## **University of Portland Pilot Scholars**

Nursing Graduate Publications and Presentations

School of Nursing

2015

# Knowledge Translation: Implementing a Child Obesity Screening and Referral Process

Sarah Wright

Isabel Toledo-Silvestre

Marie Napolitano

Follow this and additional works at: http://pilotscholars.up.edu/nrs\_gradpubs



Part of the Nursing Commons

Citation: Pilot Scholars Version (Modified MLA Style)

Wright, Sarah; Toledo-Silvestre, Isabel; and Napolitano, Marie, "Knowledge Translation: Implementing a Child Obesity Screening and Referral Process" (2015). Nursing Graduate Publications and Presentations. 7. http://pilotscholars.up.edu/nrs\_gradpubs/7

This Doctoral Project is brought to you for free and open access by the School of Nursing at Pilot Scholars. It has been accepted for inclusion in Nursing Graduate Publications and Presentations by an authorized administrator of Pilot Scholars. For more information, please contact library@up.edu.

Knowledge Translation: Implementing a Child Obesity Screening and Referral Process

Sarah Wight, RN, BSN

**DNP-FNP** student

University of Portland

Isabel Toledo-Silvestre, BA, RN, PMHNP

**DNP-FNP** student

University of Portland

Marie Napolitano PhD, APRN, FNP-C, FAANP

Director – Doctor of Nursing Practice Program

School of Nursing, University of Portland

#### Disclosure Statement:

Sarah Wight, Isabel Toledo –Silvestre, and Marie Napolitano all report no financial interests or potential conflicts of interest. A research grant from Sigma Theta Tau International (STTI) was received for this project. STTI had no involvement in study design; in the collection, analysis and interpretation of data; in the writing of the report; or in the decision to submit the article for publication.

Keywords: children, obesity, BMI, screening, referral, implementation

#### **Abstract**

**Introduction:** The purpose of this practice improvement project (PIP) was to implement a systematic obesity screening and referral process for children ages 3-17 at a county primary care clinic.

**Method:** This descriptive study used the Knowledge to Action Cycle to guide the implementation process. Mixed methods including quantitative data collection and a qualitative survey were used to analyze the process.

**Results:** Of 1,265 visits, BMI percentile was recorded for 874 (69%). Of these 874, 237 (27%) had a BMI≥95%. Forty (17%) children with BMI≥95% were screened for readiness to be referred to a BHC. And of those screened for readiness, only 9 (23%) were ready for a behavioral health intervention, 4 of whom attended an appointment. Barriers listed in the providers' survey included: limited time and discomfort discussing obesity, and a negative association with a BHC.

**Discussion:** This PIP proved a challenge for the providers. However, valuable lessons were learned regarding barriers to avoid for similar implementation projects in the future.

#### Introduction

Childhood obesity remains a major health concern in the United States with alarming rates. Over the last 30 years, the number of obese adolescents has quadrupled, while the number of obese children has doubled (CDC, 2015). By 2012, 12.7 million (16.9%) children and adolescents ages 2 to 19 in the US had a BMI at or above 95<sup>th</sup> percentile (CDC, 2014). Obesity increases the risk of chronic diseases such as diabetes, hypertension, coronary heart disease, stroke, joint disease, and cancer. Indeed, an overweight adolescent has a 70% chance to be overweight or obese as an adult (CDC, 2015). Lack of healthy eating and adequate exercise contribute to these rates. Only 70% of children exercise 3 or more times a week, and only 25% of high school students eat the daily recommended amount of fruits and vegetables (NCSL, 2011). Therefore, it is crucial that primary care providers (PCPs) who care for children address obesity in a systematic way beginning with early childhood.

#### **Literature Review**

## **Obesity Screening**

PCPs occupy an ideal position to implement evidence-based strategies in order to address and improve childhood obesity (Davis et al., 2007). The first step to address obesity among children is screening. The Institute of Medicine (IOM) (2011) recommends that children be screened for obesity in a standardized way. The U.S. Preventive Services Task Force (USPSTF) (2010) advises that clinicians screen children aged six years and older for obesity and refer them to a comprehensive, intensive behavioral intervention in order to promote improvement in weight status. The USPSTF (2010) also recommends the use of the body mass index (BMI) percentile as an appropriate measure for identifying children with excess weight, considering

obesity to be a BMI higher or equal to 95<sup>th</sup> percentile. In addition, the American Academy of Pediatrics (AAP) recommends that children ages 2-19 be screened for obesity yearly using BMI (Krebs et al., 2003). Although BMI is recommended by both the USPSTF and AAP, less than half of obese children receive BMI screening (Smith, Skow, Bodurtha, & Kinra 2013).

