



Geisinger

**Optimizing the Implementation of
Pediatric Obesity Prevention
Guidelines in a Large, Integrated
Health System**

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April 2, 2016**

Problem: How long does it take to translate research into clinical practice?

17 YEARS¹⁻⁵

Remembering 1999...

- Bill Clinton President of the United States
- Wayne Gretzky plays his last game in the NHL
- Cher's *Believe* Billboard hit was overtaken by TLC's *No Scrubs*
- Best Selling Fiction was *The Testament* by John Grisham
- Society for Behavioral Medicine Annual Meeting Theme, ***The Next Frontier: Integrating Evidence-Based B.M. Approaches into Health Care.***

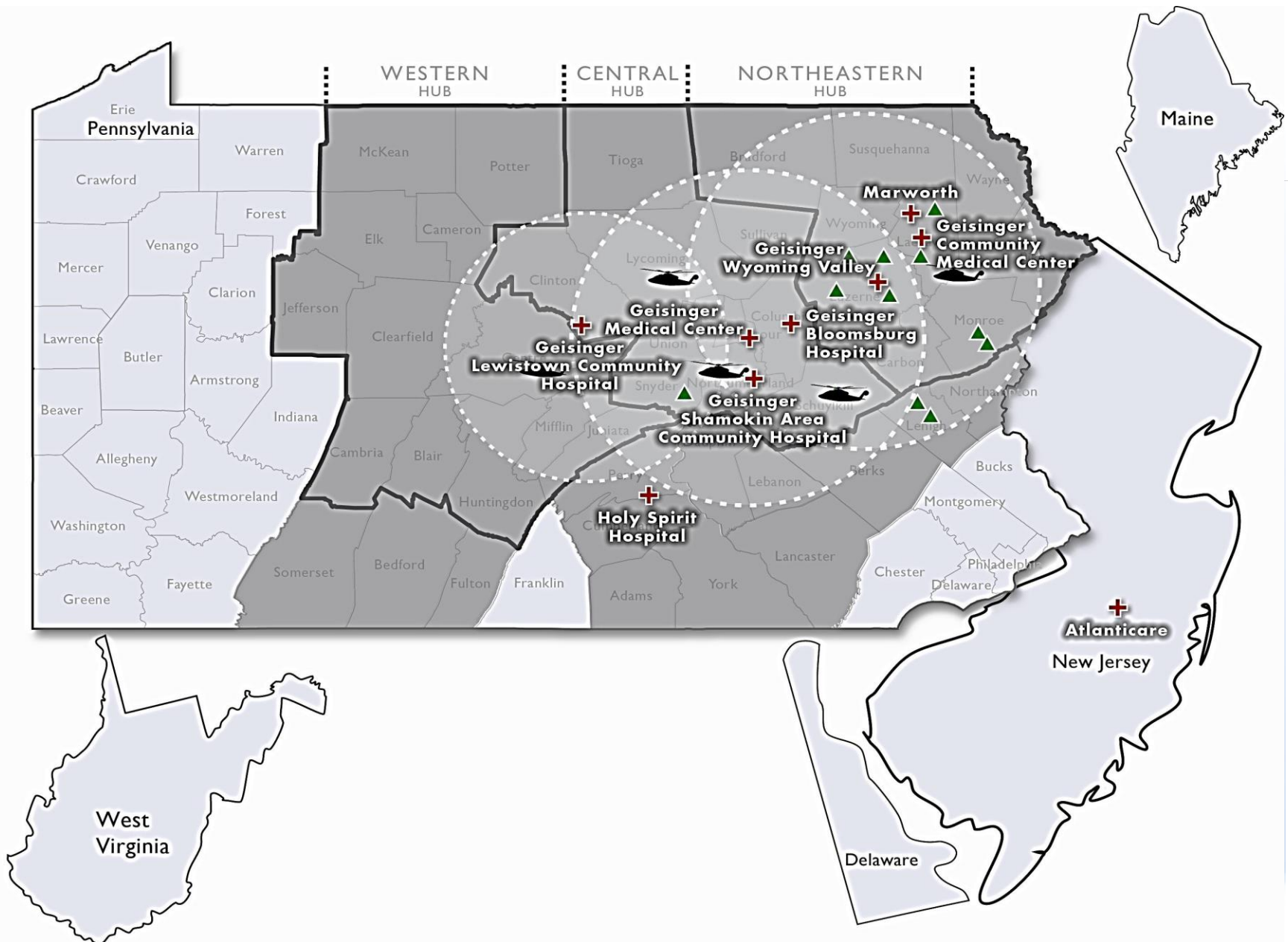
In 1999, the Next Frontier Included Integrated Health Communications

As we close out the century, the promise of good health for all Americans seems both tantalizingly close and frustratingly far away. We have made great strides in preventing disease and extending life. However, the science base, which makes progress possible, has not been effectively shared among all who need to understand and act on it. **We can do a better job of translating this knowledge into useful communication for all people**, and extending it to underserved populations who often carry the heaviest health burdens. New and emerging communication tools may help bring life-enhancing knowledge to people in ways they can use, when and where they need it.

