

Integration of HeartSmart Kids™ into Clinical Practice:

A

Quality Improvement Project

Presented to the Faculty

of the University of Alaska, Anchorage

in partial fulfillment of requirements

for the degree of

MASTER OF SCIENCE, FAMILY PRACTICE NURSE

By

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**Table of Contents**

Project .....	4
Background .....	4
Significance .....	5
Review of Literature .....	6
Problem Overview .....	8
Problem Statement .....	9
Purpose .....	9
Design .....	9
Method .....	10
Plan Do Study Act (PDSA) .....	10
Plan .....	10
Do .....	11
Study .....	12
Challenges .....	13
Act .....	14
Ethical Considerations .....	15
Significance to Nursing .....	16
Dissemination .....	16
Conclusion .....	16

**Table of Appendices**

Appendix A.....18

Appendix B.....19

## **Integration of HeartSmart Kids™ into Clinical Practice: A Quality Improvement Project**

In 2009, the Centers for Medicare & Medicaid (CMS), established “Meaningful Use” regulations through an incentive program, as part of the American Recovery and Reinvestment Act of 2009 (Gance-Cleveland, Gilbert, Gilbert, Dandreaux, & Russell, 2014). Meaningful Use (MU) is tied to reimbursement and focuses on how the Electronic Health Record (EHR) is being used (Center for Disease Control and Prevention, 2012). The goal of MU is to transform the use of the EHR from a documentation tool, to a data reservoir which allows for meaningful reviews and interpretations of the quality of care (Gance-Cleveland et al, 2014).

### **Background**

There are three stages to MU, each designed to utilize technology to improve quality outcomes. The first stage is focused on building a foundation for data capture, Computerized Physician Order Entry (CPOE) for medications, labs/radiology, patient care tasks and entry of quality care measures such as BMI, disease screening (mammogram, PAP, colonoscopy) and immunization status /forecasting (Gance-Cleveland et al., 2014). The second stage of MU is focused on patient engagement, the use of clinical best practices and the coordination of care through the healthcare system (Gance-Cleveland et al., 2014). The final stage places focus on improving outcomes, which include additional patient engagement, education, patient access to self-management tools, and improving population health (Smith, 2013).

Meaningful Use regulations are endorsed by the National Quality Forum (NQF). The NQF convenes workgroups to evaluate quality improvement measures for endorsement (National Quality Forum, 2015). NQF endorsement of a measure is considered the gold standard and

assures it is evidence-based and valid (National Quality Forum, 2015). The MU measures that pertain to the pediatric population are contained in NQF #0024 which includes data entry (height, weight, BMI percentile), as well as the interpretation into a weight classification (underweight, normal weight, overweight or obese) (Gance-Cleveland et al, 2014). Also contained in NQF #0024 is an education requirement to provide physical activity and nutritional counseling to children and adolescents (Centers for Medicare and Medicaid Services, 2013). There is no single solution to the complex issue of obesity and it will require the amalgamation of multiple entities including self, family, school, community, and nation (Spivak, Swietlik, Alessandrini, & Faith, 2010). Although MU maybe the driving force, the significance is embedded in the current childhood obesity epidemic.

### **Significance**

Childhood obesity, defined as over the 95<sup>th</sup> percentile on the Centers for Disease Control growth chart, and its long term health consequences have become a global health crisis (Fryar, Carroll, & Odgen, 2014). Although the solution is multifactorial, breaking down barriers to the discussion of obesity is an important first step. The primary care visit is an optimal forum for this conversation to occur.

Childhood obesity rates have climbed from 5.2% to 16.9% between 1971 and 2012 (Fryar et al, 2014). In simple terms it is the result of a “caloric imbalance”, too few calories burned, compared to the number consumed (CDC, 2014). The reasons for the rising rates are numerous including decreased levels of physical activity, changes in dietary patterns, and alterations of societal norms. The monetary cost of childhood overweight/obesity is estimated to be \$3 billion per year (Bode, Roberts, & Johnson, 2013).