Unfortunately, limited translational research studies exist regarding the implementation of obesity screening strategies for children in primary health clinics. One study found (Saviñon, Smith-Taylor, Canty-Mitchell, & Blood-Siegfried, 2012) that the use of electronic medical records (EMRs) customized with clinical practice guidelines clearly increased the frequency of BMI recording and completing BMI growth charts. In addition, in evaluating the implementation of a screening tool not related with BMI, Staton, Atherton, Toriello, & Hodgson (2012) concluded that increased awareness of the problem by all team members and having confidence in the benefits of the screening tool increased the rates of screening completion. Other studies found that proper education of staff members implementing a screening tool improved results (Bradley, 2012; Wallman, Smith, & Moore, 2011). Finally, time was also considered to be a concern when implementing the use of screening tools (Watson-Jarvis, McNeil, Fenton, & Campbell, 2011). This information regarding BMI screening implementation strategies was considered in the development of this implementation process.

#### **Assessment for Readiness**

Since weight loss is a behavioral change, determining the patient's readiness for behavioral modification is essential for successful weight loss. Prior to counseling a patient and his/her family for weight loss, the PCP must ensure that the patient and his/her family understands the importance of weight loss and is ready commit to it. According to Logue,

Sutton, Jarjoura, & Smucker (2000), using the Transtheoretical Model (TTM) of behavior change allows physicians to recognize when obese patients are receptive to specific behavioral interventions. Not all children with a BMI  $\geq$  95<sup>th</sup> percentile are ready for behavioral change and therefore not all are good candidates for referral to treatment. A PCP can use different screenings to assess readiness. This practice change chose to use the TTM, which assesses a patient's readiness to change using a scale from 0-10, 0 being not ready and 10 being most ready. A score of six in this scale represents strong confidence to start lifestyle changes recommended for weight loss. This practice change analyzed the use of the TTM with the score of six as a reference for referral to a behavioral health consultant (BHC) in the clinic.

#### **Referral to Treatment**

After screening school-aged children for obesity and assessing their readiness for change, these children need to be referred for treatment. Oude et al. (2009) found that a behavioral intervention was beneficial in reducing BMI for children in a meta-analysis of 64 randomized controlled studies. In addition, the American Academy of Pediatrics recommends that a clinician treating obesity should include a BMI calculation at least yearly with a subsequent referral for intensive treatment (USPSTF, 2010). These authors could not find any studies analyzing referral strategies for children screened for and/or diagnosed with obesity. This practice change project will help to fill this gap by providing an analysis of a referral implementation process for obese children and adolescent ages 3 to 17 by three pediatric PCPs in a county health clinic.

The high prevalence of obese children in the U.S., the lack of systematic ways to screen and refer obese children in primary care, and the gap in the literature of translational studies of evidence-based strategies for screening and referral of obese children in a primary care setting continue to be priority concerns for primary care clinics that work with children. Therefore, this practice improvement project aimed to fill these gaps and provide valuable information that healthcare providers could use in other settings. The purpose of this PIP is to implement a systematic process of screening and referral for obese children age 3 through 17 in a pilot project using the pediatric team in a county health clinic of the Northwest U.S.

#### **Theoretical Framework**

The theoretical framework of this practice change is based on the Social Ecological Theory. The social ecological theory recognizes the impact that culture, environment, politics, and society have on health (White, 2012a). Childhood obesity is a condition impacted not only by an individual's decisions, but also by other factors, such as environment and culture, which affect a person's ability to change her or his health behavior (Sallis, Owen, & Fisher, 2008). Referring a child to a BHC for a behavioral intervention helps to evaluate how the factors in a child's environment affect his/her obesity. For example, they discuss local resources for physical activity and affordable healthy foods. The social ecological theory also guided this practice change study by considering the culture and politics of the clinic. For example, each PCP at the clinic was asked to provide input in selecting the topic of this practice change, ensuring that it would fit within the clinic culture.

#### **Methods**

This is a descriptive knowledge implementation study guided by the knowledge to action cycle (Graham et al., 2006). Mixed methods were used for this study. Percentages were used for analysis of the primary outcomes, which include:

- 1. BMI percentile recorded in EMR
- 2. Children with BMI  $\geq 95\%$
- Charts of obese children with documentation regarding screening of readiness for BHC referral in provider's note
- 4. Referral order in chart for all children with BMI ≥ 95% and readiness ≥ 6 on a scale from
   0-10 (0 no motivation, 10 fully motivated) to a BHC using smart phrase
- 5. Appointment scheduled for each child referred to the BHC

This data was retrieved by reviewing the electronic chart of each child seen during the three month time frame of the study. In addition, qualitative post-implementation surveys were collected from the three providers. This survey included four statements using a Likert scale from strongly agree to strongly disagree, and three opened ended questions (See Appendix B for complete survey). Finally, the support staff of the pediatric team were invited to provide input on the process through monthly emails and attending the pediatric team meetings.

