Provider Perspectives on Electronic Decision Supports for Obesity Prevention

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Abstract

Despite the availability of national evidenced-based guidelines related to pediatric obesity screening and prevention, multiple studies have shown that primary care physicians find it difficult to adhere to them or are unfamiliar with them altogether. This article presents physicians' perspectives on the use of electronic decision support tools, an alert and Smart Set, to accelerate the adoption of obesity-related recommendations into their practice. The authors interviewed providers using a test encounter walk-through technique that revealed a number of barriers to using electronic decision supports for obesity care in primary care settings. Providers' suggestions for improving their use of obesity-related decision supports are presented. Careful consideration must be given to both the development of electronic decision support tools and a multilayered educational outreach strategy if providers are going to be persuaded to use such supports to help them implement pediatric obesity prevention and management best practices.

Keywords

clinical decision support, electronic health records (EHRs), obesity, pediatrics, prevention

Background

It is well established that early diagnosis[1] and behavior-based treatment of overweight and obese children can lead to better health outcomes.[2] However, childhood obesity continues to be underdiagnosed by primary care providers.[3-5] In 2007, The Expert Committee Recommendations on the assessment, prevention, and treatment of pediatric obesity were released.[6] These evidence-based recommendations suggest that providers collect and document body mass index (BMI) annually, screen for related medical conditions, assess diet and physical activity behaviors, and offer counseling on specific eating and physical activity advice.

Despite the availability of these recommendations, multiple studies have shown that primary care physicians find it difficult to adhere to national pediatric obesity screening and prevention guidelines[4] or are unfamiliar with them altogether.[7] O'Brien et al[8] have shown that physician advice often focuses on diet alone and neglects physical activity despite guidelines suggesting otherwise. Barriers to adhering to guidelines include time constraints and physicians' perception of limited self-efficacy and lack of knowledge or skills in motivational interviewing and counseling.[9] McDonald et al[10] note that an often overlooked barrier to national obesity guideline adherence is a lack of data systems or health information technology (HIT) that could be used to improve the quality of care for childhood obesity.

HIT includes a range of electronic-based interventions such as electronic medical records (EMRs), computerized provider order entry (CPOE), and Smart Sets (standardized progress notes). Clinical decision supports embedded in the EMR include a variety of tools and interventions such as computerized alerts and reminders, clinical guidelines, order sets, patient data

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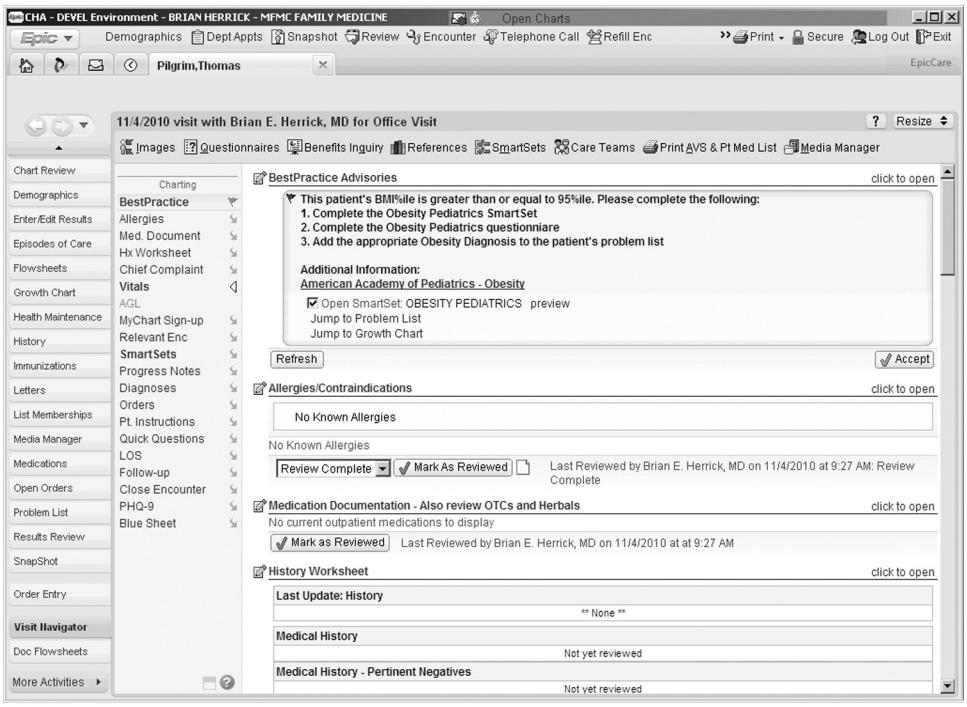

