%, and 76% less likely respectively, $p<.001$). However, primary care providers were 50% ($p<.001$) more likely to report being “very confident” in interpreting blood glucose values and diagnosing diabetes.

The Table reports the adjusted likelihood of diabetes screening intent. Providers who “disagree strongly” that metabolic screening was not a priority for them or their organization were 94% ($p<.001$) more likely to report they “definitely” would order a blood glucose test when prescribing an antipsychotic medication to a new/re-starting patient and 74% ($p<.001$) more likely to report they “definitely” would order a blood glucose test at a one-year follow-up visit.

After adjusting for differences in attitudes and practice characteristics, differences in the likelihood of glucose testing intent between CMHC providers and non-CMHC providers did not achieve statistical significance.

DISCUSSION

The results of this survey indicate that Missouri Medicaid providers who prescribe antipsychotics in a CMHC setting reported greater diabetes screening intent and advocacy for their adult patients taking antipsychotic medication compared with other prescriber specialties and settings. The survey findings are consistent with analysis of Missouri Medicaid claims data which found receiving care at a CMHC was associated with higher rates of glucose and lipid laboratory testing versus other settings, even after adjusting for differences in patient mix and receipt of care management (6).

The perceived greater organizational priority for metabolic screening observed among CMHC providers can be hypothesized to be the culmination of a series of targeted efforts by the Missouri Department of Mental Health. Missouri was the first state to take advantage of the resources and tools in the Affordable Care Act to set up a health home model (7). Missouri's CMHCs serve as the health home and central source of physical and mental health care for clients. As a result, the message that diabetes screening is necessary in adults with mental illness receiving antipsychotic medication has been doubly re-enforced in CMHC settings. In addition, the Missouri Department of Mental Health invested in the CMHC health home infrastructure, including the institution of metabolic monitoring audit-and-feedback systems and delivery of continuing-education on cardiometabolic screening to both clinicians and clinic staff, which may have further reinforced the organizational priority of screening.

The attenuation of the adjusted association between provider specialty-setting and intentions to order glucose testing may be due to the inclusion of attitudes and organizational priorities related to screening that were targeted within CMHCs and in the model specification. This result suggests that the differential across provider types and setting may be due to modifiable factors affected by organizational priority-setting rather than to idiosyncratic characteristic of CMHCs. Thus, these results support the potential for increasing diabetes screening in mental health patients through purposeful priority and performance-improvement initiatives at the Medicaid system level, not just in the CMHC setting. The recent Medicaid-specific HEDIS[®] performance measures for diabetes screening and management in adults with serious mental illness receiving antipsychotic medication should re-enforce the priority of screening regardless of healthcare setting.

Missouri was effectively able to target its organizational messaging, prioritization, and health home infrastructure investment toward a concentrated "market segment" of 200–250 providers operating in a finite number of mental health service areas. However, from a population health perspective, 70% of adults receiving antipsychotic medication in Missouri Medicaid do not initiate antipsychotic therapy within the CMHC Health Home infrastructure based on administrative claims records. Because the challenge will be to scale up to practice settings that are somewhat dissimilar to the CMHCs studied in this initial work, gathering formative data about how the model is perceived in terms of cost, compatibility, and ease of implementation will be important prior to dissemination of the approach (8).

Another challenge in directing state-based performance improvement within Medicaid is that many states have reciprocating arrangements when it comes to reimbursed care. In this study, one-in-ten adults received at least one of their antipsychotic prescriptions from providers practicing in one of the seven bordering states. Missouri agencies have less influence on how care is prioritized, organized, and delivered outside its borders. This has implications for Medicaid performance improvement initiatives as states consider strategies to improve health metrics for all of its citizens.

One limitation of survey studies is nonresponse selection bias (3). Physician response to unsolicited surveys is known to be low and declining. A systematic review of physician survey response bias indicates the amount of bias may be minimal (9). In the present study,

the effective response rate was consistent with rates observed in unsolicited physician surveys (10). Demographic differences between survey responders and non-responders were generally small, with the exception that responders treated more patients receiving antipsychotic medication than non-responders. However, quality improvement efforts would likely target heavier prescribers and so the findings provide valuable insights.

Antipsychotic prescribers within Missouri Medicaid, and the state healthcare system in which they practice, may not be nationally representative. The 2014 *Excellence in Mental Health Act* – which established criteria for “Certified Community Behavioral Health Clinics” – was enacted to meet the needs of all Americans with serious mental illnesses and promote whole-person medical care. The survey instrument used in this study can be used by medical directors and policymakers to assess diabetes testing attitudes and barriers within their own states as certified clinics are implemented.