The long-term health consequences can be devastating. Multiple studies demonstrate that overweight / obese children become overweight / obese adults, with associated medical issues such as increased cardiovascular risk, diabetes, work productivity issues, and a poorer quality of life (Gance-Cleveland et al, 2014). In addition to the cardiovascular risk, there has also been a rise in prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD) (Janczyl & Socha, 2012) . The rise in NAFLD is closely related to the rise in childhood obesity. The prevalence of NAFLD in children is three percent, while the rate rises to 80% in obese children (Singer, Stanco, & Botu, 2014).

### **Review of Literature**

Literature shows that additional attention needs to be given to MU data collection, such as weight, height and BMI percentiles. Although the majority of providers perceive they collect height and weight, the reality is only 50% of children are measured and even less have a BMI percentile calculated or graphed (Dettori, Elliott, & Horn, 2009; Yarborough, Debar, Wu, Pearson, & Stevens 2012). The importance of objective data cannot be underestimated as providers and parents are poor at visually identifying overweight and obese children, which is a reflection of changing societal norms and what is perceived as an issue (Dettori et al, 2009; Gauthier, 2014). The majority of early MU studies have focused on the clinical decision support, such as patient alerts and reminders, as well as Computerized Physician Order Entry (CPOE) (Jones, Rudin, Perry, & Shekelle, 2014). Data related to Stage 2 and 3 MU measures is sparse, as it is still in its infancy. In addition, MU regulations are still in an incentive period and consequences (reduced reimbursement) have not yet taken place.

One of the many and most challenging roles of the primary care provider is obesity prevention (Kologotla & Adams, 2004; Spivak et al., 2010; Yarborough et al, 2012).

Preventative health can be difficult to provide within the confines of a brief illness focused visit; practitioners struggle to balance the economics of the health care industry and providing holistic care. Reported barriers include time constraints, lack of training, and lack of resources (Walker, Strong, Atchinson, Saunders, & Abbott, 2007; Spivak et al, 2010; Yarborough et al., 2012). In addition, there is an underlying concern that addressing this sensitive issue may adversely affect the clinician-patient relationship (Walker et al., 2007; Yarborough et al., 2012).

The literature suggests that a team approach with parental and/or patient engagement is essential for positive outcomes (Carmen, et al., 2013). Engagement of the family is important especially in the preschooler age group, as parental concern about obesity may translate into changed behaviors at a family level (Gauthier, 2014). It is especially important to support the provider by utilizing the parent(s) and/or clinical staff for essential data input, such as vital signs, activity levels, nutritional history, and gathering educational handouts. These activities, if done for the provider in advance, allows the time necessary for the crucial conversation instead of preparing for the intervention (Dettori et al, 2009).

There is an abundance of patient education materials available related to pediatric nutrition and activity. The American Academy of Pediatrics (AAP) publishes and sells a wide variety of brochures that address both topics such as Energy In & Energy Out, Encourage your Child to be Physically Active, and What's to Eat? Healthy Foods for Hungry Children. In addition, the Consortium to Lower Obesity in Chicago Children developed and licensed a tool called 5-4-3-2-1 Go!, this program addresses nutrition, water intake, screen time, and physical activity (Evans, 2007). Although these resources are outstanding, neither of them provide patient tailored education, nor do they promote parental engagement as required by MU.

A relatively new educational tool available is called HeartSmart Kids (HSK)™. HSK is an interactive, web-based program designed for use in the clinical setting. It was developed by Kevin Gilbert, PhD and introduced in 2000 and has been the technology backbone of several studies, including a 2010 grant funded by the Agency for Healthcare Research and Quality (HeartSmartKids, 2010). The program is designed for easy, efficient use that engages the parent/patient, as well as meets the requirements for MU and is based on current national guidelines (HeartSmartKids (HSK) and Childhood Obesity Guidelines, 2012). HSK engages the parent with questions regarding lifestyle, nutrition, and physical activity of the child. The clinical staff inputs height, weight, blood pressure and documents the educational interaction. The program graphs the data on growth charts, and calculates cardiovascular risk based on BP, age and gender. The program offers the provider patient specific information that can be used to tailor their education to the individually identified needs of the patient. In addition, it delivers suggested questions to ease into the challenges of discussing these sensitive topics. Lastly, the program affords patients and their family with a written document that included their specific data and suggested goals to improve their health status (HSK, 2015).