## **Implementation Process**

The implementation of this PIP involved initiating a protocol to screen children for obesity using a BMI  $\geq$  95<sup>th</sup> percentile and then to assess the child/family's readiness to start a behavioral change program. Once the child and the family were determined to be ready, he or she was to be referred to the BHC for a healthy weight management intervention, which includes both nutritional and socio-behavioral treatment approaches. After completing the three months of the project were completed, the authors analyzed the data in order to provide input on measurement and process outcomes. The specific steps of this practice change can also be seen in the flowchart in Appendix A.

This PIP used the Knowledge-to-Action cycle developed by Graham et al. (2006) at the University of Ottawa as a guide to implement the different steps of this change. This model focuses on how to implement new knowledge into practice. The steps of the Knowledge-to-Action Cycle are shown in Figure 1.

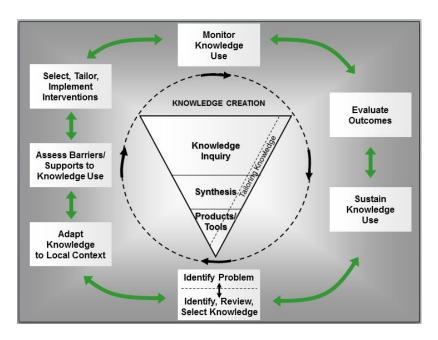


Figure 1. Knowledge to Action Cycle (Graham et al., 2006)

Need to state permission received in writing from Dr. Graham to use model?

Identify the Problem

To begin the Knowledge-to-Action Cycle, first a problem must be identified. In this case, the providers at the clinic identified the high risk of obesity in children and lack of systematic screening for childhood obesity. Current practice in the clinic includes the MAs inconsistently charting the height and weight in EPIC, which automatically calculates the BMI. The providers may or may not refer obese children to a registered nurse for nutritional counseling based on the providers' individual decision, without a systematic protocol which follows recommended clinical guidelines.

## Identify, Review, and Select Knowledge

Next, the authors of this practice change reviewed the literature to learn the best evidence for screening. Screening guidelines from USPSTF, IOM and the AAP, and articles from databases such as CINAHL and Medline were used. As mentioned above, this data led us to choose BMI for the screening tool and to select referral for behavioral treatment for BMI  $\geq$  95 as an intervention. The review of the literature and input from the providers revealed that this treatment could be more effective if patients were screened for readiness first and rated their readiness as 6/10 or greater. Therefore, a screening for readiness to be referred to a BHC was added.

## **Adapt Knowledge to Local Context**

Next, the evidence based practices must be adapted to the local context. Obesity screenings such as the Family Nutrition and Activity Screening have been shown to be useful in correlating child obesity with family life habits (Ihmels, Welk, Eisenmann, Nusser, & Myers, 2009). However, during discussion with the providers at this clinic, this screening tool was determined to be too time consuming and too difficult to incorporate into EPIC for charting purposes. In addition, alternatives to BMI screening, such as the waist-to-height ratio (Li et al., 2013), were discussed with the providers, but were determined to not be feasible changes in the clinic. Also, although the USPSTF recommends screening children six and older for obesity and the AAP recommends ages 2-19, these authors chose the age range 3 to 17. This range was used because the clinic was already gathering obesity related data for this age range.

#### **Assessing Barriers to Knowledge Use**

As discovered by using the social ecological theory, potential barriers to this information may be social or cultural ideas that the children are not obese and do not need to be screened. Before this intervention, the providers referred children to nutrition counseling based on their own clinical judgment. Potentially this systematic screening and referral process will contradict a provider's idea about who should be referred, which could decrease referrals for children with a BMI  $\geq$  95 if it went against the clinician's judgment. Additionally, the providers acknowledged potentially being overwhelmed by additional practice change projects happening at the same time.

## **Select, Tailor, and Implement Interventions**

Next, an intervention must be selected. The staff at this clinic decided to implement a process of screening children using the BMI. When each child is seen by a provider, either for a well-child exam or for an acute issue, it was an irregularly implemented standard for the BMI to be calculated. Now, however, all children should have a BMI recorded, and those with a BMI ≥ 95% screened for readiness to change and be referred to a BHC for a behavioral intervention if they rate their readiness as 6/10 or greater. This was done by placing an internal referral order in EPIC, the EMR used by the clinic. These referrals were then seen by the BHC, and appointments scheduled by a technical clerical assistant (TCA) with the parent(s) and child. All stakeholders, including providers, the social workers, parents, children, and clinic support staff were notified of this practice change.