- David Satcher, MD, PhD, Preface, Science Panel on Interactive Communication and Health. *Wired for Health and Well-Being: the Emergence of Interactive Health Communication 1999*⁶

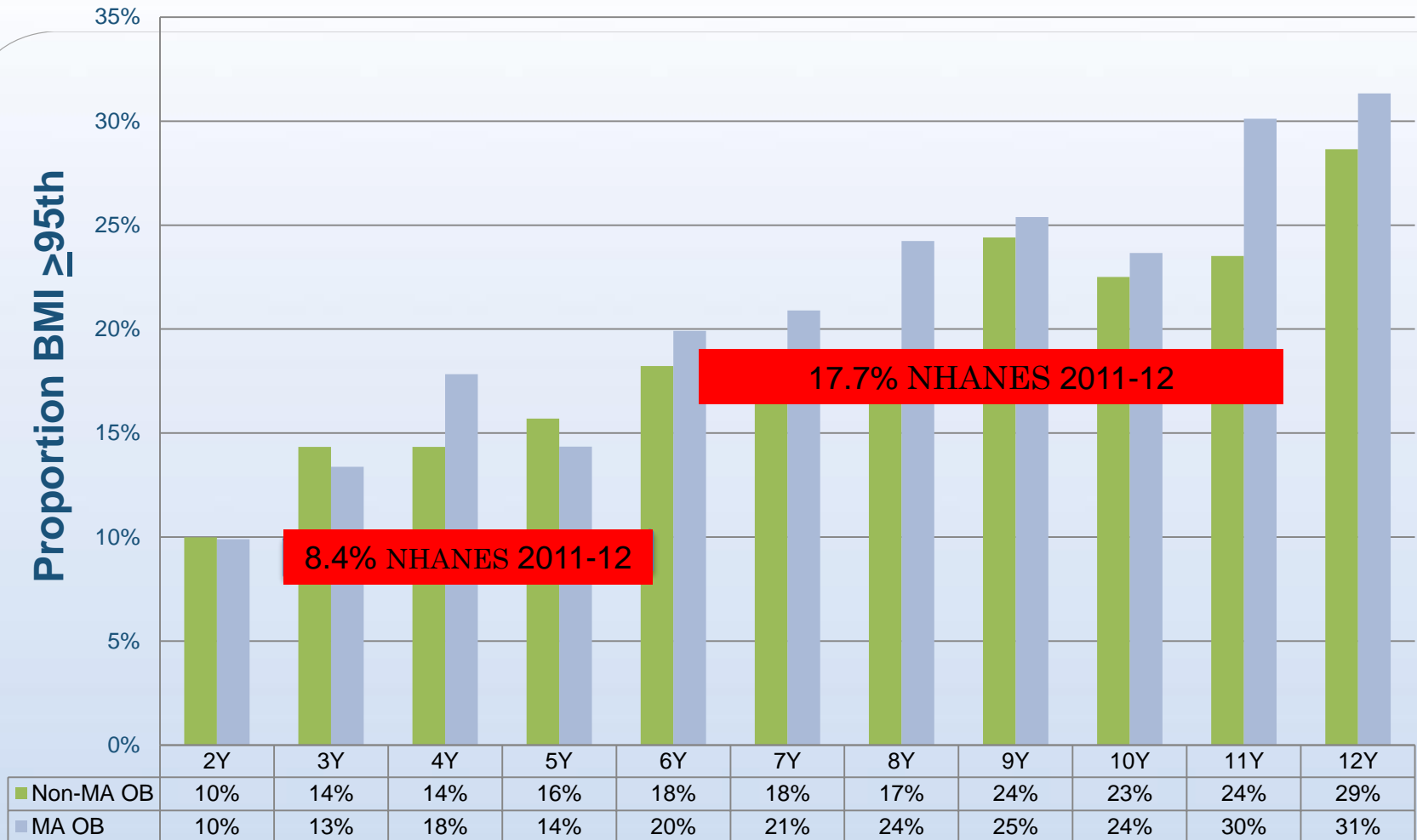
Patient Lens in Today's Automated Electronic Health Record (EHR) Environment





