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Adherence to the Women's Preventive Services Guidelines in the Affordable Care Act

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Abstract

Objective—To assess the adherence of women's health providers in New Mexico to the Women's Preventive Services Guidelines, now covered as part of the Affordable Care Act, and to examine how providers' knowledge, attitudes, and external barriers are associated with adherence to these clinical guidelines.

Design—Cross-sectional, descriptive survey.

Setting—New Mexico.

Participants—Women's health providers in New Mexico, including nurse practitioners, certified nurse-midwives, and family practice and obstetrician/gynecologist physicians.

Methods—Participants completed a self-administered survey measuring knowledge, attitudes, external barriers, and adherence to each of the eight guidelines. Adherence was defined as following a guideline more than 90% of the time.

Results—The response rate was 22% (399/1,798). Among the eight guidelines, participant adherence ranged from 17.2% to 88.4%. Only 39.7% of the participants indicated adherence to a majority of the guidelines (four or more). Overall, provider adherence was directly associated with familiarity with the guidelines (odds ratio [OR], 3.69; 95% confidence interval [CI; 1.96, 6.96]), self-efficacy to implement them (OR, 4.25; 95% CI [2.21, 8.20]), and younger age (OR, 0.97; 95% CI [0.94, 1.00]).

Conclusion—Adherence to the Women's Preventive Services Guidelines by providers in New Mexico is variable, and for many recommended practices, is less than optimal. New targeted implementation strategies are needed to address barriers to adherence.

Keywords

adherence; clinical practice guidelines; implementation; women's health

The Affordable Care Act (ACA), signed into law on March 23, 2010, stipulates that new health insurance plans must cover preventive health services without cost sharing, including co-payment, co-insurance, or deductible charges (Patient Protection and Affordable Care Act, 2010). Women's preventive health services are specifically included under the law and include many preventive services already recommended by the U.S. Preventive Services Task Force, such as cancer screenings. To identify what additional preventive health services should be included, the U.S. Department of Health and Human Services (USDHHS) directed the Institute of Medicine (IOM, 2011) to convene a panel of experts to review the evidence and recommend needed clinical preventive services for women ages 16 to 65 years beyond those already covered by the ACA. On July 19, 2011, the IOM issued a set of eight new recommendations on what should be included in these guidelines. USDHHS (supported by the Health Resources and Services Administration) quickly adopted these recommendations as clinical guidelines for providers, making them a part of the required set of covered services for new health plans under the ACA beginning August 1, 2012 (USDHHS, n.d.; Table 1).

Although the ACA mandates the coverage of these services (with some limited exceptions), how these guidelines are adopted and delivered by clinicians is an essential piece in their implementation. Evidence suggests that clinical practice guidelines that have promise to improve health move very slowly into clinical practice, and many of these evidence-based interventions never reach those who could benefit (Balas & Boren, 2000; Green, Ottoson, Garcia, & Hiatt, 2009). In general, studies that have examined the processes associated with how providers incorporate clinical guidelines into their practice behaviors demonstrate that uptake of guidelines and practice behavior change are complex phenomena influenced by many factors (Ament et al., 2015). Understanding the factors that may promote or impede providers' adherence to clinical guidelines is a critical first step in developing strategies to increase the implementation of best-evidence recommendations and improve care and patient outcomes.

Cabana and colleagues (1999) proposed an evidence-based framework for examining factors associated with the adoption of and adherence to clinical practice guidelines by providers (Figure 1). The adherence factors identified in this model included knowledge and attitude variables, such as familiarity, awareness, agreement, self-efficacy, and outcome expectancy. External barriers were also included, such as lack of patient acceptability, inadequate time and resources, and characteristics of the guidelines themselves. For example, the guidelines' recommendations may affect adherence. Recommendations requiring more complex behavioral change have been shown to be difficult to implement (Johnston, Young, Grimmer-Somers, Antic, & Frith, 2011). Within a particular set of clinical guidelines, knowledge, attitudes, and external barriers may vary for individual recommendations. Therefore, understanding the factors associated with adherence at the individual recommendation level is important for optimizing the success of targeted strategies for the

implementation of guidelines in practice (Lugtenberg, Zegers-van Schaick, Westert, & Burgers, 2009).