Figure 1. Pediatric obesity best practice alert—appears on screen if the automatically calculated BMI is more than the 95th percentile for a child's age and sex

reports, dashboards, documentation templates, diagnostic support, and clinical work flow tools.[11] HIT has great potential for accelerating the adoption of health care recommendations and guidelines into physician practice.[12,13] Some recent research has shown significant improvements in identifying obesity where computer decision supports were used.[14,15]

Although this research is promising, the use of alerts and other electronic decision supports for more behavior-based interventions in pediatrics, obesity included, is relatively new. Review-based studies[16] suggest that more research is necessary to identify design features and contextual factors that can help physicians adopt recommended pediatric obesity screening and prevention guidelines. This study responds to that call by identifying important logistical and conceptual challenges to provider use of electronic decision supports for obesity prevention and management.

Methods

Study Setting and Population

We conducted qualitative, in-depth semistructured telephone interviews with pediatric physicians from the Cambridge Health Alliance (CHA). CHA's primary care network includes just over 100 pediatricians and family medicine providers who care for about 20 000 children. CHA cares for an ethnically diverse and traditionally underserved population (57% white, 14% black, 4% Asian, and 11% Hispanic; 38% speak a language other than English at home). Since 2004, CHA has used the EpicCare electronic health record system for recording patient data, prescribing, and order entry.

Beginning in December 2007, a point-of-care alert (Figure 1) was implemented at CHA. At the beginning of a well-child visit, each patient's height and weight are entered into his or her EMR. If the BMI, which is automatically calculated, is more than the 95th percentile for a child's age and sex, a bright yellow obesity alert is displayed at the top of the encounter screen. For children aged 2 to 18 years with a BMI $\geq$ 95th percentile, the alert led clinicians to complete a Smart Set, which is a structured progress note, that included the following: (1) documentation and coding of a BMI percentile and diagnosis of obesity (ICD-9 [*International Classification of Diseases, Ninth Revision*] Diagnosis Code V85.5), (2) documentation of counseling on nutrition (ICD-9 V65.3) and physical activity (ICD-9 V65.41), (3) prompts to order fasting laboratory testing if appropriate (Figure 2),