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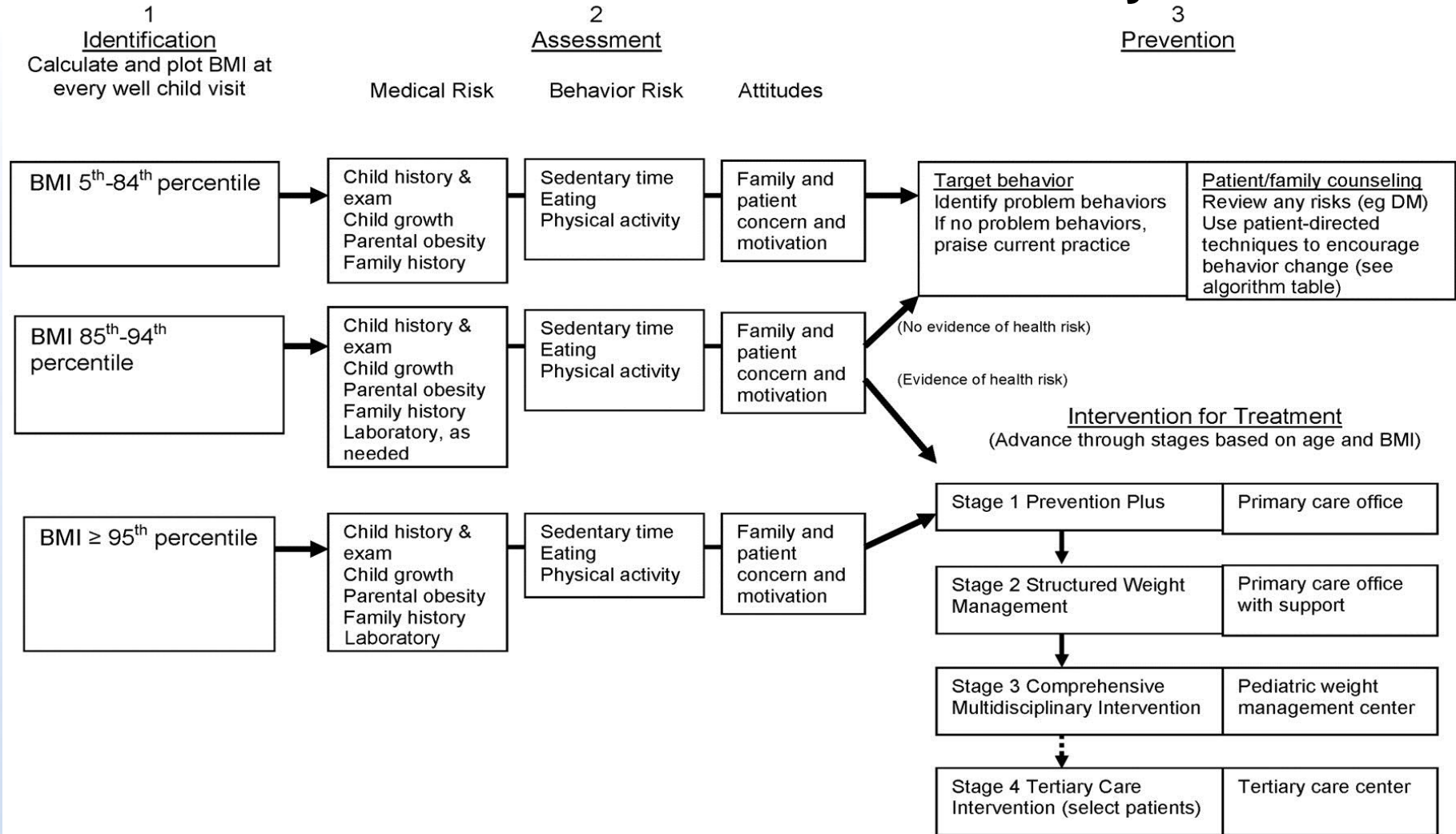
Obesity Prevalence among 2-12 year olds, Geisinger Health System, 2014-2015



Objectives

- Describe clinical implementation of pediatric obesity prevention guidelines using health information technology (HIT) strategies
- Discuss utility of incorporating patient-reported data for clinical decision making and preventive counseling on weight outcomes
- Highlight key implementation lessons

Optimizing Implementation of Guidelines for Assessment and Prevention of Pediatric Obesity⁷



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Guidelines, data, and health information technology strategies

Guideline: Identification of BMI Percentile

- Data: Documented 94.6% of Well Child Visits
- HIT: Dual screens in exam room to enable provider-patient/parent discussion of growth

Guideline: Assessment of Medical, Behavioral Risk and Attitude

- Data: Patient-Reported Data for Behavioral Risk- Early Healthy Lifestyles and Family Nutrition and Physical Activity
- HIT: patient-portal, real-time patient feedback, topic preference, integration into EHR for clinical decision support

Guideline: Preventive Counseling

- HIT: Ed. materials accessible at home and 1-click in clinic

- 1) What is your relationship to the pediatric patient?
 - A. I live with this child and care for him/her regularly *(Move to Question 2)*
 - B. I do not live with this child, but care for him/her regularly *(Move to Question 2)*
 - C. I do not live with this child and I do not care for him/her regularly *(End Questionnaire)*
- 2) In the past 7 days, how often was your child fed each food listed below? Include feedings by everyone who feeds the child and include snacks and night-time feedings.