### **Problem Overview**

A review of meaningful use data at a family practice clinic in Juneau, Alaska was undertaken evaluating practitioner documentation of individualized obesity education. The provider staff is a mix of physicians, nurse practitioners and physician assistants, including one pediatrician, for a total of eleven full time employees. The clinic provides ambulatory care services for patients from womb to tomb. Services range from wellness care to chronic disease management. As a tribally operated Indian Health Service clinic they must meet standards set by various governmental agencies including those covered by meaningful use regulation.

The goal of this quality improvement project was to improve provider meaningful use data. The internal evidence regarding pediatric nutrition and physical activity revealed documentation did not meet meaningful use requirements in the EHR. Furthermore, patients and/or parents were not being provided tailored educational materials addressing these issues. A summary of the medical records between September 30, 2014 and October 1, 2015, identified 541 children who received either well-child checks (V20.2) or sports physicals (70.3). Review of the providers' meaningful use data related to educational topics revealed no structured documentation of education associated with nutrition or physical activity as required by NQF #0024.

### **Problem Statement**

Does the incorporation of a standardized screening tool (HSK) along with a structured documentation process, between Oct. 5, 2015 and Dec. 5, 2015, improve meaningful use measures for the medical staff related to pediatric education on physical activity and nutrition for the medical staff at a family practice clinic in Juneau, Alaska?

### **Purpose**

The purpose of this quality improvement project was twofold: to improve documentation of patient education to satisfy MU requirements related to NQF #0024 and ease individualized education barriers by providing quality patient-specific education through the integration of HSK into the clinic visit.

### **Design**

This quality improvement project was conducted at a Family Practice clinic located in Juneau, Alaska. A project design was developed to meet the two-fold goals of improving

provider documentation and providing individualized patient specific obesity education. Toward that goal, a project implementation plan was created for integrating HSK into the clinic. The staff piloted the integration of HSK in well-child checks (V20.2) or sports physicals (V70.3). The MU measure collected was documentation of patient education related to nutrition and physical activity.

The Plan, Do, Study, Act (PDSA) quality improvement model was utilized for this project. The PDSA model evolved from the original Shewart cycle, which was developed in the early 1900s by Walter Shewart (Best & Neushauser, 2006). This model is referred to as a rapid-cycle change model and is often used in the health care field (Varkey, Reller, & Resar, 2007)

## Method

### Plan Do Study Act (PDSA)



(Pic 2 Fly, n.d.)

## Plan

The PDSA cycle began with an assessment of current internal evidence related to documentation practices of the study measures. During this “planning” phase a review of

provider meaningful use data between Oct. 5, 2014 and Dec. 5, 2014 was completed. Results were consistent with the preliminary data review, confirming lack of documented education related to physical activity and nutrition.

## **Do**

The “do” phase required the coordination of interprofessional in-services related to the use of HSK as well as an improved clinic flow during the integration period. HSK was the web-based program chosen to provide a standardized approach to the collection of patient specific data, included lifestyle questions, assessment for readiness to change, vitals documentation (height, weight, BMI, and BP) as well as health improvement recommendations. The use of HSK is a negotiated contract, based on the number of fulltime providers, with the developers which includes a one-time fee for account set-up and customization (\$2,550) and then an annual subscription fee (\$1,650) that includes data reporting and preparation (K. Gilbert, personal communication, March 6, 2015).

The interprofessional improvement team consisted of nine office support staff, 20 medical support staff including certified nursing assistants, medical assistants, licensed practical nurses, registered nurses and 11 primary care providers. Role specific education was provided to these groups, including the purpose of the project, individual contributions, and handouts related to a structured document in their EHR.

The project aim was improvement of documentation and the outcome measure of interest was the frequency in which staff used structured documentation of nutrition and physical activity in a way that fulfilled meaningful use requirements. Evidence of improvement was shown by comparing the pre and post HSK integration data results.