The Cabana and colleagues (1999) framework has been widely applied in studies of adherence to clinical practice guidelines among both physicians and nurses. Applications include studies focused on adherence to asthma treatment guidelines among pediatricians (Cabana, Rand, Becher, & Rubin, 2001); adherence to preventive cardiology guidelines for women among primary care physicians (Cabana & Kim, 2003); adherence to the National Asthma Education and Prevention guidelines among nurse practitioners (O’Laughlen, Rance, Rovnyak, Hollen, & Cabana, 2013); adherence to ventilator-associated pneumonia prevention guidelines among critical care nurses (Kiyoshi-Teo, Cabana, Froelicher, & Blegen, 2014); and adherence to clinical guidelines on smoking cessation treatment among primary care physicians (Nelson et al., 2015).

Over the past decade, evidence from these studies and others suggested that provider adherence to clinical practice guidelines is often less than optimal, even when general awareness of the guidelines may be high (Bourgault et al., 2014; Cabana & Kim, 2003; Cabana et al., 1999; Carlson, Glenton, & Pope, 2007; Flores, Lee, Bauchner, & Kastner, 2000; Kiyoshi-Teo et al., 2014; O’Laughlen et al., 2013). Multiple factors may promote or limit providers’ adherence and translation of guidelines into improved patient outcomes, and substantial adherence variation within individual recommendations is embedded in different types of guidelines. In other words, clinicians pick and choose which recommendations they implement. Findings also suggested that targeted interventions are needed to overcome specific barriers, strengthen promotors, and assist providers in fully implementing clinical practice guidelines (Cabana et al, 2001; Johnston et al., 2011). Moreover, research in quality improvement pointed to the integration of multipronged interventions, including at the systems level, to improve guideline-concordant care (Cooper et al., 2013). However, understanding the provider factors associated with clinical practice guideline implementation is a critical first step.

To date, no research has been published regarding the experience of providers with implementing the Women’s Preventive Services Guidelines. To fill this gap, we assessed the adherence of women’s health providers to these guidelines in New Mexico. We also examined how providers’ knowledge, attitudes, and perceived external barriers were associated with their adherence to these guidelines.

Methods

Ethics Approval

This study was reviewed and approved by the university Institutional Review Board prior to data collection. Participants indicated a willingness to participate in the study by responding to the survey.

Study Design and Sample

We employed a cross-sectional, descriptive survey design. Women’s health providers in the state of New Mexico comprised the study population. Using the state licensure lists, all

1,798 women's health providers licensed in the state were invited to participate in the study, including nurse practitioners, certified nurse-midwives, and family practice and obstetrician/gynecologist physicians. Data collection began in January 2013 and ended in March 2013. Inclusion criteria stipulated that providers had to be 21 years of age or older, self-identified as fluent in English, and managing care for women aged 18 years or older in their practice.

Survey Development and Measures

A structured, self-administered survey was developed to collect information on adherence and factors that might influence adherence to the Women's Preventive Services Guidelines. The items in the survey were an adaptation of items in instruments developed by Cabana and colleagues (1999, 2000, 2001) and others (Kortteisto, Kaila, Komulainen, Mäntyranta, & Rissanen, 2010; Quiros, Lin, & Larson, 2007). Both the face and content validity of the survey were assessed with a small group of reviewers, including content and survey experts, and experienced women's health clinicians. A convenience sample of 10 clinicians pilot tested the survey, and their comments led to pertinent modifications.

Our final survey instrument had 92 items and required approximately 20 to 25 minutes to complete. It included questions about provider demographics, clinical practice setting, and patient population (19 items), attitudes toward clinical practice guidelines in general, and perceived subjective norms. In addition, for each of the eight guidelines (two components for Guideline 1 to address gestational diabetes mellitus [GDM] screening for all pregnant women and high-risk pregnant women), providers were asked about their knowledge, attitudes, and external barriers. Providers were also asked an open-ended question about whether they had any general comments about each guideline.

Adherence—Providers were asked to indicate how often they adhered to each of the guidelines with one of five possible responses: *less than half the time (<50%)*; *just over half of the time (51%–75%)*; *most of the time (76%–90%)*; *almost all of the time (91%–99%)*; and *all of the time (100%)*. Consistent with previous studies, adherence was defined as supporting a clinical practice by implementing the guideline in practice greater than 90% of the time (Cabana et al., 2001; O'Laughlen et al., 2013; Pathman, Konrad, Freed, Freeman, & Koch, 1996).