	Daily	Sometimes	Never
Breast Milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formula	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cow's Milk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
100% fruit juice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweet foods: candy, cookies, cake, ice cream, pudding, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sweet drinks: juice drinks, soft drinks, soda, sweet tea, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fruits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vegetables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 3) How much sleep does your child get in 24 hours (includes naps and night sleep)?
 - A. 6-8 hours
 - B. 9-10 hours
 - C. 11-12 hours
 - D. More than 12 hours
- 4) How often does your child have tummy time, floor time, or physically active play each day?
 - A. None
 - B. Once per day
 - C. 2-3 times per day
 - D. 4-5 times per day
 - E. More than 6 times per day

Patient-Reported Screening Data: Early Healthy Lifestyles (0-24 mo)

- 5) How many hours does your child sit or lay still watching TV, a DVD, video, or playing *stationary* electronic games each day?
 - A. None
 - B. Less than 1 hour per day
 - C. 1 to 2 hours per day
 - D. 2 to 4 hours per day
 - E. More than 4 hours per day
- 6) Is there a TV in your child's bedroom?
 - A. Yes
 - B. No
- 7) How would you describe your child's current weight status?
 - A. Very underweight
 - B. A little underweight
 - C. About the right weight
 - D. A little overweight
 - E. Very overweight
- 8) Do you think your child's weight presents a current or future health problem? *(Ask once)*
 - A. Yes
 - B. No
 - C. Not sure

Please indicate how often each statement was true in your household in the last 12 months:

- 9) We couldn't afford to eat balanced meals *(Ask once)*
 - a. Often True
 - b. Sometimes True
 - c. Never True
- 10) Feeding is a good way to soothe my child when she/he is distressed (mad, hurt, crying). *(Ask once)*
 - A. Disagree
 - B. Slightly disagree
 - C. Neutral
 - D. Slightly agree
 - E. Agree

Patient-Reported Screening Data: Family Nutrition and Physical Activity (FNPA)^{8,9} (2-9 year olds)

FOR EACH QUESTION, PLEASE SELECT THE ANSWER THAT BEST REPRESENTS YOUR CHILD/FAMILY

	Almost Never	Some- times	Usually	Almost Always
1. My child eats breakfast....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Our family eats meals together.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Our family eats while watching TV ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Our family eats fast food....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Our family uses microwave or ready to eat foods...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. My child eats fruits and vegetables at meals or snacks...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. My child drinks soda pop or sugar drinks...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. My child drinks low fat milk at meals or snacks...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Our family limits eating of chips, cookies, and candy...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Our family uses candy as a reward for good behavior...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My child spends less than 2 hours on TV/games/computer per day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Our family limits the amount of TV our child watches...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Our family allows our child to watch TV in their bedroom...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Our family provides opportunities for physical activity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Our family encourages our child to be active every day	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Our family finds ways to be physically active together ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. My child does physical activity during his/her free time...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. My child is enrolled in sports or activities with a coach or leader...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Our family has a daily routine for our child's bedtime...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. My child gets 9 hours of sleep a night ...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Parent: Immediate feedback.
Discuss with physician today?

NO

YES: Which 3 topics?

Physician Clinical
Decision Support:
EHR alert FNPA results,
topic preference, talking
points, 1-click to
educational materials

Parent educational materials

KIDS eat right.



Family Nutrition and Physical Activity Survey

KIDS eat right.

eat right Academy of Nutrition
and Dietetics
Foundation

together with

IOWA STATE UNIVERSITY

2. Family Eating

Our family rarely eats fast food but we eat while watching TV.

Recommended Practice

Regular consumption of food away from home, particularly at fast food establishments, has been associated with increased risk for overweight, especially among adolescents. It is harder to make healthier choices when eating out so reducing meals out can promote healthier eating. It is also important to not watch television while eating meals as this may cause children to eat too much or to eat less healthy foods.

Cook Healthy

Food and Nutrition Tips from Kids Eat Right

Get the Kids Involved!

Want your kids to eat healthier? Make it easier (and more fun!) to prepare fresh meals at home and eat fast food less often by involving your kids in the kitchen. Although popping a meal in the microwave might seem like the easiest option, it is not always the best one. Pre-prepared, microwaveable, or heat and serve entrees are often higher in sodium, fat and calories than freshly prepared meals. These tips will make you and your kids kitchen pros.



Allow your children to pick a recipe

Make a list of the ingredients, and check off the ones you already have. Shop together for the rest.

Make the rules clear

If you do not want your kids to touch the stove or knives, tell them so. When they are old enough, allow them to use the stove and sharp objects with your close supervision.

Expect mistakes

The experience of cooking together is more important than the finished recipe. Just ignore little spills or the pepper that misses the bowl.

Give your kids appropriate tasks for their age and level of development

The following may be appropriate for the youngest children:

- Tear lettuce
- Rinse fruits, vegetables and canned beans that have been placed in a colander
- Add ingredients to a bowl
- Stir ingredients
- Beat eggs

Kids have short attention spans

Keep them busy with vegetables to wash or pots to stir. Even setting the table and putting things in the trash count.