In summary, significant disparities in diabetes screening attitudes and intention to screen were found between prescriber specialty-setting. Establishing organizational priority across all treatment settings will be important for achieving population-based risk minimization screening goals in Medicaid.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table

Adjusted likelihood of prescriber intent to screen for diabetes among adult patients receiving antipsychotic medication

Prescriber Characteristics	Baseline Testing <i>“Definitely would order a blood glucose test when initially prescribing a second-generation antipsychotic medication to an adult patient.”</i>		Annual Follow-Up Testing <i>“Definitely would order a blood glucose test at the one-year follow-up for an adult patient who continues to take a second-generation antipsychotic.”</i>	
	Relative Risk	95% CI	Relative Risk	95% CI
Provider				
Specialty-Setting				
Behavioral health (CMHC)	Reference		Reference	
Behavioral health (non-CMHC)	1.03	(.64–1.46)	.80	(.52–1.07)
Primary care	.70	(.48–1.03)	.79	(.61–1.03)
Other	.62	(.29–1.06)	.46	(.21–.77)
Generational cohort (year of birth)				
1945 or earlier	1.07	(.87–1.30)	1.09	(.96–1.24)
1946–1964	1.08	(.69–1.50)	.94	(.67–1.19)
1965–1985	Reference			
Female	1.28	(1.05–1.58)	1.05	(.93–1.19)
Race: White versus other	.64	(.52–.79)	.79	(.70–.91)
Practice				
Practice type: stand-alone versus multi-site	1.01	(.82–1.24)	1.03	(.89–1.18)
Shared mental health and medical health facilities vs. separate	1.07	(.84–1.31)	1.02	(.87–1.18)
Use of an electronic medical/health record system: yes vs. no	1.00	(.79–1.30)	1.02	(.88–1.21)
Patient population on Medicaid				
< 10%	Reference			
10–24%	.87	(.64–1.14)	1.05	(.87–1.23)
25–49%	1.04	(.79–1.34)	1.12	(.94–1.30)
50–100%	1.12	(.83–1.47)	1.17	(.98–1.37)
State: Missouri versus bordering state	1.49	(.99–2.33)	1.10	(.90–1.46)
Urban setting	1.18	(.98–1.45)	1.14	(1.00–1.30)
Prescribing trends				
Percent of adult patients taking antipsychotics in a typical week				
0–49	Reference		Reference	
50–100	.86	(.60–1.15)	.87	(.67, 1.11)
Percent provider has personally prescribed				
None	Reference			
1–49	1.29	(.95–1.77)	1.23	(1.02–1.46)

Prescriber Characteristics	Baseline Testing <i>“Definitely would order a blood glucose test when initially prescribing a second-generation antipsychotic medication to an adult patient.”</i>		Annual Follow-Up Testing <i>“Definitely would order a blood glucose test at the one-year follow-up for an adult patient who continues to take a second-generation antipsychotic.”</i>	
	Relative Risk	95% CI	Relative Risk	95% CI
50–100	1.29	(.90–1.76)	1.24	(1.01–1.49)
SGA prescriptions per treated adult in Medicaid				
0–1	Reference			
1.1–3.9	1.11	(.84–1.42)	1.06	(.88–1.23)
4–5.9	1.11	(.85–1.45)	1.03	(.85–1.21)
6 or more	1.10	(.84–1.41)	1.02	(.86–1.19)
Barriers (reference = all other responses)				
<u>Patient</u> (Agree strongly...)				
Patients forget to get lab work done.	.97	(.75–1.22)	.97	(.84–1.12)
Patients do not see screening as a priority.	.99	(.74–1.28)	1.05	(.88–1.23)
Fasting makes it difficult for patients to comply.	1.11	(.76–1.46)	.97	(.76–1.18)
The time or transportation is inconvenient.	.77	(.46–1.14)	.75	(.53–1.00)
<u>Practice</u>				
Agree strongly...				
I do not have the necessary equipment.	.58	(.37–.83)	.89	(.68–1.09)
I have difficulty getting the lab results.	1.27	(.94–1.62)	1.13	(.95–1.31)
Disagree strongly...				
Screening adds complexity to my workload.	1.04	(.84–1.31)	1.00	(.88–1.15)
<u>System</u> (Disagree strongly...)				
Metabolic screening is not a priority for my organization.	1.94	(1.48–2.53)	1.74	(1.46–2.10)

SOURCE: Author’s analysis of data from the provider survey, ProviderPRO healthcare provider database, and 2011 Missouri Medicaid claims data.

NOTES: Multivariable log-binomial regression was used to model each outcome with the primary predictor of provider specialty. Adjusted relative risk results control for all variables presented in the table. Factors statistically significant at the alpha=0.05 level are bolded. Available sample size for the modeling was 669. CMHC = Community Mental Health Center; CI = confidence interval; SGA = oral second-generation antipsychotic.