Before implementing this practice change, an information letter regarding the details of the project was given to all staff members on the pediatric team who agreed to be involved in the project. Informed consent was not considered necessary as the change followed practice guidelines and did not involve new treatment or patients as subjects. Approval from the internal review board (IRB) was received from the University of Portland (the authors' university), but not from this clinic as it was not considered necessary by clinic leadership.

#### **Monitor Knowledge Use**

The following step after selecting and implementing the intervention on the Knowledge-to-Action Cycle is to monitor the knowledge use. This includes selecting outcomes to monitor and then collecting data on them. For this project, the authors collected data at two months and weekly throughout the third month. This data was collected from charts without any identifying data in regards to either provider or patient.

#### **Evaluate Outcomes**

This PIP had eight outcomes which the authors evaluated using percentages. After beginning data collection at two months of the project, providers were notified of low outcomes and reminded about the practice change process. This appeared to improve the results for collecting the BMI. The goal of this project was to screen children for BMI at 100% of visits, since the protocol at the clinic already included this. Additional goals included: 80% of children with BMI  $\geq$  95% be screened for readiness, 90% of those children with BMI  $\geq$  95% and readiness  $\geq$  6/10 referred to a BHC, 90% of those referred to be scheduled for an appointment, and finally 85% of families referred to attend the first appointment.

## **Sustain Knowledge Use**

The last step in the Knowledge-to-Action Cycle is to sustain knowledge use. To increase the likelihood that the project would be sustained, the three providers filled out a survey with

their opinions of the project and what improvements could be made. In addition, the authors also plan to disseminate the information to other health care professionals. First, they submitted an article describing the project to this academic journal. They also have presented a poster on the project at their school, at an international nursing conference, and potentially at other local or national conferences. This will allow other providers and/or primary care clinics to be aware of barriers and strengths related to implementing similar programs to help improve treatment of childhood obesity.

#### **Results**

## **Demographics**

The participants in this study are the members of the pediatric team in the clinic. This included one pediatrician (DO), two pediatric nurse practitioners (NPs), one registered nurse (RN), three certified medical assistants (CMA), two BHCs and clerical staff. These three providers are females, one is a doctor of osteopathy (DO), and two are nurse practitioners (NPs). Two of them are Latino and work full time four days per week. The other provider is Caucasian and works part time two days per week. Two of them speak Spanish, and the third uses an interpreter as necessary, relevant for a clinic with a high Latino population. The children seen were 73% Latino, 44% female, and spread fairly evenly over the age range from 3 to 17, with highest percent of children aged 4-6 (See Figure 2).

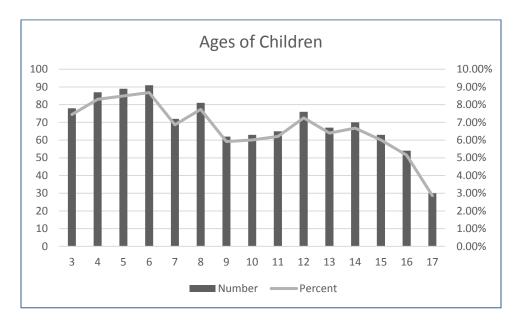


Figure 2. Ages of children seen by providers.

## **Quantitative Data**

The three pediatric providers involved in this practice improvement project saw 1,048 children aged 3-17 years old on 1,265 visits in the three month time frame from January 2<sup>nd</sup> to March 31<sup>st</sup>, 2015. Of the 1,265 visits, BMI percentile was recorded for 874 (69%) of the visits (see Figure 3). Of the 874 visits with BMI recorded, 237 (27%) had a BMI ≥ 95% (see Figure 4). Forty (17%) of these were screened for readiness to be referred to a behavioral health specialist to treat obesity. And of those screened for readiness, only 9 (23%) were ready for a behavioral health intervention. These nine patients were referred to a behavioral health counselor and of them 4 (44%) of them attended appointments during this time interval. See Table 3 for a summary of the results. In addition, while collecting data, the authors observed that the pediatric team more successfully implemented this process at well child checks (WCCs)

compared to other visits. For example, BMI was recorded at 96% of WCCs versus 58% of other visits, and 32% of obese children at WCCs were screened for readiness compared to 6% of obese children at other visits (See Figure 3).