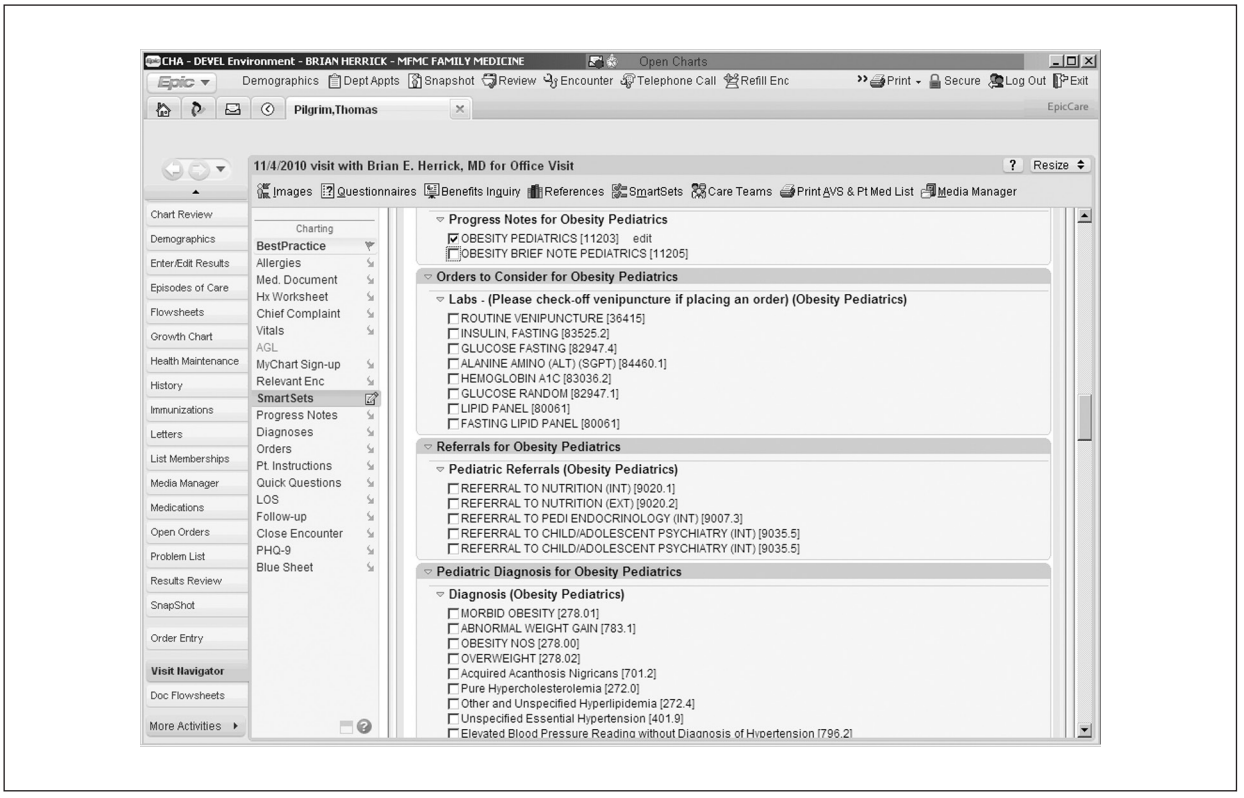

Figure 2. Pediatric obesity Smart Set—prompting provider to open a progress note, order labs, make referrals, and enter a diagnosis

(4) recommendations for a return visit or referrals, and (5) parent educational materials.

Using a purposive sampling method, we developed a list of 20 physicians (pediatricians and family medicine doctors) who see a high volume of pediatric patients between the ages of 6 and 12 (primary sampling criteria) and have experience with EpicCare EMR system at CHA (secondary sampling criteria). Between December 2010 and February 2011, we contacted the 20 physicians via e-mail at least 3 times, inviting them to participate in the study. Of the 20 physicians, 10 did not respond to the invitations, and 1 declined to participate. The final sample consisted of 9 physicians.

Interview Guide and Data Collection

The interview guide was created by the study team, which included physicians, health service researchers, information technology specialists, and an anthropologist. Topics covered in the interview included the physician's experience with the CHA obesity alert and Smart Set, facilitators and barriers to the use of these specific tools, and the use of HIT in general for obesity management. The interview required participants to respond to open-ended questions about these tools as they would normally be encountered during a regular well-child visit with an obese patient. A test encounter with an obese pediatric patient (BMI > 95th percentile) was created for use during the interview. Participants were asked to walk through this encounter during the interview. To avoid having to halt an interview if computer issues arose, screen shots of the test patient's EMR, obesity alert, and obesity and well-child visit Smart Sets were sent to providers in an interview confirmation e-mail, along with basic confidentiality information. The interviews lasted between 30 and 45 minutes, and participants were mailed a $40 gift certificate to compensate them for their time at the conclusion of the interview. All participants gave verbal approval to be interviewed and audio-recorded over the phone prior to the commencement of the interview. This study was approved by CHA's Institutional Review Board for Human Subjects Protection.

Analysis

All interviews were audio-recorded, transcribed, and imported into QSR International's NVivo 8 software, a qualitative data analysis program. An initial codebook was developed by 2 members of the research team after reviewing a sample of interview transcripts. Transcripts

were then coded by 1 member of the research team who added codes to the codebook as new themes emerged. Three members of the research team met periodically to review and discuss coding and analysis. Analysis involved the systematic comparison of coded segments across the 9 interviews to identify convergent, salient, and/or unique themes. The analysts compiled their interpretations of the study population's perceptions of the facilitators and barriers to HIT use for obesity screening and prevention and shared these interpretations with the larger research team for their final review.

Results

Of the 9 providers who participated in this study, 5 were women, and 4 were men. These providers had been in practice from 11 to 40 years at the time of the interview, with an average of 25 years in practice; 5 of the providers interviewed were pediatricians, and 4 were family medicine providers. The average pediatric patient panel size for the study participants was 1172, ranging from 285 to 872 for the family medicine providers (patients 0-18 years old) and 1548 to1885 for the pediatricians (patients 0-22 years old).

The primary aim of this study was to determine what providers thought worked well and what could be improved about the electronic decision supports for childhood obesity. As noted, the interview method required the providers to be in the EMR navigating a hypothetical encounter with an obese patient. This activity revealed that the providers had varying degrees of familiarity with the computer decision support tools available to them. Not only did some have difficulty identifying elements in the pediatric obesity alert and Smart Set, but a few providers were seeing the obesity Smart Set for the first time.