Knowledge and attitudes—The knowledge and attitudes items were developed by Cabana and colleagues (2001). Providers were asked to indicate their awareness of (one item; yes/no response) and familiarity with (one item; 5-point scale with response options ranging from *not at all familiar* to *extremely familiar*) each guideline. A total of three items per guideline addressed provider attitudes: one item on agreement with each guideline (6-point scale with response options ranging from *strongly disagree* to *strongly agree*); confidence or self-efficacy in implementing each guideline (4-point scale with response options ranging from *not at all confident* to *extremely confident*); and expected outcome if each guideline were implemented (4-point response scale with response options ranging from *no effect* to *large effect*). These knowledge and attitude items were developed by Cabana and colleagues (2001).

External barriers—External barriers were measured by six items addressing potential practice barriers to implementing each guideline (Cabana et al., 2001). Providers were asked to indicate how significant each barrier was to the implementation of each guideline on a 5-point scale, with response options ranging from *not at all significant* to *extremely significant*. Barriers assessed were lack of equipment or clinic space, lack of time during a patient visit, lack of educational materials, lack of support staff, lack of reimbursement for services, and lack of acceptability to patients.

General attitudes toward clinical guidelines—General attitudes toward clinical practice guidelines (not specific to the women's health preventive guidelines) were measured using the Attitudes Regarding Practice Guidelines Scale (Quiros et al, 2007), a 12-item scale with 6-point response options ranging from *strongly agree* to *strongly disagree* (Cronbach's alpha = 0.83). This scale, modeled after tools developed by Cabana and colleagues (1999, 2000, 2001), measures provider motivation to use guidelines, relevance of guidelines to practice, and outcome expectancy. Outcome expectancy refers to the belief that a given behavior, for example, adopting practice guidelines, will lead to the desired outcome, such as improving women's health, and is based on social cognitive theory (Bandura, 1986).

General perceived subjective norms toward clinical guidelines—Perceived norms related to clinical practice guidelines in general were measured using an adaptation of a three-item scale (Kortteisto et al., 2010) asking about how important patients, supervisors, and provider colleagues think it is to use clinical practice guidelines for clinical decision making (Cronbach's alpha = 0.80). Providers responded on a 5-point scale with response options ranging from *not important* to *extremely important*

Subjective norms refer to how a person perceives the judgements of significant people in his or her environment about a particular behavior. According to the theory of planned behavior (Ajzen, 1991), these perceived judgements are thought to influence how one subsequently behaves. How a provider perceives others in his or her environment, such as other providers and patients, to regard the adoption of clinical practice guidelines may influence that provider's own use of guidelines.

Procedures

Potential participants were informed about the study via a mailed postcard announcing that the survey was forthcoming. A week after the postcard mailing, a survey packet was mailed to each potential participant. This packet included an informed consent cover letter; a paper version of the survey; instructions for consenting to and completing the survey online at the link provided via the REDCap web-based management system; and a stamped, addressed envelope for survey return. The same packet of materials was mailed again 2 weeks after the first mailing of the survey. Finally, a reminder postcard was sent to all potential participants 2 weeks after the second packet mailing. All contact with the clinician recipients included contact information for them to ask questions about the survey and/or to opt out of participation.

Data Analysis

All statistical analysis was conducted in Stata 13.1 (Stata Corp, 2013), and an alpha level of .05 was used as the threshold for statistical significance, although associations at the .10 level also were noted. Provider adherence was our dependent variable for the analysis of each of the eight guidelines. Consistent with our definition of adherence, we considered the participants adherent if they reported following a guideline more than 90% of the time. Adherence was present if the participant answered either 4 (*almost all of the time*; 91%–99% of the time) or 5 (*all of the time*; 100% of the time) on a 5-point Likert scale.