Cooking for Picky Eaters

If your kids are picky when it comes to eating fruits and vegetables, try these tips:

- Involve your kids in selecting and preparing fruits and vegetables.
- Serve the fruits and vegetables you know your kids like at meals and snacks.
- Keep offering your kids fruits and vegetables they don't like. It often takes kids several exposures to a new food before they will accept it.
- If your kids like fresh broccoli but not steamed broccoli, it's okay!

Easier-than-Ever Entrees

Next time you think grabbing a frozen dinner or other prepared entrée would be easier than making dinner yourself, think again. Try these super-easy entrees that will cost you less time, calories and fat, and money!

- Black bean tacos (black beans, tortillas, salsa)
- Chicken salad (rotisserie chicken, shredded, over romaine lettuce)
- Veggie stir fry (frozen veggie mix and a touch of low-sodium soy sauce)
- Pork tenderloin (throw in the crockpot and let it cook on low all day)
- Cheesy quesadillas (whole wheat tortilla with reduced -fat cheese and salsa)

Limit Soft Drinks

There are many ways to kick the soft drink habit.

- Be a good example and drink fewer soft drinks or sugary drinks and your kids will follow.
- Drink more water.
- For a sweet treat that still offers a great dose of nutrition, offer your kids low-fat chocolate milk, fruit smoothies (made with low-fat milk or yogurt) or 100% fruit juice.

Peanut Butter Wrap

Place a tortilla or a whole-wheat wrap on a plate. Spread with peanut butter. Sprinkle with shredded carrots or a favorite fruit such as raisins, sliced bananas or strawberries. Tightly roll the tortilla or wrap and cut into bite-sized pieces.

Authored by Academy of Nutrition and Dietetics staff registered dietitians.

For more articles, tips, recipes and videos to help your kids eat healthy, visit www.kidseatright.org.

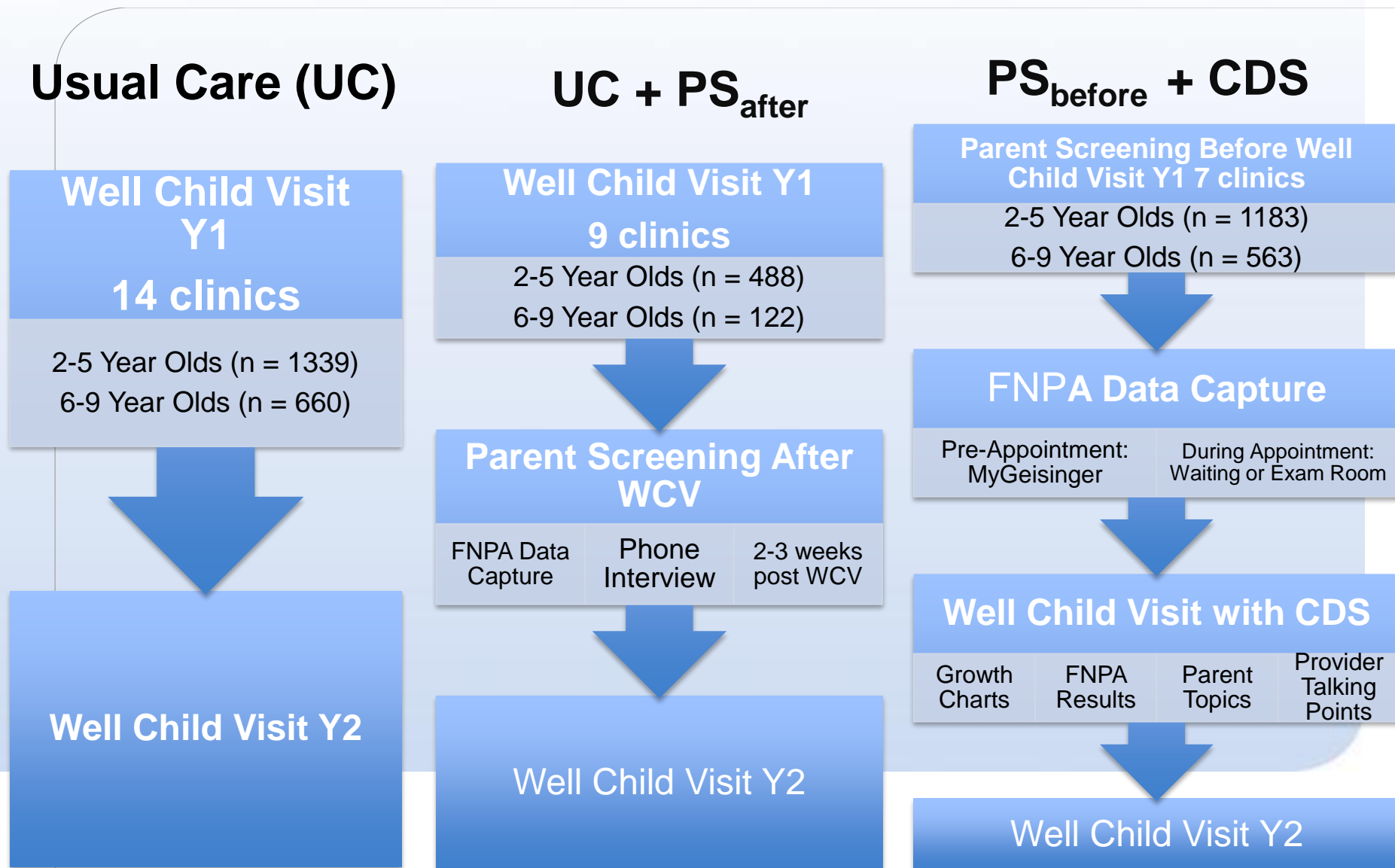
To find a registered dietitian in your area, visit www.eatright.org.