On September 29<sup>th</sup> and 30<sup>th</sup>, 2015, the implementation phase of the project began with staff attending departmental educational in-services which covered their responsibility and role

within the project. The integration process of HSK began on October 5, 2015 and included the following steps.

1. Parents of patients who are checking in for a qualifying visit were provided an electronic tablet and instructed how to complete the lifestyle questions in the HSK program.
2. Nursing staff logged into the web-based program and entered height, weight, BP into the patients HSK profile.
3. Nursing staff then printed the personalized educational documents and gave to the provider to review with the patient.
4. Provider reviewed and gave the educational literature to the patient/parent.
5. Nursing staff documented the educational intervention in the EHR.

The integration phase ended on Dec. 5, 2015, which led to the “study” phase of the project. The second data collection was completed and the results compared to pre-intervention. The improvement goal for the project was 10%, which was chosen because it meets the requirements of meaningful use regulations and is a standard first improvement cycle goal.

### **Study**

The project demonstrated that providing a well thought out process and the integration of technology based tools, outstanding outcomes can be achieved. The outcome goal for this pilot project was a 10% improvement of EHR documentation of education related to nutrition and physical health of child, who presented to the clinic for a specific type of visit. At the conclusion of the integration period a 41% increase in structured documentation was realized.

- Pre-intervention: Zero of 53 (0%) qualifying visits had education documented related to nutrition or physical activity.
- Post-intervention: Thirty of 74 (41%) qualifying visit had the required documentation.

The presence of the required documentation indicated the following steps were completed:

- Parents completed the HSK lifestyle questions.
- Nursing added BP, HT, WT, and printed the education documents.
- Provider discussed and gave the parents the HSK educational handouts.
- Lastly, it was captured in the EHR as structure documentation as required by meaningful use regulations.

Chi-square goodness-of-fit demonstrated statistical significance for documentation rates, utilizing pre-invention and post-intervention data,  $\chi^2(1, N = 74) = 76.7 = p < .001$  (Pallant, 2010). Although there was significant improvement, the project did have some challenges and lessons learned.

### **Challenges**

Even though the project was successful challenges did arise. The challenges can be divided into structure, integration, and process issues.

#### **Structure**

The structure or system issues revolved around the visit codes changing. On Oct. 1, 2016, the International Classification of Disease and Related Health Problems (ICD) moved from version nine to version 10. Therefore, the codes (V20.2 and V70.3), used in the preliminary data review were no longer recognized by the EHR. This change resulting in the need for a manual review of each visit code to ensure inclusion criteria were met.

#### **Integration**

The use of HSK presented integration issues. HSK is an independent program, meaning it is not integrated into the EHR. This resulted in the need for dual documentation as well as toggling between the systems. The nursing staff was responsible for documenting height, weight

and blood pressure in the EHR as well as in HSK thus impacting charting time. Navigating between programs is dissatisfying for personnel and may have led to missed documentation opportunities. For example, even when nursing completed HSK documentation, 16% of the time the required documentation was missed in the HER, resulting in an omitted meaningful use measure.

### **Process**

Process issues include staffing and cost. Staff related issues comprised engagement and accountability to the project. The project did not identify department “cheerleaders” as part of its design. The results of this oversight led to challenges getting staff to be accountable for their role in the project. An example, if the scheduler missed identifying the child was eligible for participation, the chance of meaningful use documentation fell to 0%. This same result was seen at each hand off point in the process. If the registration staff did not have the family complete the HSK, then nursing did not enter the data.

The final challenge is related to cost set-up and subscription to HSK. As stated earlier the cost includes a one-time set-up fee of \$2550.00 and an annual fee of \$1650.00, which is a substantial amount of funds that have no reimbursement value. Through these challenges, lessons are learned for the next step in the improvement process which were summarized during the “Act” part of this PDSA.

### **Act**

On Jan. 20, 2016, a meeting was arranged with the participating staff, clinic administrator and division director. The project and its goals were reviewed along with the results. The presentation concluded with several recommendations.