To make contrasts more apparent and consistent with the approach taken by others (Cabana et al., 2001; Kiyoshi-Teo et al., 2014), we also dichotomized the responses to the knowledge, attitudes, and external barrier variables. The single-item factors were considered present if the provider answered 4 or 5 on a 5-point Likert scale, 3 or 4 on a 4-point Likert scale, or 5 or 6 on a 6-point Likert scale. For example, participant scores on the single-item familiarity measure were dichotomized so that providers were considered familiar with a guideline if they answered either 4 (*very familiar*) or 5 (*extremely familiar*) on a 5-point Likert scale. Similarly, the two multi-item scale scores, which were calculated by taking the mean scores across items, were dichotomized at a cut-point equal to the second highest possible item value (4 on a 5-point Likert scale and 5 on a 6-point Likert scale). For example, the responses to the 12-item measure of general attitudes about clinical practice guidelines were summed and the mean scores across the items were calculated. These scores were dichotomized at a cut-point equal to a response of 5 (*moderately agree*) or 6 (*strongly agree*) on a 6-point Likert scale, indicating those providers with positive attitudes about clinical practice guidelines in general.

Descriptive statistics of frequencies and proportions for categorical variables and means and standard deviations for continuous variables were calculated. Pearson's chi-square tests were used to test associations between categorical variables, with Fisher's exact tests used as an alternative in the presence of low expected cell frequencies. Independent samples *t* tests were used to compare means between groups. Constant comparative analyses (Glaser, 1992) were used to identify themes or emerging categories in providers' qualitative comments about each guideline by systematically comparing the participants' statements for similarities and differences.

A logistic regression model was developed to explore predictors of overall guideline adherence. For the purposes of this regression analysis, we developed a composite measure of overall guideline adherence, defined as adherence to at least 50% (four or more) of the reported eight guidelines relevant to the providers' patient population. For those respondents who indicated they did not care for pregnant women, the guidelines that focused on gestational diabetes screening and lactation care were excluded. Independent variables for the model were selected based on the overall significance of associations with adherence to the individual guideline. Specifically, any provider or practice characteristic, attitude, or barrier that was significantly ($p < .05$) associated with adherence to at least three of the eight guideline components was included as a predictor. In this overall model, guideline-varying independent variables were assigned their modal value across guidelines. Dummy variables were used for all categorical variables, and all variables were entered simultaneously into the

logistic regression model. To screen for problematic multicollinearity among independent variables and resulting increased standard errors and decreased precision, variance inflation factors, which measure linear dependence among sets of variables, were calculated among the independent variables. The Hosmer–Lemeshow test was used to assess overall model fit for the regression model, and sensitivity and specificity values were calculated to characterize model performance.

Results

Of the 1,798 providers in our population, we received 399 surveys (22% response rate). Of those returned, we excluded 31 surveys (those with > 50% missing responses and/or from providers who did not see women in their practice), resulting in 368 surveys for analysis (92% analysis rate). With 368 surveys, there was sufficient power to detect small effect sizes for most planned analyses. For instance, at an alpha of .05, we had 80% power to detect an effect size of $w = .15$ for Pearson's chi-square tests on 2×2 tables. Not all of the total responses in the analysis of each guideline are equal due to incomplete surveys.

Respondent Characteristics

Table 2 presents the respondents' demographic and practice characteristics. Most respondents were female, and the mean age was 52.9 years (range = 26–79). The distribution by discipline was 30.3% physicians and 69.7% advanced practice nurses (certified nurse-midwives and nurse practitioners). More than 40% reported that they served rural communities, and nearly 40% were in group practice arrangements. Nearly 60% reported serving a majority Hispanic patient population.

Rates of Adherence and Adherence Factors

Adherence, knowledge, and attitudes—Table 3 displays the rates of adherence, knowledge, positive attitudes, and external barriers for each guideline. The dependent variable, adherence to guideline-recommended practices, was mostly in the 40% to 50% range across guidelines, with the notable exception of HIV screening (much lower, at 17%) and GDM screening for all pregnant women at 24 to 28 weeks' gestation (much higher, at 88%). Awareness and familiarity rates (54%–81% and 55%–73%, respectively) were much higher than adherence rates, as were rates of agreement with guidelines (72.5%–86%). Confidence or self-efficacy in implementing guideline recommendations varied widely across guidelines (45%–86%), with fewer than 50% of providers reporting confidence regarding lactation support and HIV screening and at least 75% reporting confidence regarding practices related to comprehensive birth control counseling, human papillomavirus (HPV) screening, sexually transmitted infection (STI) counseling, and GDM screening. With the exception of HIV screening, guideline-recommended practices were perceived to be effective, with more than 75% of providers reporting that recommended practices would have a moderate or large effect on women's health.