Table 3

Results

|  | # of Visits | %    |
|--|-------------|------|
| Total Visits   | 1265        |      |
| BMI percentile recorded  | 874         | 69%  |
| Visits BMI ≥ 95%   | 237         | 27%  |
| Visits with BMI ≥ 95% that were screened for readiness                     | 40          | 17%  |
| Screened for readiness who were ready for an intervention                  | 9           | 23%  |
| Patients screened as ready who were referred for an appointment with a BHC | 9           | 100% |
| Patients referred who attended the appointment                             | 4           | 44%  |

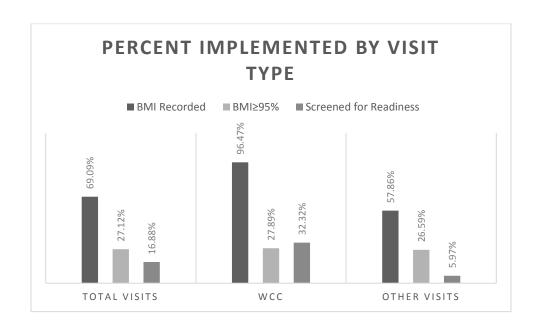


Figure 3. Percent implemented by visit type. Percentage of visits which had BMI recorded, BMI  $\geq$  95%, and percentage of visits with BMI  $\geq$  95% in which the child was screened for readiness for total visits, WCC visits and visits for reasons other than a WCC.

## **Provider Survey Conclusions**

At the end of the data collection period, the three providers completed a survey to provide insights regarding the implementation process. This survey included four statements rated on a Likert scale from strongly agree (1) to strongly disagree (5), three open questions, and a final section of general comments (See Appendix B for full questionnaire). The results of the first four questions are shown in Table 3.

Table 3

Results of Provider Survey

|                            | This practice<br>change took too<br>much time | Your role in the screening and referral process was easy to understand and implement | This practice change will help recognize and treat obesity in children. | This practice change was feasible to complete in a regular visit. |
|----------------------------|---|--|---|---|
| Provider #1 (full time)    | Neither agree nor disagree (3)                | Agree (2)  | Neither agree nor disagree (3)  | Disagree (4)  |
| Provider #2<br>(full time) | Strongly disagree (5)                         | Disagree (4)   | Agree (2)   | Disagree (4)  |
| Provider #3 (part time)    | Neither agree nor<br>Disagree (3)             | Agree (2)  | Neither agree nor<br>Disagree (3)                                       | Neither agree nor disagree (3)                                    |

| Conclusions | Provider #2<br>strongly<br>emphasized that<br>she needed more<br>time to build<br>rapport with the<br>patients before<br>addressing<br>obesity | 2/3 providers agreed that their role on this PIP was clear. The 3 <sup>rd</sup> provider was on medical leave for most of the pre-project planning | Only 1 provider agreed on the potential impact of this study for the screening and treatment of children obesity | 2/3 providers<br>strongly stated<br>that this PIP was<br>challenging to<br>implement<br>during a regular<br>pediatric visit |
|-------------|--|--|--|---|

## **Open Ended Questions**

- 1. Barriers Completing the Referral for Children with BMI ≥ 95%. One provider stated that families were not receptive to referring a child to a counselor for weight management and that she needed more repeated visits in order to talk about referral. She stated that it was hard to talk about the referral during the first visit when she had newly begun the discussion about weight. The part time provider stated that she forgot to discuss obesity and referral with her patients for several reasons. First, she was not in the clinic during the team meetings so she was not regularly updated about the study. Second, she saw a lot of same day appointments during the study which left obesity "out of her radar." And third, she does not have a regular patient panel, which also leaves health promotion on a secondary level. The third provider stated that families did not seem interested.
- 2. Barriers to Screening Children and Families for Readiness. One provider stated that families did not see weight issues as a "psych" issue, and therefore the families would rather see a nutritionist than a BHC. Another provider stated that it was hard to assess readiness for obesity treatment when the visit was related to a separate issue. The third provider states that

"sometimes it feels awkward bringing up the weight issue since I don't know the families very well," and, "also if the child is being seen for an acute visit like a cold, sometime it does not seem like the appropriate time to bring up the obesity." The third provider stated that she "tried to have it as part of the forecasting," but it was not always completed as there were other practice changes happening at the same time.

- **3. What helped you to complete screening and referral process?** Insufficient data to provide input, since providers did not answer this question.
- **4. General Comments or Recommendations.** One provider stated that there was so much to do during a visit that it was difficult to discuss the referral. Another provider strongly emphasized that she needed more time (visits) for the implementation so that she could add lab results in follow up visits and have a stronger case of the need to treat the obesity. The third provider mentioned that "it would be great to have a default screen that popped up or flagged us if the BMI is  $\geq 95\%$ , so when we scrub [review charts], we can make note and have it in our mind to ask about readiness even if is it not a WCC."