KIDS eat right.

Kids Eat Right is a joint effort of the Academy of Nutrition and Dietetics and the Academy of Nutrition and Dietetics Foundation to end childhood obesity and provide the resources to help families, communities, and policy makers ensure quality nutrition for children.

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FNPA Pilot: Randomized Cluster Controlled Design



Participant Demographics

Baseline Characteristics 2-5 Years

	PS _{before} (N=1183)	PS _{after} (N=488)	Control (N=1339)
Females	558 (47.2%)	245 (50.2%)	644 (48.1%)
Race/Ethnicity			
White	1091 (92.2%)	449 (92.0%)	1261 (94.2%)
Black	61 (5.2%)	25 (5.1%)	37 (2.8%)
Asian	14 (1.2%)	8 (1.6%)	26 (1.9%)
Multi	9 (0.8%)	1 (0.2%)	6 (0.5%)
Other	6 (0.5%)	5 (1.0%)	7 (0.5%)
Missing	2 (0.2%)	0 (0.0)	2 (0.1%)
Weight Category			
Underweight	38 (3.2%)	18 (3.7%)	67 (5.0%)
Normal	807 (68.2%)	331 (67.8%)	980 (73.2%)
Overweight	184 (15.6%)	48 (9.8%)	169 (12.6%)
Obese	143 (12.1%)	48 (9.8%)	123 (9.2%)
Unavailable	11 (0.9%)	43 (8.8%)	0

Baseline Characteristics 6-9 Years

	PS _{before} (N=563)	PS _{after} (N=122)	Control (N=660)
Females	276 (49.0%)	56 (45.9%)	318 (48.2%)
Race/Ethnicity			
White	525 (93.3%)	103 (84.4%)	618 (93.6%)
Black	25 (4.4%)	10 (8.2%)	15 (2.3%)
Asian	4 (0.7%)	3 (2.5%)	15 (2.3%)
Multi	1 (0.2%)	1 (0.8%)	3 (0.5%)
Other	6 (1.1%)	2 (1.6%)	9 (1.4%)
Missing	2 (0.4%)	3 (2.5%)	0
Weight Category			
Underweight	18 (3%)	3 (2.5%)	17 (2.6%)
Normal	378 (67%)	76 (62.3%)	436 (66.1%)
Overweight	77 (13.7%)	16 (13.1%)	103 (15.6%)
Obese	89 (15.8%)	16 (13.1%)	104 (15.8%)
Unavailable	1 (0.2%)	11 (9%)	0

Hypothesis and Primary Outcome Measure

- Hypothesis: Children in PS_{before} + CDS arm will show smaller increases in BMI than usual care
- Primary outcome: Change in BMI50 over one year.
- BMI50 is the deviation from the 50th percentile for age and gender (CDC growth charts).
 - More appropriate for prevention outcome than looking at *reductions in* BMI because children have normal BMI distribution at baseline
 - BMI %-tile curves flatten at higher weight status^{10,11}

BMI50 for 7 yr. old boy, 4' tall

45 lbs



60 lbs



75 lbs



90 lbs



BMI% 4%

BMI50 -12

91%

18

>99%

47

>99%

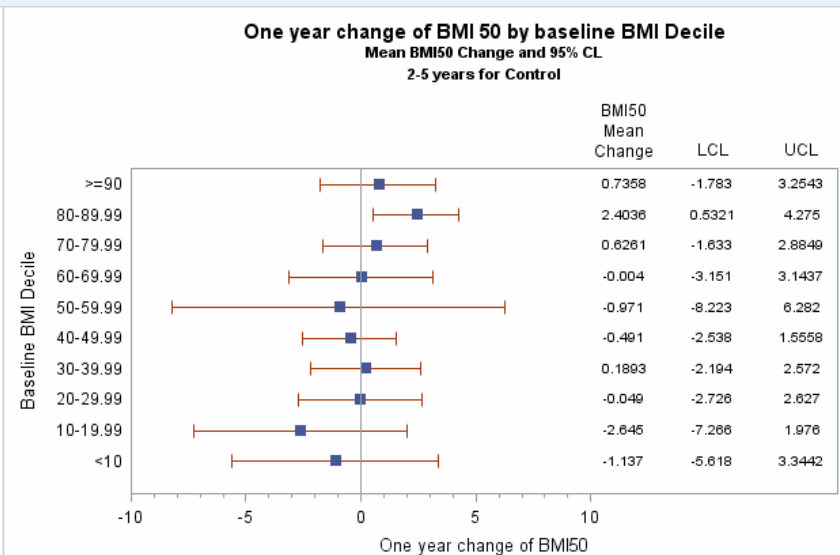
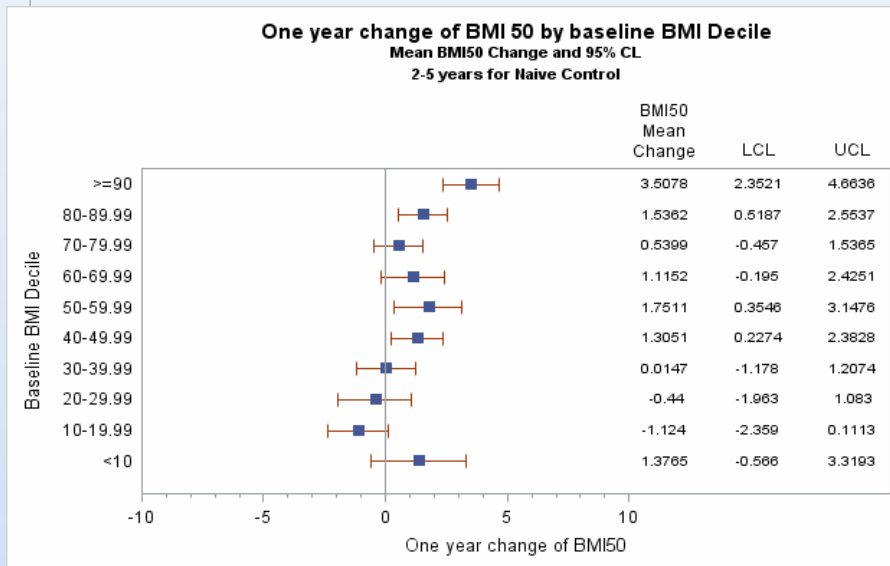
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BMI50 Outcomes: 2-5 year olds

Counter to hypothesis, no difference between PS_{before} & usual care (UC).

Compared to UC control group, those who received UC + PS_{after} had greater BMI50 reductions 0.965 ($p = 0.13$) at one year. Not necessarily a desirable finding.



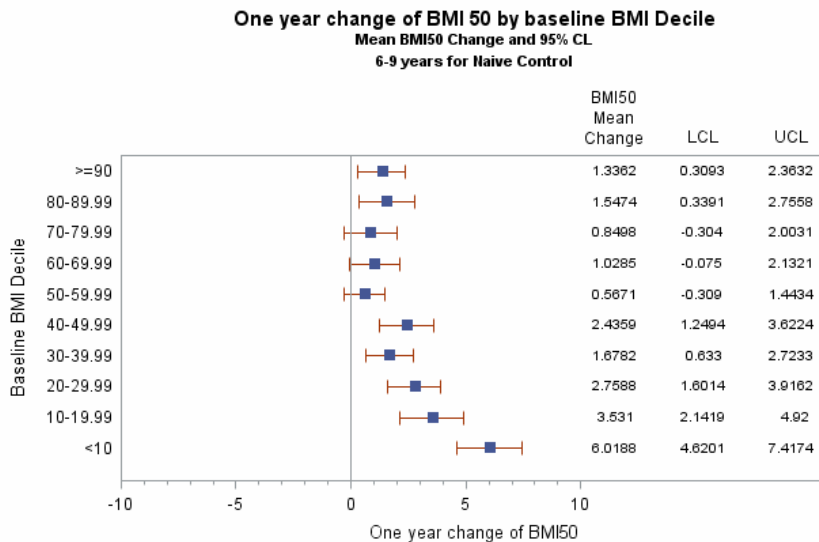
Usual Care (Control)

UC + PS_{after}

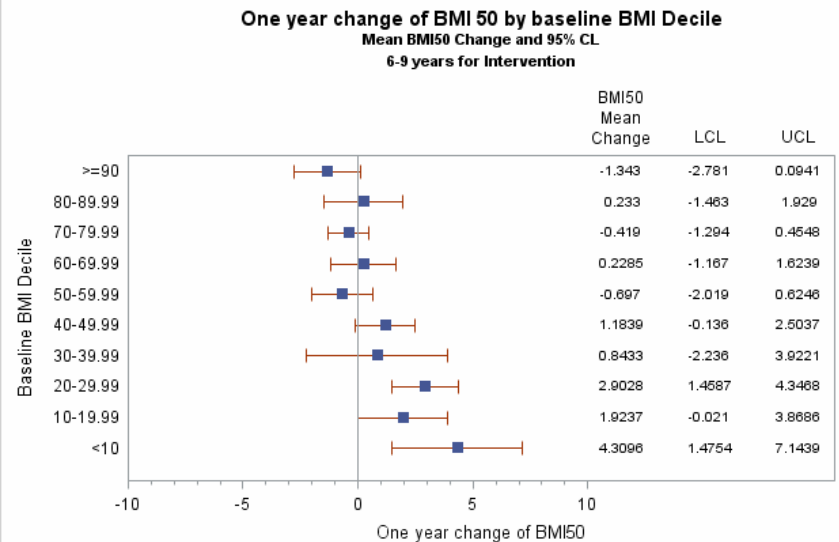
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BMI50 Outcomes: 6-9 year olds

- Confirmed hypothesis- Compared to UC control group, those who received PS_{before} + CDS had greater BMI50 changes 0.93 (p=0.07) at one year.
- No significant differences between UC and UC + PS_{after} groups at one year.
- Most pronounced gains in kids with baseline BMIs <50th percentile, kids at 50th-89th percentile very close to 0, and kids >90th percentile had negative BMI50 changes.



Usual Care (Control)



PS_{before} + CDS

Pilot Study Conclusions and Next Steps

Conclusions

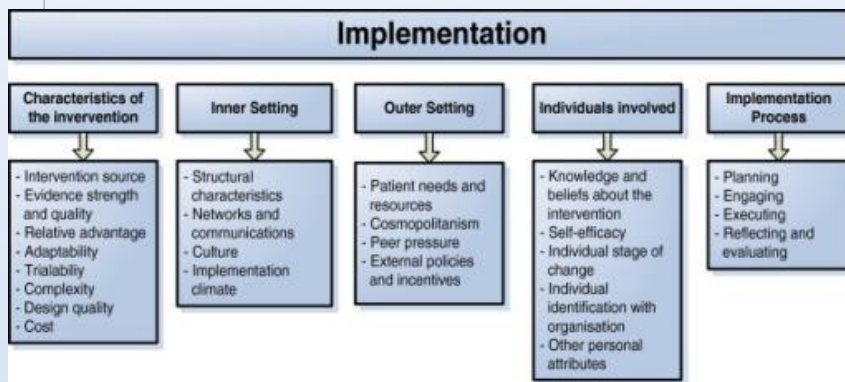
- Age variation in results
 - Are we asking the right screening questions for parents of 2-5 year olds?
- HIT-enabled intervention with CDS seems to have utility in promoting healthy weight trajectories for 6-9 year olds
 - Will there be compounding benefits overtime?
 - Could a simpler post-care intervention be effective for parents of 2-5 yr olds?

Next Steps

- 2-5 year old tool refinement
 - Exploratory factor analysis of FNPA and weight trajectories in 2-5 year olds to determine useful items to include
 - Modify tool and evaluate 1 year outcomes in BMI50
- Longitudinal study of behavioral indicators and child growth (≥ 6 yr olds), interactions with health care and community-level factors
- Treatment for ≥ 6 year olds

Implementation Evaluation

Consolidated Framework for Implementation Research¹²



Characteristics of Intervention

- Guidelines-standard of care; evidence-based tool for 6-9 yr olds, patient-and provider-informed design

Inner setting

- EHR analytics, expansion of visit codes to ensure firing of screenings

Individuals involved

- Parent satisfaction surveys (N= 211)
 - 99.9% agreement that PCPs talked about obesity prevention using sensitive, non-blaming language
 - PS_{before} parents were more likely to identify sleep being discussed than usual care ($p<0.05$)
 - Regardless of child weight, parents' satisfied with and will continue discussing weight and habits with PCPs

Implementation Process

- iPad least preferred by patients; providers want ease in documentation
- PS_{before} completion rates 32% (includes 7% patient portal)

Implementation Lessons and Next Steps

Lessons

- Parent screening tool low completion rates attributed to:
 - low use of patient portal
 - provider incentive to see patients within 5 minutes of arrival regardless of scheduled time
- Account for local variation in workflow

Next Steps

- Encourage parent enrollment in patient-portal to access information and save time
- Work with administration to align provider incentives with quality
- Adequately equip clinics with technology tools
- Communicate workflow strategies that save time and improve quality

Final Thoughts

We've shown that it is possible to implement guidelines into practice with aid of HIT in less than 10-17 years

- Guidelines based on best available evidence⁷ in 2007 and implemented at Geisinger in 2013.
 - Gaps – under 2 (Dr. Williams will discuss next)
- Behavioral assessment- need an evidence-based tool for 2-5 year olds
 - Successfully adapted research on an evidence-based tool into the clinic (super quick- 2009 to 2013)

Imperative to look beyond (before) primary outcome to tell the whole story.

Learning health care systems are continuously innovating, discovering, and maturing.

Health care systems are part of the obesity prevention solution.

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