External barriers—External barrier rates varied widely across guidelines and type of barrier. Domestic violence and lactation support had particularly high reported barriers, despite more than 85% provider agreement. Domestic violence counseling had the highest

barrier regarding lack of time (37%) of any guideline, and lactation support had the highest overall barriers and highest barriers regarding lack of equipment (40%), educational materials (32%), support staff (36%), and patient acceptability (39%). Notably, HIV screening, which had by far the lowest adherence rate (17%), also had the highest barriers regarding reimbursement (32%). For the majority of guidelines, either lack of support staff (18%–36%) or lack of time (13%–39%) was the most commonly reported barrier.

Associations Between Adherence and Adherence Factors

Adherence and respondent characteristics, overall attitudes, and perceived subjective norms—Associations among adherence and respondents' demographic and practice characteristics, as well as overall attitudes toward clinical practice guidelines and perceived subjective norms for guidelines overall, were examined. As shown in Table 4, for six of the nine guidelines, certified nurse-midwives were significantly more likely to follow guidelines (23%–100%) than were MDs and NPs (9%–87%). The full-range birth control guideline calls for making available all of the Food and Drug Administration–approved contraceptive methods and providing patient counseling and education for these methods.

Providers who served majority American Indian populations were significantly more likely to follow gestational diabetes guidelines for high-risk patients (87%) compared with providers who primarily served other racial/ethnic groups. (41%–52%). In contrast, providers who served primarily Hispanic patients were more likely to adhere to guidelines regarding STI counseling (48% vs. 24%–36%) and discussion of full-range birth control (53% vs. 37%–52%). Older age of provider was significantly associated with nonadherence for a majority of the guidelines ($M = 53.7$ – 56.5 years for nonadherent vs. $M = 48.8$ – 51.1 years for adherent), but greater years since graduation was only associated with nonadherence for STI counseling ($M = 18.6$ nonadherent vs. $M = 15.9$ years adherent) and HIV screening ($M = 17.9$ nonadherent vs. $M = 14.6$ years adherent). For five of the nine guidelines, providers who had more positive general attitudes regarding clinical practice guidelines were significantly more likely to report adherence to the guidelines than were providers with neutral to negative attitudes (28%–58% vs. 14%–45%). In contrast, subjective norms were significantly associated with adherence for only two of the guidelines. Providers who perceived that colleagues, supervisors, and patients believe it is very important to follow guidelines were more likely to be adherent than were providers who perceived it was only somewhat important (HPV screening: 9% vs. 35%; STI counseling: 54% versus 38%).

Adherence, knowledge, and attitudes—As shown in Table 4, a variety of knowledge and attitude factors were significantly associated with adherence to guideline-recommended practices. Provider awareness, familiarity, and attitudes were, across guidelines, very strongly associated with adherence to recommended practices. Providers who were aware of and familiar with guideline recommendations were generally two to five times more likely to adhere to the guidelines than were providers who were either unaware of or were aware of but unfamiliar with guidelines (42%–77% vs. 4%–41% adherent). Similarly, providers who reported high confidence or self-efficacy were generally three to 10 times more likely to be adherent (33%–71% vs. 4%–21% for those with low confidence). Agreement with

guidelines and perceived effectiveness of guidelines had slightly weaker relationships with adherence, although both were significantly associated with adherence for a majority of the guidelines. Overall, the lowest adherence rates were among those who disagreed with (1%) or did not perceive the effectiveness (4%) of HIV screening.

Adherence and external barriers—In contrast, as shown in Table 5, external barriers were not significantly associated with adherence for a majority of practices. However, barriers were significantly associated with the full-range birth control guideline. Providers who reported a lack of equipment, time, educational materials, support staff, or difficulties regarding reimbursement generally had adherence rates of 26% to 38% with this guideline-recommended practice, whereas providers who did not report these issues had adherence rates of 54% to 56%. Lactation support, which had the highest overall reports of barriers, had significant associations between adherence and barriers regarding educational materials, reimbursement, and support staff (20%–31% adherence for those who perceived significant barriers vs. 48%–55% adherence for those who did not). There were also notable associations between adherence to domestic violence screening and counseling practices and barriers regarding time, educational materials, reimbursement, and patient acceptability (29%–32% adherence when significant barriers were perceived vs. 42%–47% when not).