#### **Discussion**

This practice improvement project aimed to implement a systematic screening and referral program for obese children in a county health clinic, using the Knowledge to Action Cycle as an implementation model. The BMI percentile was chosen as a screening method, the children were then also screened for readiness and referred if ready for a behavioral health intervention. At the end of the implementation process, providers gave input on the implementation through a qualitative survey.

The first outcome was whether the BMI was recorded for every visit. After collecting data only 69% of child visits had a current BMI. This is higher than the national average, though less than the clinic goal of 100%. The WCC visits had a much larger percentage of BMIs recorded (96%) compared to visits for other reasons (58%). Many of the patients had a weight recorded, but no height, so EPIC could not calculate the BMI. Since this clinic's standard is to record BMI at 100% of child visits, this helped the clinic to identify a need to improve in this area. One recommendation to try to improve BMI recording at a 100% percentage is to review this goal regularly at pediatric team monthly meetings.

After recording the BMI, the goal was for providers to screen patients with a BMI  $\geq$  95% for readiness to change. This was a weak point in the results as providers only screened obese children for readiness at 17% of all visits that the child had a BMI  $\geq$  95%. This was only 6% for visits other than WCC, and somewhat higher (32%) for obese children during WCCs, but still low. One suggestion from providers to improve readiness screening included having a clinical reminder in EPIC to alert providers when the child had a BMI  $\geq$  95%. One barrier to readiness screening was that the providers did not feel comfortable discussing obesity with new patients. Even though two of the three providers were Hispanic, as were 73% of the children, they still did not feel comfortable discussing an obesity referral. To address this barrier, perhaps providers could attend a cultural training on how to address obesity in this population. Another barrier was time constraints to discuss readiness for obesity referral during the visit, especially for non-WCC visits. Due to the time constraints, the recommendation is to discuss obesity and readiness for referral at WCCs instead of all visits. A final observation was that having lab results reflecting the effect of obesity on the child's health was useful to help convince children and family that

obesity was a concern. This approach, however, may exclude children who do not have abnormal labs, but are still obese and at risk for health conditions in the future.

When screening for readiness, many of the patients and their families were not ready for an intervention. One explanation for this is that providers stated that the families showed reluctance to go to a "counselor" as this was perceived negatively, as though there was something psychologically wrong with them or their child. Perhaps more patient education regarding the role of the BHC and the intervention would be helpful to increase the readiness of the families. In addition, when the providers did screen patients for readiness, instead of using the 0-10 scale, they simply charted whether or not the patient stated they were ready for an intervention. This indicates that a simple discussion regarding readiness may be easier to use than a 0 to 10 scale.

The referral and attendance of an appointment with the BHC for a behavioral intervention was the most successful part of this intervention. All nine obese patients who were screened as ready for an intervention were referred to a BHC and had an appointment scheduled. Of those patients, 4 (44%) attended an appointment during the time frame of the study, and others had appointments scheduled for after data collection ended. This was likely due to the ease of ordering a referral through EPIC, and the convenience of having the BHC located at the same clinic. In addition, assessing for readiness ensured that patients referred by the providers were ready and willing to attend such an appointment.

From the provider survey results, other relevant points brought up by providers in the survey, not included in the discussion above relate to training of the providers and concurrent practice changes in the clinic. With a small number of participants, it is essential that all

members receive all training, and make up training if necessary so that the practice change can be successful. Therefore it is recommended that when any participant misses training at any step of the implementation process, that participant completes the training at a later date. In addition, when providers have multiple projects occurring the same time, it is difficult to fully focus on each one.

#### Limitations

This practice improvement project had a few limitations. In order to assess the feasibility of implementation at a primary care county clinic, this project was not controlled or double blind, which may have affected results. Also the sample size was small, with only three providers on one team at the clinic. The time frame of only three months also may have decreased the results as one provider mentioned she would prefer to have more time to develop a relationship with patients and more time to get lab results back before discussing obesity.

#### **Recommendations for Future Research**

In the future, more studies are needed regarding the implementation of an obesity screening and referral process. A larger sample size, such as an entire pediatric clinic or a group of clinics would provide better information. Also, a longer study may be beneficial to see if results improved over time.

## **Implications for Clinical Practice**

Although this practice improvement project was not fully implemented at this county clinic, it may be more successful with a few changes. First, staff involved in BMI recording should be fully trained on how to record the BMI at each visit, and this should be monitored regularly. In this PIP, the percent of patients with current BMI in their chart increased after

reminder emails were sent to the providers. Reminders of BMI recording should take place during regular team meetings until the 100% goal is reached. These authors highly recommend that in order to reach the AAP goal to screen children for obesity using BMI percentiles annually, BMI should be calculated at every visit as many children do not come to the clinic annually. Second, changing the goal to screening all patients for readiness for the intervention at their annual WCCs, instead of at every visit, may be more reasonable. Third, the successful results of the referral process in this PIP relate to the presence of a BHC in the clinic. It is crucial that the referral process is convenient for the patient. Also, providers could benefit from a cultural training that facilitates and eases discussion around obesity with children and their families. Lastly, more education for patients and their families regarding the behavioral intervention may be useful to demystify the negative connotation of a "behavioral/psychological" intervention.