- First, continue the use of the HSK program as it provided a standardized approach to gathering lifestyle information. In addition, it engaged the family in the learning process and incorporated readiness for change using motivational interviewing questions.
- Second recommendation was to identify departmental champions to work with staff on an individual level to assist with areas needing improvement.
- Lastly, it was suggested that the information technology department be consulted to address the ICD code issue and the ability to run meaningful use reports.

Although impressed with the results and process, currently the clinic is working to improve meaningful use data related to cardiovascular disease education and tobacco cessation. It was highlighted that the improved clinic flow process used for this project could be transferred to other health promotion initiatives.

### **Ethical Considerations**

The aim of this project was to evaluate and improve provider documentation practice. Data collection was limited to provider MU measures and did not contain individual protected health information as identified in privacy rules (Grove, Burns, & Gray, 2013). There was no direct contact between the project director and the patient or parents. In addition, the student adhered to the Health Insurance Portability and Accountability Act regulations, confidentiality, and privacy regulations. Agreement and support from the clinic administration was obtained prior to the project initiative, including a letter of support (Appendix A). Lastly, the project was submitted and approved, as exempt, by the UAA Institutional Review Board (Appendix B). The use of the HSK product was negotiated via email between the project director and the HSK founder / CEO K. Gilbert (K. Gilbert, personal communication, March 6, 2015). The agreement included customization of the lifestyle questions and access to the web based portal for the

duration of the project. The agreed monetary cost for use of the HSK program was funded by the project director and there were no identified conflicts of interest.

### **Significance to Nursing**

Among the various roles the Family Nurse Practitioner (FNP) is responsible for, providing evidence based care in a safe and efficient manner is the foundation. A thorough knowledge of the quality improvement process is the backbone to this foundation and has been identified as an essential element of the Masters prepared nurse. This particular project incorporated the regulations set forth by meaningful use and the processes of improving quality of care through documentation. The project demonstrated that a multidepartment approach to an issue could lead to significant positive changes and improved outcomes of required regulations.

### **Dissemination**

The project including its success and challenges has been developed into a poster and power point presentation. The poster was presented at the 3<sup>rd</sup> Annual Pharmacology and Legislative update on January 9, 2016. In addition, the project has been selected for presentation at the U.S. Public Health Services (USPHS) Scientific and Training symposium. The power point will be presented in Oklahoma City, OK on May 17, 2016 during the Implementing Primary/Secondary Prevention Priorities track. This Symposium brings together USPHS Officers of the various disciplines (medical, nursing, dentists, pharmacists, scientists and veterinarians) of the USPHS. This project dovetails exceptionally well with this year's theme of "Gimme Five: Building a Better Tomorrow through Prevention Today".

### **Conclusion**

Quality improvement initiatives can be a struggle for any organization, as it involves change. As with most professions, change is the only constant in nursing. Change is driven by

multiple factors, including governmental regulations such as those related to Meaningful Use (Gance-Cleveland et al, 2014). Patient education is a required MU measure and is the cornerstone of nursing and the role of the Family Nurse Practitioner. This project sought to show how the integration of a standardized tool and implementation of a consistent process could be used to improve provider MU data.

The PDSA improvement model was used as the foundation and provided a systematic approach to guide the project. The “planning” phase brought to light areas for improvement while the “do” portion incorporated a process that utilized various staff and departments to reach the improvement goal. Although dividing responsibilities among various staff was a challenge, it did prove to be an effect process that resulted in exceeding the improvement goal by 31%.

At the conclusion of the project, staff as well as administration was pleased with the results. The success of this venture has paved the way to replicate the PDSA methodology with other quality improvement projects that are deemed important to quality patient care and improved patient outcomes at this Family Practice Clinic in Juneau, Alaska. In summary, this project met the twofold goal of improving MU documentation and providing individualized education.

## Appendix A



**Ethel Lund Medical Center**  
3100 Channel Drive, Suite 300 Juneau, AK 99801  
907.463.4040 - www.searhc.org

Date: July 23, 2015

To whom it may concern:

This letter confirms that Ethel Lund Medical Center (ELMC) has agreed to participate in a quality improvement project by piloting the integration of HeartSmartKids (HSK) into well child and sports physical visits. We understand that the project is related to meaningful use (MU) data and the potential of improving individual provider MU measures related to education on nutrition and physical activity. The estimated project dates are August 15 – Sept 30, 2015, with the goal of 100 qualifying provider visits.

Below are the expectations of the Project Director, Ms. Sara Lang, RN-BC, BSN, FNPs:

- Abide by all confidentiality and privacy regulation, including but not limited to HIPAA
- Provide pre and post meaningful use data related to the project.
- Provide training related to:
  - Structured documentation in our electronic health record
  - Access and use of the HSK program.

ELMC will provide the following:

- Access to reporting software for meaningful use data collection
- Staff availability for training

We are excited to participate in this quality improvement project and look forward to working with Ms. Lang.

A handwritten signature in black ink, appearing to read "KR", is written over a horizontal line.

Kristina Randolph, MBA, CCPM  
ELMC Clinic Administrator

**Appendix B**

3211 Providence Drive  
Anchorage, Alaska 99508-4614  
T 907.786.1099, F 907.786.1791  
[www.uaa.alaska.edu/research/ric](http://www.uaa.alaska.edu/research/ric)

DATE: September 14, 2015

TO: Sara Lang, BSNS  
FROM: University of Alaska Anchorage IRB

PROJECT TITLE: [795347-2] Integration of HeartSmart Kids into Clinical Practice: A Quality Improvement Project.

SUBMISSION TYPE: Amendment/Modification

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE: September 14, 2015

Your Institutional Review Board (IRB) proposal meets the U.S. Department of Health and Human Services requirements for the protection of human research subjects (45 CFR 46 as amended/revised) as being exempt from full Board review. In keeping with the usual policies and procedures of the IRB, your research project is approved with suggested revisions. Thank you for a copy of these revisions.

Therefore, you have permission to begin data collection for your study. If this study goes beyond one year from the date of this submission, you will need to submit a Progress Report for approval to continue the research and please submit a Final Report at the end of your project.

Please report promptly proposed changes in the research protocol for IRB review and approval.

On behalf of the Board, I wish to extend my best wishes for success in accomplishing the objectives of your study.

Sharilyn Mumaw, M.P.A.

Research Integrity & Compliance Officer

## References

Best, M., & Neushauser, D. (2006). Walter A. Shewhart, 1924 and the Hawthorne Factory.

*Quality and Safety in Health Care*, 15(2), 142-143.

Bode, D. R. (2013). Increased adolescent overweight and obesity documentation through a simple electronic medical record intervention. *Military Medicine*, 115-118.

Carmen, K., Dardes, P., Maurer, M., Sofaer, S., Adams, K., Bechtel, C., & Sweeney, J. (2013). Patient and Family Engagement: A Framework for Understanding the Elements and Developing Interentins and Policies. *Health Affairs*, 32(2), 223-231.

Center for Disease Control and Prevention. (2012, Oct. 11). *Meaningful Use*. Retrieved from Centers for Disease Control: <http://www.cdc.gov/ehrmeaningfuluse/introduction.html>

Centers for Disease Control and Prevention. (2014, August 13). *Childhood Obesity Facts*. Retrieved from Centers for Disease Control: <http://www.cdc.gov/obesity/data/childhood.html>

Centers for Medicare and Medicaid Services. (2013). *An introduction to the Medicare EHR incentive program for eligible professionals*. Retrieved from Centers for Medicare and Medicaid Services: [https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/beginners\\_guide.pdf](https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/beginners_guide.pdf)

Dettori, H., Elliott, H., & Horn, J. (2009). Barriers to the management of obesity in children: A cross sectional survey of GPs. *Australian Family Physician*, 38(6), 460-464.

Evans, W. (2007). The 5-4-3-2-1 Go! Intervention: social marketing strategies for nutrition. *Journal of Nutrition Education and Behavior*, S55-S59.

Fryar, C., Carroll, M., & Odgen, C. (2014, September). *Prevalance of overweight and obesity among children and adolescents: United States, 1963-1965 Through 2011-2012.*

Retrieved from Centers for Disease Control and Prevention:

[http://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_11\\_12/obesity\\_child\\_11\\_12.pdf](http://www.cdc.gov/nchs/data/hestat/obesity_child_11_12/obesity_child_11_12.pdf)

Gance-Cleveland, B., Gilbert, K., Gilbert, L., Dandreaux, D., & Russell, N. (2014). Decision support to promote healthy weights in children. *The Journal for Nurse Practitioners, 10*(10), 803-812.

Gauthier, K. (2014). Starting the conversation: A health information technology tool to address pediatric obesity. *The Journal for Nurse Practitioners, 10*(10), 813-819.

Grove, S., Burns, N., & Gray, J. (2013). Ethics in research. In S. Grove, N. Burns, & J. Gray, *The practice of nursing research* (pp. 159-194). St. Louis: Elsevier.

*HeartSmartKids (HSK)*. (2015). Retrieved from HeartSmartKids (HSK):

<http://www.heartsmartkids.com/>

*HeartSmartKids (HSK) and Childhood Obesity Guidelines*. (2012). Retrieved from HeartSmarm Kids: <http://www.heartsmartkids.com/obesity-guidlines>

HeartSmartKids. (2010, Dec. 16). *HeartSmartKids and the Agency for Healthcare Research and Quality*. Retrieved from HeartSmart Kids:

[https://www.heartsmartkidslive.com/index.php/news/view/heartsmartkids\\_and\\_the\\_agency\\_for\\_healthcare\\_research\\_and\\_quality](https://www.heartsmartkidslive.com/index.php/news/view/heartsmartkids_and_the_agency_for_healthcare_research_and_quality)

Janczyl, W., & Socha, P. (2012). Non-alcoholic fatty liver disease in children. *Clinics and Research in Hepatology and Gastroenterology, 36*(3), 297-300.

- Jones, S., Rudin, R., Perry, T., & Shekelle, P. (2014). Health information technology: An updated systematic review with a focus on meaningful use. *Annals Of Internal Medicine*, *160*(1), 48-54.
- King, J., Patel, V., Jamoom, E., & Furukawa, M. (2014). Clinical benefits of electronic health record use: National findings. *Health Services Research*, *49*(1.2), 392-404.
- Kolagotla, L. a. (2004). Ambulatory management of childhood obesity. *Obesity Research*, *275*-283.
- National Quality Forum. (n.d.).
- National Quality Forum. (2015). *Balancing cost and quality for value*. Retrieved from National Quality Forum:  
[http://www.qualityforum.org/Story/Balancing\\_Cost\\_and\\_Quality\\_for\\_Value.aspx](http://www.qualityforum.org/Story/Balancing_Cost_and_Quality_for_Value.aspx)
- Pallant, J. (2010). *SPSS Survival Manual*. New York: McGraw-Hill.
- Pic 2 Fly. (n.d.). *Results for Plan Do Study Act Modelin Education*. Retrieved from Pic 2 Fly:  
<http://www.pic2fly.com/Plan+Do+Study+Act+Modelin+Education.html>
- Singer, C., Stanco, P. C., & Botu, A. (2014). Non-alcoholic fatty liver disease in children. *Current Health Sciences Journal*, *40*(3), 170-176.
- Smith, J. (2013). What is meaningful use? *Nurse Leader*, *19*.
- Spivak, J. G., Sweietlik, M., Alessandrini, E., & Faith, M. (2010). Primary care provider' knowledge, practices, and perceived barriers to the treatment and prevention of childhood obesity. *Obesity*, 1341-1347.

Varkey, P., Reller, K., & Resar, R. (2007). Basics of quality improvement in health care. *Mayo Clinic Proceedings*, 82(6), 735-739.

Walker, O. S. (2007). A qualitative study of primary care clinicians' views of treating childhood obesity. *BMC Family Practice*.

Yarborough, B., Debar, L., Wu, P., Pearson, J., & Stevens, V. (2012). Responding to pediatric providers' perceived barriers to adolescent weight management. *Clinical Pediatrics*, 51(11), 1063-1070.