Model of overall adherence—Table 3 presents a logistic regression model for overall adherence to the guidelines (at least 50% adherence to the set of eight guidelines). Out of a sample of 368 providers, only 146 (39.7%) reported following a majority of guideline-recommended practices relevant to their patient populations. Model diagnostics were reasonable. The Hosmer–Lemeshow test was nonsignificant ($\chi^2[288] = 288.9, p = .474$), variance inflation factors were low (max variance inflation factor = 1.78), model sensitivity was 61.1%, and model specificity was 80.3%. Age, familiarity, and confidence were significantly associated with overall adherence to guideline-recommended practices. Older providers had slightly lower odds of being adherent (odds ratio [OR], 0.97; 95% CI [0.94, 1.00]), whereas providers who were both aware of and very or extremely familiar with guidelines (OR, 3.69; 95% CI [1.96, 6.96]) and providers who were highly confident in their ability to implement recommended practices (OR, 4.25; 95% CI [2.21, 8.20]) were much more likely to adhere.

Participants' Qualitative Comments on the Guidelines

The themes and quote exemplars from providers' comments about each guideline are presented in Table 7. A total of 150 participants (41%) provided at least one comment on the guidelines. Some of the themes identified from these comments amplified the external barriers assessed in the survey, such as lack of time during a patient visit and lack of reimbursement or cost issues. These themes included additional barriers that providers in New Mexico described in adopting these guidelines. Providers in rural communities reported a lack of community resources for referral for services for domestic violence and a lack of access to providers with specialized skills, such as lactation consultants. Some providers expressed disagreement with a one-size-fits-all approach to a guideline, such as HIV screening, because the rates of HIV infection in the state were perceived to be low. Other providers were concerned that many women interpret the change in recommendations about

the frequency of cervical cancer screening to mean that annual well-women visits are no longer warranted. Other guidelines were perceived to provide limited health benefit, such as the HPV testing or well-woman preventive visit recommendations.

Discussion

Using a statewide survey, this study analyzed provider adherence to the Women's Preventive Service Guidelines recommended by the IOM and supported by the Health Resources and Services Administration. Overall, provider adherence was directly associated with clinician familiarity with the guidelines and clinician confidence or self-efficacy to implement them. Younger providers reported that they were more likely to adhere to these guidelines than were their older counterparts.

Overall, adherence rates lagged behind awareness, familiarity, and agreement rates. In other words, considerably more providers knew about the guidelines than followed them. Those who were only aware of the guidelines were less likely to adhere to the recommendations than were clinicians who were more familiar. This finding is consistent with previous research demonstrating that a casual awareness is not as effective as being familiar with the details of guidelines in terms of being able to implement them in practice (Cabana et al., 1999; Kim et al., 2010).

Provider confidence or self-efficacy, the belief that one can perform a behavior or complete a specific task, was consistently associated with adherence to the guidelines. Clinicians who reported low self-efficacy to implement a guideline were much less likely to be adherent. Other studies have shown that low self-efficacy is a major obstacle for clinical guideline implementation (Cabana et al., 2001; Kim et al., 2010; Kiyoshi-Teo et al., 2014). In a review of 76 studies on uptake of clinical practice guidelines, Cabana and colleagues (1999) found that 68% of the studies reporting that low self-efficacy was an impediment included guidelines that were heavily focused on health education and counseling. Many if not most of the Women's Preventive Services Guidelines include these components, suggesting that active strategies for improving self-efficacy, such as interactive skill building, may be an important consideration in successful implementation of these guidelines.

Among the eight guidelines, provider adherence varied from 17.2% for HIV screening to 88.4 % for gestational diabetes screening at 24 to 28 weeks of gestation. Only 39.7% of the respondents indicated adherence to a majority of the guidelines (four or more) relevant for their patient population. This is consistent with other reports that show significant adherence variation within a given set of clinical guidelines (Bourgault et al., 2014; Cabana et al., 2001; Christakis & Rivara, 1998).

We found that several guidelines were particularly problematic for providers to implement. For example, the HIV screening guideline was generally not endorsed as effective, and providers disagreed about its relevance in a state where the HIV risk was perceived by some participants to be relatively low. New Mexico ranked 34th among the 50 states in the number of adults and adolescents diagnosed with HIV in 2013 (Centers for Disease Control and Prevention, 2015). Consistent with the findings about HIV screening, other studies that have

shown that providers may avoid adopting clinical practice guidelines that do not reflect the characteristics of their patient population or that leave little room for clinical judgment or experience (Christakis & Rivara, 1998; Lugtenberg et al., 2009).

Conversely, the gestational screening guideline had the highest reported adherence. Providers described this guideline as an established standard of care for pregnant women for some time and particularly relevant for their patient population, which many perceived at high risk for diabetes. New Mexico's significant population of Native Americans and Hispanics are two to three times more likely to have diabetes than are their non-Hispanic White counterparts (New Mexico Department of Health, 2016).

Adherence to several of the other guidelines, such as the lactation support and domestic violence counseling guidelines, were associated with unique sets of external barriers. The barriers for these guidelines identified in both the survey items and the qualitative comments indicated that these guidelines require an array of supportive policy, community, organizational, and clinical factors for successful implementation. The time burden and cost/reimbursement barriers are particularly salient, especially for the guidelines that require extended time to counsel, educate, and/or refer a patient. The rural nature of New Mexico poses severe challenges to the availability of community services to support women who report domestic violence or need assistance with lactation. If these guidelines are to be successfully implemented by providers, and especially by those in rural communities, the current limitations must be acknowledged and additional targeted support and resources be made available.

Limitations

There are several limitations to this study. First, our survey response rate of 22% was low, and this may affect the generalizability of our findings to other practicing women's health care providers. Our survey was long, and busy providers may not have felt they had enough time to complete the questionnaire. We did, however, have a fairly even distribution of both physician and advanced practice nurse providers across both rural and urban areas of the state. Second, the measures in our study were self-reports, which may introduce recall and reporting biases and inflate results, particularly for adherence. However, the relatively low rates of adherence across most of the guidelines suggest adherence was not inflated. Finally, due to our cross-sectional design, we cannot analyze the direction of association between knowledge, attitudes, and barriers with adherence or infer causation.

Implications

To our knowledge, our study was the first to examine clinicians' experiences with the Women's Preventive Services Guidelines and report on factors associated with adherence to these recommended practices. Despite our study's limitations and the different demographic characteristics of New Mexico compared with the United States as a whole in terms of rurality and status as a majority-minority state, our findings should be instructive. Less than 40% of providers were adherent to the majority of the eight guidelines. Providers who were more familiar with the guidelines reported higher levels of self-efficacy to implement them and younger participants were more adherent.

External barriers specific to several of the guidelines suggest different intervention points to improve guideline adoption. Consistent with other studies on clinical practice guideline adherence, our findings demonstrate that multiple interventions at several levels, such as patient, provider, organizational, community, and policy, and tailored to the unique barriers associated with individual guidelines are warranted (Cabana & Kim, 2003; Cabana et al., 2001). Targeted and active implementation strategies to increase familiarity with guidelines, enhance confidence to integrate them in practice, and decrease structural barriers may hold promise. Potential strategies include hands-on technical assistance, point-of-decision prompts, training workshops with skill-building components, community capacity building, and engagement with key policymakers (Proctor & Brownson, 2012; Rabin, Glasgow, Kerner, Klump, & Brownson, 2010).

Conclusion

Although the Women's Preventive Services Guidelines are recommended by the IOM, adopted by USDHHS, and covered as part of the ACA, the adoption of these guidelines by providers in New Mexico in their clinical practice is variable and for many recommendations is less than optimal. Research is needed to develop and test new implementation interventions to overcome barriers to adherence with these evidence-based guidelines to improve care and health outcomes for women.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Callouts

To date, no evidence has been published regarding the experience of providers with implementing the Women's Preventive Services Guidelines.

Less than 40% of providers were adherent to the majority of the guidelines.

Research is needed to develop and test new implementation interventions to overcome barriers to adherence to the Women's Preventive Services Guidelines to improve health outcomes for women.

Figure 1.

Barriers to physician adherence to practice guidelines in relation to behavior change.

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Table 1**Health Resources and Services Administration's Women's Preventive Services Guidelines**

Type of Preventive Service	USDHHS Guideline for Health Insurance Coverage	Frequency
1. Screening for gestational diabetes	Screening for gestational diabetes	In pregnant women between 24 and 28 weeks of gestation and at the first prenatal visit for pregnant women identified to be at high risk for diabetes
2. Human papillomavirus testing	High-risk human papillomavirus DNA testing in women with normal cytology results	Screening should begin at 30 years of age and should occur no more frequently than every 3 years
3. Counseling for sexually transmitted infections	Counseling on sexually transmitted infections for all sexually active women	Annually
4. Counseling and screening for HIV	Counseling and screening for HIV for all sexually active women	Annually
5. Contraceptive methods and counseling ^a	All Food and Drug Administration–approved contraceptive methods, sterilization procedures, and patient education and counseling for all women with reproductive capacity	As prescribed
6. Breastfeeding support, supplies, and counseling	Comprehensive lactation support and counseling by a trained provider during pregnancy and/or in the postpartum period, and costs for renting breastfeeding equipment	In conjunction with each birth
7. Screening and counseling for interpersonal and domestic violence	Screening and counseling for interpersonal and domestic violence for all women and adolescents	Not specified
8. Well-woman visits	Well-woman preventive care visit annually for adult women to obtain the recommended preventive services that are age and developmentally appropriate, including preconception care and many services necessary for prenatal care	At least one well-woman preventive care visit annually; visits as needed to obtain all necessary recommended preventive services, depending on a women's health status, health needs, and other risk factors

Note. USDHHS = U.S. Department of Health and Human Services. Reprinted from USDHHS (n.d.).

^aThese guidelines concerning contraceptive methods and counseling do not apply to women who are participants or beneficiaries in group health plans sponsored by religious employers. In addition, as of January 1, 2014, accommodations are available to group health plans established or maintained by certain religious employers and group health insurance plans connected with such plans as outlined in the final federal rules (Coverage of Certain Preventive Services Under the Affordable Care Act, 2013).

Table 2Respondent Characteristics (*N* = 368)

Characteristic	<i>n</i> (%)
Gender	
Female	301 (82.9)
Male	62 (17.1)
Race/ethnicity	
Non-Hispanic White	266 (72.3)
Hispanic	67 (18.2)
American Indian	10 (2.7)
Other	25 (6.8)
Type of provider	
Doctor of Medicine	111 (30.3)
Certified nurse-midwife	44 (12.0)
Nurse practitioner	211 (57.7)
Type of practice	
Solo	46 (12.8)
Group or PPO	138 (38.5)
Hospital, outpatient or satellite	51 (14.2)
FQHC	43 (12.0)
Academic health center	31 (8.7)
Other	49 (13.7)
Type of community	
Rural	145 (40.8)
Urban	174 (49.0)
Suburban	36 (10.1)
Majority patient population served	
Non-Hispanic White	120 (34.8)
Hispanic	200 (58.0)
American Indian	25 (7.2)
	Mean (<i>SD</i>)
Age, years (<i>n</i> = 340)	52.9 (10.4)
Years since graduation (<i>n</i> = 361)	17.5 (11.0)

Note. PPO = preferred provider organization; FQHC = Federally Qualified Health Center.

Table 3

Provider and Practice Characteristics, Attitudes, Knowledge, and External Barriers as Predictors of Overall Adherence to Guidelines in a Logistic Regression Model (N=309)

Characteristic	Odds Ratio	95% CI
Male	1.22	0.53, 2.76
Age	0.97 [*]	0.94, 1.00
CNM ^a	1.83	0.68, 4.92
NP ^a	0.83	0.41, 1.70
Patients: Hispanic ^b	1.49	0.81, 2.75
Patients: American Indian ^b	2.24	0.79, 6.41
Positive overall attitudes toward clinical guidelines	1.28	0.70, 2.35
Aware, unfamiliar ^c	1.46	0.68, 3.14
Aware, familiar ^c	3.69 ^{***}	1.96, 6.96
High agreement	1.21	0.48, 3.06
High confidence	4.25 ^{***}	2.21, 8.20
High effectiveness	0.97	0.44, 2.11
High barrier: time	0.97	0.42, 2.23
High barrier: educational material	1.08	0.46, 2.53
High barrier: reimbursement	0.95	0.43, 2.11
Constant	0.32	0.04, 2.65

Note. CI = confidence interval, CNM = certified nurse-midwife, NP = nurse practitioner.

^aReference category is providers who are Doctors of Medicine.

^bReference category is providers who report patient populations that are majority non-Hispanic White.

^cReference category is providers whose modal response was being unaware of clinical practice guidelines.

^{*} $p < .05$.

^{***} $p < .001$