## **Conclusion**

Obesity is a rising epidemic in this country and is especially concerning in children since their health issues will start earlier and may last for the rest of their lives if not addressed while still young. In order to prevent complications associated with child obesity, it is crucial to systematically screen patients for obesity using BMI percentile as recommended by the USPSTF and AAP. After recognizing obesity in a child, assessment for readiness would allow providers to recognize when obese children and their families will be receptive to an obesity behavioral intervention. Having an effective referral process and a BHC on site facilitates the treatment attendance, and hopefully completion of treatment. If the barriers to the screening and referral process can be addressed, this implementation project may be useful to address child obesity in primary care clinics across the nation.

#### References

- Bradley, H., B. (2012). Implementation of a skin cancer screening tool in a primary care setting:

  A pilot study. *Journal of the American Academy of Nurse Practitioners*, *24*(2), 82-88.

  doi:10.1111/j.1745-7599.2011.00669.x
- Centers for Disease Control & Prevention (CDC). (2014). *Overweight and obesity*. Retrieved from http://www.cdc.gov/obesity/data/childhood.html
- CDC (2015). Adolescent and school health: Childhood obesity facts. Retrieved from: http://www.ncsl.org/research/health/childhood-obesity-2012.aspx
- Davis, M.M., Gance-Cleveland, B., Hassink, S., Johnson, R., Paradis, G., & Resnicow, K. (2007). Recommendations for prevention of childhood obesity, *Pediatrics*, *120* (Supplement 4), S229, S253.
- Graham, I. D., Logan, J. Harrison, M. B., Straus, S. E., Tetroe, J., Caswell, W., & Robinson, N. (2006). Lost in knowledge translation: Time for a map? *The Journal of Continuing Education in the Health Professions*, 26, 13-24.
- Ihmels, M. A., Welk, G. J., Eisenmann, J. C., Nusser, S. M., & Myers, E. F. (2009). Prediction of BMI change in young children with the family nutrition and physical activity (FNPA) screening tool. *Annals of Behavioral Medicine*, *38*(1), 60-68. doi:10.1007/s12160-009-9126-3
- Institute of Medicine (IOM) (2011). Early childhood obesity prevention policies: Goals, recommendations, and potential actions. Retrieved from:

  http://www.iom.edu/Reports/2011/Early-Childhood-Obesity-Prevention-Policies.aspx

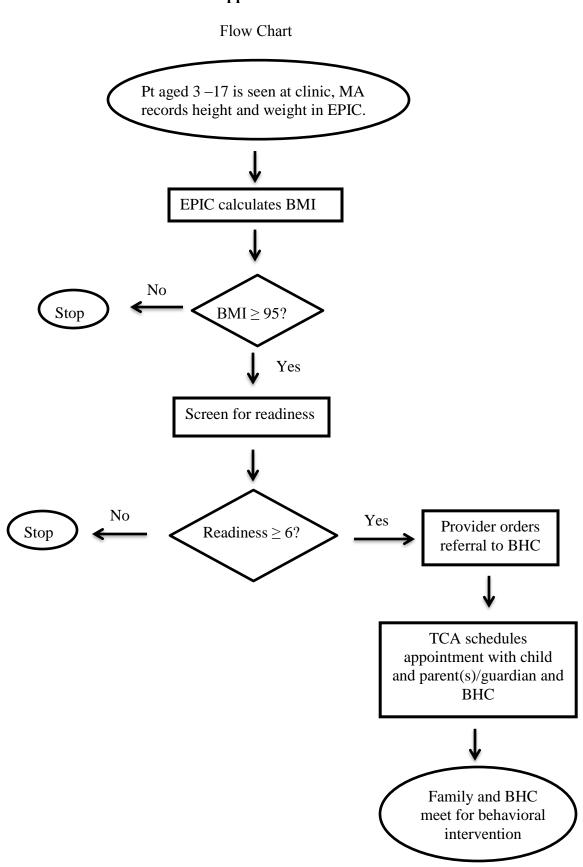
- Krebs, N. F., Baker, R. D., Greer, R. D., Heyman, M. B., Jaksic, T., Lifshitz, F., & Jacobson, M. S. (2003). Policy statement: prevention of pediatric overweight and obesity. *Pediatrics*, *112*(2), 424-430.
- Li, W., Chen, I., Chang, Y., Loke, S., Wang, S., & Hsiao, K. (2013). Waist-to-height ratio, waist circumference, and body mass index as indices of cardiometabolic risk among 36,642

  Taiwanese adults. *European Journal of Nutrition*, 52(1), 57-65. doi:10.1007/s00394-011-0286-0
- Logue, E., Sutton, K., Jarjoura, D., & Smucker, W. (2000). Obesity management in primary care: assessment of readiness to change among 284 family practice patients. *Journal of American Family Medicine*, 13(3), 164-171.
- National Conference of State Legislatures. (2011). Childhood overweight and obesity trends.