Although the interview was meant to capture both positive and negative aspects of the obesity alert and Smart Set, the majority of providers did not feel that the supports worked well. Their responses fell into 2 categories: logistical issues regarding both the alert and the Smart Set and questions regarding the appropriateness of the use of this technology for obesity care.

Logistical Issues

Alert. Providers noted that the alert served as a reminder to address obesity in the well-child visit. However, they reported a number of logistical issues, including alert fatigue, perception of inefficiency, and inappropriate and/or inconsistent timing of alert appearance.

Most of the providers said that they often or always ignored electronic alerts that appeared on their computer screen during a patient encounter because they see so many of them throughout their work. As one provider noted, "It is alert exasperation. It is a horrible design." Before opening the alert, the majority of respondents could not say what precisely was included in the alert but felt that "too many clicks of the mouse" were needed, and they were concerned that opening an alert would cause more work in an already time-crunched visit. Providers also felt that the alerts did not appear consistently. It was not clear to them whether the alerts were appearing for the medical assistants as they entered patients' heights and weights into the EMRs and then would disappear as the medical assistant logged out and the provider logged in or if the alert simply did not appear at every visit for patients who are obese.

Smart Set. Providers perceived that the Smart Set prompted a more in-depth discussion of obesity than might otherwise normally happen in such a visit. This was characterized as positive though it increased the physicians' concerns about the time it took for them to complete the Smart Set. One provider noted that the Smart Set helped remind him/her that it was important to address obesity: "Because we are really crazy busy. . . . And we need something occasionally to hit us on the side of the head and go, 'hey, did you pay attention to this?'" However, despite a rationale for the Smart Set, providers found it to be "unnecessary" and "inefficient." One provider reflected: "I think probably a couple of years ago I opened it and I saw the Smart Set and everything that it asks for and decided that I just didn't want to do it. . . . I generally don't like the Smart Sets in Epic anyway because they make more work." Many providers felt that they could address obesity sufficiently within the context of a well-child visit without having to open a Smart Set and that they had already been doing so in their practice especially through the use of Smart Phrases—commonly used text of their own design that could be easily retrieved and embedded into the EMR.

Most providers find the existing well-child visit Smart Set to be helpful and use it regularly. Thus, use of the obesity Smart Set during a well-child visit requires that the provider open a second, separate Smart Set. Use of both the obesity and well-child visit Smart Sets at the same visit was characterized as "redundant" and "clunky." Additionally, many providers felt that the order of the prompts within the obesity Smart Set did not follow their natural work flow, and navigating between the 2 Smart Sets was cumbersome. As one provider described it, "You wind up then having to spend several minutes cleaning up after yourself because they each activate different things within Epic. You often are then in conflict and then you get all these error warnings. That is a problem." Addressing obesity within the well-child visit

Table 1. Provider Recommendations for Accelerating Use of Pediatric Obesity Alert and Smart Set

Recommendations	Examples
Alerts and Smart Sets should be streamlined and more direct	The alert should be very brief, not require clicks to other screens, and should include a specific clinical action to do during the visit such as, "Have you checked your patient's BMI?"
Automate tasks and integrate the alerts and Smart Sets into physicians' natural work flow	Automate and integrate the process as much as possible. For example, when entering the patient's height and weight triggers the obesity alert to appear, obesity should also be automatically added to the patient's problem list. Additionally, an integrated "obesity well-child visit" Smart Set should open up automatically if the vitals suggest that the child is obese. Hotlinks to appropriate educational materials should also be integrated into the problem list
Provide greater visibility, education around Smart Sets	Multiple methods should be implemented to introduce the staff to a Smart Set and its contents. This would inlude doing e-mail blasts, presentations at grand rounds and staff meetings, and providing webinars trainings

made some of the obesity Smart Set prompts, such as ordering fasting labs, seem unrealistic, as well.

Lack of familiarity with the contents of the obesity Smart Set was another barrier mentioned by the providers. The large number of Smart Sets available coupled with what was described as a low-key, passive introduction of them to the staff was seen as an impediment to the providers getting to know Smart Sets and what is in them.

Recommendations. The providers made a number of suggestions to improve the efficiency and effectiveness of the obesity alert and Smart Set, including automating and integrating it as much as possible into their regular work flow and using a more intentional educational campaign to disseminate information to providers about Smart Sets and their content (Table 1).

Appropriateness of Use of HIT for Obesity Care

Although logistical issues were important, there were deeper and perhaps overriding questions from providers about whether electronic decision supports were merited, given that obesity was considered a behavioral health problem. Whereas an alert might be a useful tool for bringing something to the providers attention that might be missed (eg, preventing drug interactions), a number of providers felt that receiving an alert for something that was obvious from observation was unnecessary. At the same time, some felt that the difference between obesity and overweight was not as clear as a BMI measure, and thus, they were relunctant to give a child the diagnosis of obesity. Providers were also reluctant to give this diagnosis and document it electroncially because of perceived stigma on the part of their patients. At least 1 provider had a patient seek care elsewhere after having a discussion about the patient's obesity, and another provider revealed her concerns of this happening if a patient saw such a diagnosis on his or her medical record.

Most providers felt that the evidence around obesity was inconsistent and unreliable causing there to be a "questionable relationship between the best practices and the evidence." In the absence of any specific steps that they felt were effective in addressing obesity, they were not sure what an alert or Smart Set could do to improve their patient care. In fact, most of the providers expressed doubt about the ability of physicians in general to address behavior-based problems such as obesity in their offices: "I haven't see*n* any kind of things where really there is some evidence that a physician's involvment actually is helpful, OK? I've not seen it in obesity, and I'm just not seeing any data whatsoever that anything we do is helpful." One provider pointed to patients' life circumstances as mitigating factors that a physician cannot adequately address: "I use the Smart Set. I do my best. And I get nowhere, really . . . right? . . . because there are some hard stops in these patients' lives. And I don't have anything to offer them." Without the evidence of provider efficacy, some felt physicians were not likely to use the Smart Set at all: "Whoever is going to use these Smart Sets has to believe in it. So that to me is the real issue. Because I know every time this is brought up at a meeting, pediatricians go 'Oh, I can't do this. I can't get them to lose weight. I'm not going to be held responsible.' I think we . . . need to build deliberate different message to folks. Show some successes."

Yet a number of providers noted the importance of trying to motivate and counsel their patients to make changes in their lives. Though they were unsure about the evidence of motiviational interviewing (MI) techniques, this was seen as probably the most effective way for a provider to address obesity. However, spending time with Smart Sets left them less time to engage in MI: "I'd rather spend the 20 minutes counseling and

discussing it rather than opening up a Smart Set." As they are used currently, obesity Smart Sets were not seen as a tool to support this interaction: "I think that this [addressing obesity] is more motivation than medication. That's why I think the Smart Set misses the point, misses the target a little bit."

Recommendations. Many of the provider suggestions for improving the obesity Smart Set in regard to using it for behavioral health issues revolved around adding components to support MI. This includes adding places to document parent/child readiness to make changes and to document patient goals, prompts to guide providers in doing motiviational interviewing, and visual aids that could be easily accessed to help educate and motivate their patients.

Discussion

Using HIT decision alerts to accelerate the adoption of evidenced-based practices is an innovative strategy for improving obesity management. As seen in this study, physician buy-in is critically important to making the use of HIT successful. We found that despite the existence of 2 decision alert strategies (alert and Smart Set), 2 major obstacles to effective use were present: (1) logistical technical issues and (2) doubt about the evidence around obesity care and the use of HIT for behavior-based problems. The results of this study suggest that efforts to promote the use of HIT for obesity care would need to address 4 key areas: (1) clarifying the connection between current obesity research data and best-practice recommendations for obesity care, (2) tailoring HIT to address behavior-based health problems, (3) modifying alerts and Smart Sets to streamline provider work flow, and (4) implementing a HIT outreach strategy designed to educate physicians on the evidence concerning obesity best-practices and the effectiveness of HIT in improving patient outcomes.

Clarify connection between obesity research and best practice recommendations. The logistics of using any particular support tool hardly matter if providers do not believe that their actions have an impact on their patients in regard to obesity health outcomes. Our results showed that some providers were skeptical about the connection between obesity research data and best-practice recommendations and about their own ability to effectively address obesity in their patients. Understandably, providers' beliefs in their efficacy are likely to affect their clinical actions. Cook et al[4] suggested that low rates of obesity counseling by providers may be a reflection of "physicians' reluctance to address conditions for which they believe have little impact" (p. 115). Our results align with other research where physicians were reported to have pointed to the lack of sound evidence for the effectiveness of lifestyle behavior change for addressing obesity, especially without consideration of the social determinants of obesity.[17] Yet providers' awareness of best-practice recommendations does improve their attitude toward obesity counseling,[18] which increases the likelihood that they will counsel their patients. Therefore, one of the first steps needed to accelerate providers' adoption of recommended best practices for obesity care is to educate them on the recommendations while highlighting their connection to obesity research.

HIT and behavioral health issues. HIT has already been shown to be effective in identifying and documenting obesity.[14,15] This is relevant because it is a health problem that is often underdiagnosed,[4,19] and overweight children, perhaps on their way to becoming obese, are even less likely to be identified than obese patients.[20] Electronic decision supports seem particularly well suited to this identification task because, even when providers felt they could diagnose obesity "just by looking at someone," they also revealed confusion about the difference between being overweight and obese. Obesity responds best to early intervention,[1] so identifying and documenting those that are at risk of becoming obese is critical for improving chances for successful treatment of this population.

Researchers have suggested a number of aspects that may make addressing obesity within a patient encounter more successful. These include assessing readiness to change,[21] incorporating behavior change strategies,[1] and setting goals in a collaborative fashion.[14] These aspects can all be readily aligned with the motivational interviewing approach that providers believe is most important for catalyzing behavioral change in their patients. And although HIT, in general, appears to be closely associated with prompting clinical actions such as ordering tests, preventing negative medicine interactions, and providing immunizations, motivational counseling components can and have been incorporated into the EMR visit template.[21]

However, even if providers believe in motiviational counseling for addressing obesity in their patients, research has shown that they do not always feel competent to provide that type of service.[22-24] Knowing what to suggest to patients does not mean that they know how to suggest it—this is a barrier to addressing obesity and overweightness in the primary care setting.[24,25] Physicians' proficiency with behavioral counseling should be increased and could accompany HIT innovation. For

example, providing MI training[25] coupled with prompts embedded within the EMR to guide a provider through MI[21] and easy access to visual educational materials to communicate weight problems[14,21] could prove helpful.

Modifying alerts and Smart Sets to make provider work flow more efficient. Even when providers do believe that there are effective evidence-based practices for addressing obesity and that HIT could help address obesity, the alerts and Smart Sets in their current form are thought to be inefficient and hamper work flow. Lack of time in general is already perceived as a barrier to addressing obesity within the primary care setting.[1,23,26] In the context of patients visits, anything that is perceived by the provider to cause more work is going to be difficult for them to adopt. Thus, there is a real need to ensure that HIT tools will make providers' work flows more efficient and effective. Following the quality improvement approach discussed by Rattay et al[21] seems helpful for aligning electronic decision supports most effectively with current office and provider work flows.

Implementing a carefully designed HIT outreach strategy. Our research suggests that encouraging the adoption of obesity prevention guidelines through the use of HIT will require a well-planned outreach strategy. The first step of this strategy may be to ensure that providers are proficient in the use of EMRs. In the design of this study, the original purpose of using a test encounter was simply to provide the appropriate stimulus to generate rich responses to the interview questions. However, this walk-through interview technique revealed providers' varying levels of expertise in using the EMRs and proved to be a struggle for some. To make the most of this technology, it is necessary for providers to learn enough technical skills to be able to navigate with ease.

Another important part of this strategy will involve educating physicians on the evidence connected to obesity best practices and providing data that using HIT is a promising approach for improving obesity outcomes in patients. Finally, attention should be given to exposing providers in multiple ways to the HIT tools, so that they become familiar and comfortable with their use. This could include booster training sessions at staff meetings and grand rounds along with e-mail blasts and webinar trainings of tips and tricks.

Limitations

This qualitative study of a group of providers in 1 primary care setting is subject to limitations. First, it was a purposeful sample and thus may not fully represent all the pediatric providers at the CHA. Additionally, the findings may not resonate with providers in alternate settings—for example, rural, suburban, or with homogeneous populations. The providers interviewed had a range of experience with HIT, and many reported "alert fatigue." Thus, the findings might not be applicable to providers who have yet to experience practice alerts. However, despite these limitations and given the paucity of qualitative studies on the use of the EMR for obesity prevention, the study provides important information on the factors that might accelerate the use of HIT for obesity prevention and the potential barriers to its acceptability.

Conclusion

Careful consideration must be given to both the development of computer decision support tools and to an educational outreach strategy, if providers are going to be persuaded to use HIT to help them implement pediatric obesity prevention and management best practices. Alerts and Smart Sets need to make providers' work more efficient and should facilitate their use of behavioral change strategies, such as MI, that are considered by researchers and practitioners alike to be effective. The outreach strategy should be multilayered and include not only technical skills training but educational components that build awareness about the computer decision support tools available, the connection between obesity research and best practices, and the promising use of HIT to manage behavioral health problems. These considerations will help HIT fulfill its potential as a tool to accelerate the use of obesity best practices in primary care settings.

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