  Retrieved from http://www.ncsl.org/research/health/childhood-obesity-trends-state-rates.aspx
- Oude, L. H., Baur, L. Jansen, H. Shrewsbury, V. A., O'Malley, C., Stolk, R. P., & Summerbell,C. C. D. (2009). Interventions for treating obesity in children (Review). *The Cochrane Library*, 1, 1-197.
- Sallis, J. F., Owen, N., & Fisher, E. B. (2008). Ecological models of health behavior. In K. Glanz, B. K. Rimer, & K. Viswanath (Eds.), *Health Behavior and Health Education:*Theory, research and practice, (pp. 465-486). San Francisco, CA: Jossey-Bass.
- Saviñon, C., Smith-Taylor, J., Canty-Mitchell, J., & Blood-Siegfried, J. (2012). Childhood obesity: Can electronic medical records customized with clinical practice guidelines

- improve screening and diagnosis? *American Academy of Nurse Practitioners*, 24, 463-471.
- Smith, A.J., Skow, A., Bodurtha, J., & Kinra, S. (2013). Health information technology in screening and treatment of child obesity: a systematic review. *Pediatrics*, *131*(3), 894-902.
- Stanton, M., R., Atherton, W., L., Toriello, P., J., & Hodgson, J., L. (2012). Implementation of a "Learner-driven" curriculum: A screening, brief intervention, and referral to treatment (SBIRT) interdisciplinary primary care model. *Substance Abuse*, *33*(3), 312-315. doi:10.1080/08897077.2011.640140
- United States Preventative Services Task Force (USPSTF) (2010). Screening for obesity in children and adolescents: US Preventative Services Task Force Recommendation statement. *Pediatrics*, *125*(2), 361-367. doi:10.1542/peds.2009-2037
- Wallman, C., M., Smith, P., B., & Moore, K. (2011). Implementing a perinatal substance abuse screening tool. *Advances in Neonatal Care (Elsevier Science)*, 11(4), 255-267. doi:10.1097/ANC.0b013e318225a20b
- Watson-Jarvis, K., McNeil, D., Fenton, T., R., & Campbell, K. (2011). Implementing the nutrition screening tool for every preschooler (NutriSTEP(R)) in community health centres. *Canadian Journal of Dietetic Practice & Research*, 72(2), 96-98. doi:10.3148/72.2.2011.96
- White, K. M. (2012a). Change theory and models: Framework for translation. In K. M. White and S. Dudley-Brown (Eds.), *Translation of Evidence into Nursing and Health Care Practice* (pp. 49-60). New York, NY: Springer Publishing Company.

# Appendix A



## Appendix B

## **Participant Satisfaction Questionnaire**

## **Child Obesity Screening Implementation Project**

Please score the following statements as strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree by circling the corresponding number.

## This practice change took too much time.

| Strongly Agree  | Agree | Neither agree nor disagree | Disagree | Strongly disagree |  |
|---|-------|----------------------------|----------|-------------------|--|
| 1   | 2     | 3                          | 4        | 5                 |  |
| Your role in the screening and referral process was easy to understand and implement. |       |                            |          |                   |  |
| Strongly Agree  | Agree | Neither agree nor disagree | Disagree | Strongly disagree |  |
| 1   | 2     | 3                          | 4        | 5                 |  |
| This practice change will help recognize and treat obesity in children.               |       |                            |          |                   |  |

| Strongly Agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
|----------------|-------|----------------------------|----------|-------------------|
| 1              | 2     | 3                          | 4        | 5                 |

# This practice change was feasible to complete in a regular visit.

| Strongly Agree | Agree | Neither agree nor disagree | Disagree | Strongly disagree |
|----------------|-------|----------------------------|----------|-------------------|
| 1              | 2     | 3                          | 4        | 5                 |

Please answer the following questions:

What barriers did you find to completing the referral for children with BMI  $\geq$  95%?

What barriers to screening children and families for readiness to attend a meeting with the behavioral health consultant?

What helped you to complete the screening and referral process?

#### Other comments: