

# Rosa's Problem Description (DRAFT)

## Problem Statement

Obesity rates in the state of Heartland are higher than national averages and are increasing year after year. The Heartland State Health Department is committed to lowering these rates. The program planned here will begin as a pilot project in the Wellington community and will be expanded statewide if successful.

## Summary of Existing Data

### YRBS

Description: Heartland's YRBS data indicates that Heartland's teenagers are at high risk for obesity and related chronic diseases.

Main findings from the latest survey:

- Approximately 17% of students were overweight and an additional 15% were obese
- 15% of students had not participated in any moderate or vigorous physical activity for the seven days prior to the survey
- Only 18% of students reported eating five or more servings of fruits and vegetables per day in the seven days prior to the survey
- 42% of students said they watched 3 or more hours of TV per day

### BRFSS

Description: Heartland's BRFSS data indicates that many adults are overweight and obese when compared to national averages.

Main findings from the latest survey:

- Approximately 38% of adults are overweight, and 28% are obese
- 24.1% consume 5 or more fruits and vegetables per day
- 76% participated in some physical activity over the past month, but only 43.6% had at least 30+ minutes of moderate physical activity five or more days per week OR 20+ minutes of vigorous physical activity for three or more days per week

### Wellington Health Care Association

Description: Measured health markers, including BMI, of children in four different grade levels (second, fourth, seventh, and tenth)

Main findings:

- Approximately 35% of students had BMI's that put them in the overweight or obese categories
- Of those with high BMI levels, 60% have at least one associated cardiovascular disease risk factor (high blood pressure, high cholesterol, etc)
- Many children in second grade (approximately 33%) have already developed high BMI levels (ages 7-8)

### Heartland College Nutrition Department

Description: Study on relationship between parents and children when it comes to food choices and dietary habits

Main findings:

- Young children prefer foods high in fat and sugar
- Children make better food choices if they believe their parents are watching, or if they are actually monitored by their parents
- Parents control what is available to their children in the home
- Children who observed their parents eating healthier options were more likely to consume healthier options

### **Wellington TV Turnoff Network**

Description: Information on families that have participated in last few years

Main findings:

Demographically, the majority of Wellington families that participate in the TV turnoff each year are white and fairly well-educated. The TV Turnoff network affiliate in Wellington has had good success in getting participation, especially when working through elementary and middle schools. Parents and children report spending less time watching TV during the turnoff week, although that decrease doesn't seem to last for the rest of the year.

## **Who is Affected and to What Degree?**

The percentage of overweight and obese individuals has increased nationally in recent years. The state of Heartland has experienced a similar trend. The percentage of overweight and obese adults in Heartland has gone from 54% in to 66% in the past ten years. Children are also dramatically affected. National data show that the percentage of children overweight or obese has changed from 22% in 1999-2000 to 26.2% in 2003-2004 (NHANES).

## **Potential Audiences and Rationale**

Based on conversations within the Heartland State Health Department and the planning team, two potential broad target audiences are being discussed:

### **Children**

The rationale for selecting children is that they are one of the priority audiences for the Heartland State Health Department. There is a great deal of management support for programs targeting children and young adults. Also, there is a high level of support for this audience from many of the members of the Wellington Community Coalition and various other partners. The planning team and the Heartland State Health Department have many existing relationships with organizations who work closely with children and their parents, making access to this particular target audience fairly easy. In addition, the problem of obesity is increasingly affecting children with some data showing large percentages of overweight and obese children in Wellington by ages 7 and 8. Several local groups have done studies with this audience, leading to existing data which could be helpful in planning a program targeting this group. Two potential behaviors are being explored with the target audience of children: increasing their fruit and vegetable intake and reducing the time spent watching television. (*See next section for information about behaviors and rationale.*)

### **Mothers of Infants**

The rationale for selecting mothers of infants is that the Wellington Community Coalition has some members who work closely with this group and feel passionately about meeting their needs. However, there are fewer partners working in this area and access to this target audience would be somewhat more difficult than children and parents. In addition, there is little to no local data about this particular target audience. There could be studies which have been done with this target audience, but none that are currently known by the planning team at this time. There is only one behavior being explored with this group which is increasing the initiation, duration, and/or exclusivity of breastfeeding. There is evidence in the literature to support the idea that breastfeeding can reduce the odds of childhood obesity. (*See next section for additional information about behaviors and rationale.*)

## **Potential Behaviors and Rationale**

As mentioned above, several potential behavior changes are being considered at this time: increasing fruit and vegetable intake (for children), decreasing TV and screen time (also for children), and breastfeeding (for mothers of infants). All three behaviors impact obesity.

### **Increasing Fruit and Vegetable Intake**

Fruits and vegetables provide essential vitamins, minerals, fiber, and other compounds which may help prevent many chronic diseases. In addition, substituting low-calorie fruits and vegetables for higher-energy-dense foods can help individuals manage their weight. Not many studies have been done which look at fruit and vegetable consumption among children; however, there have been several interventions which have attempted to increase fruit and vegetable consumption among school children. Increases usually range between 0.3 and 0.99 servings per day.

Recommendations for the amount of fruits and vegetables to be consumed by children range from 1-2 cups of fruit per day and 1-3 ½ cups vegetables per day (depending on gender, age, and activity level).

### **Decreasing Television and Screen Time**

TV and screen time is also associated with obesity in children. The precise mechanism unknown, but limiting or reducing television and screen time has been shown to lead to decreases in weight. Other programs designed to reduce the amount of TV children watch have been moderately successful. The American Academy of Pediatrics recommends that children under two years of age watch no television and children two and over should be limited to 1-2 hours of television per day.

### **Breastfeeding**

Observational studies link breastfeeding and breastfeeding duration with lower levels of obesity. Exclusive breastfeeding seems to have an even stronger protective effect than breastfeeding combined with formula feeding. In addition to its impact on overweight and obesity, breastfeeding has many other health benefits for both the infant (lower risk for ear infections, respiratory infections, and type 2 diabetes) and the mother (decreased risk of breast and ovarian cancer and type 2 diabetes). The American Academy of Pediatrics recommends exclusive breastfeeding for the first six months and support of breastfeeding for at least the first year.

Decision Point: Based on discussion with the planning team and a comparison of the potential audiences and behaviors, the broad target audience of children and broad behavior of reducing television viewing was chosen.

## **Applicable Models of Behavior Change or Theories**

There are several models of behavior change that could apply. Both the social ecological model and social cognitive theory have been used in other interventions targeting children. The social ecological model calls for intervention on multiple levels (personal, interpersonal, organizational, community, or social). Each of these levels impacts behaviors and decisions made by individuals and interventions should comprehensively address multiple levels of behavior change in order to support individuals in as many ways as possible.

Social cognitive theory has many constructs to explain how behavior, personal factors, and environmental factors interact. It has been used in designing TV-reduction interventions in the past, especially the constructs of behavioral capability, outcome expectations, and self-efficacy. Behavioral capability refers to the knowledge and skills to perform a given behavior (in this case, turning off the TV and finding other things to do to occupy time). Outcome expectations refer to the results of doing a specific behavior. For example, what does a child expect if they turn off the TV. Do they expect that they will be able to find something interesting and fun to do, or do they expect to be bored? Self-efficacy is the confidence in ability to do a behavior. For example, can children overcome the barriers to turning off the TV? Do they believe they can do it and still have fun?

## **Other Interventions/Best Practices**

We have reviewed several other TV interventions and have spoken to program planners and evaluators involved in those interventions. A summary of those interventions:

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### **Brocodile the Crocodile**

*Brocodile the Crocodile* is a health-promotion childcare curriculum intervention to reduce television viewing. Each of the intervention's seven sessions consists of a 30-minute musical activity, a 10-minute snack, and a 20-minute interactive education component. Take-home materials for parents and parent-child activities are also included. Children in the intervention group, compared to children in the control group, had a relative mean reduction by parental report of 4.7 hours/week in their television/video viewing, which is statistically significant.

Source: Dennison BA, Russo RJ, Burdick PA, Jenkins PL. An intervention to reduce television viewing by pre-school children. *Arch Pediatr Adolesc Med* 2004;158-76.

### **Primary Care Intervention**

A 4-week primary-care intervention for low-income African American families addressed television and video watching and video game-playing. The families were randomized to receive counseling alone or counseling plus a behavioral intervention that included an electronic television time manager. The counseling alone intervention included brief counseling of the family and three brochures from the American Academy of Pediatrics. The counseling plus behavioral intervention received the same brief counseling and brochures plus information on monitoring and setting media budgets, and an electronic media manager. Both intervention groups reported decreases in the amount of time that children spent watching television and videotapes and playing video games (mean changes of -13.7 and -14.1 hours per week), but they were not statistically significant.

Source: Ford B, Tiffany BS, McDonald E, et al. Primary care interventions to reduce television viewing in African-American children. *Am J Prev Med* 2002;22(2):106-09.

### **Eat Well and Keep Moving; Planet Health**

*Eat Well and Keep Moving* and *Planet Health* are school-based interventions to improve activity and dietary behaviors among 4<sup>th</sup> and 5<sup>th</sup> grade students and 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade students, respectively. The programs are similar in that they focus on four behavioral changes: reducing television viewing to less than 2 hours per day; increasing moderate and vigorous physical activity; decreasing consumption of high-fat foods; and increasing consumption of fruits and vegetables to 5 a day or more. These interventions were designed to provide students with cognitive and behavioral skills to enable change in these behaviors. They differ in their outcome measures. The primary end points for the *Eat Well and Keep Moving* intervention are changes in television viewing, physical activity and dietary intake. The lesson plans are age-appropriate so they also differ in content. Classroom materials are based on social cognitive theory and include 50-minute lessons and classroom-based campaigns that also include activities at home for family members. The intervention is taught by classroom teachers and intervention materials provide links to school food service staff and families. The primary end point for the *Planet Health* intervention is obesity prevention although measures of television viewing, physical activity, and dietary intake were collected. Television viewing was marginally reduced by -0.55 hours/day, however it was not statistically significant (P=.06) in the *Eat Well and Keep Moving* intervention. In the *Planet Health* intervention the reduction of television viewing was statistically significant, girls reduced their television viewing by -0.58 hours per day and boys reduced their television viewing by -0.40 hours per day. The prevalence of obesity among girls participating in the Planet Health intervention was reduced compared to controls and statistically significant; however, there was no differences found among boys.

Source: Gortmaker SL, Peterson K, Wiecha J, et al. Reducing obesity via a school-based interdisciplinary intervention among youth: Planet Health. *Arch Pediatr Adolesc Med* 1999; 153(4):409-18.

### **SMART Classroom Curriculum**

The *SMART classroom* curriculum (7) was developed for 3<sup>rd</sup> and 4<sup>th</sup> graders and addressed the children's screen time (television and video watching, and video game use). The curriculum incorporated eighteen 30-50 minute lessons into an existing curriculum for 6 months. Lessons included self-monitoring and self-reporting of television, videotape, and video game use to motivate children to want to reduce the time they spent in these activities. These lessons were followed by a television turn off during which children were challenged to watch no television or videotapes, and plan no video games for 10 days. After the turnoff, children were encouraged to follow a 7-hour per week budget of television, videotape, and video games. In addition, each participating household was given an electronic television time manager. This

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device locks onto the power plug of the television set and monitors and budgets viewing time for each member of the household through use of personal identification codes. Parents received newsletters that were designed to motivate them to help their children stay within their time limits. Relative to controls, the intervention group of children had statistically significant decreases in child- and parent-reported television viewing hours per week. Also compared to controls, children in the intervention group had statistically significant relative decreases in body mass index.

Source: Robinson T. Reducing children's television viewing to prevent obesity: a randomized controlled trial. *JAMA* 1999;282:1561-67.

### **Stanford GEMS**

*Stanford GEMS* was designed to reduce television, videotape, and video-game use among African-American girls aged 8-10 years. The intervention consists of after-school dance classes (GEM) at three community centers and a five-lesson intervention called START (Sisters Taking Action to Reduce Television) delivered in participants' homes. The GEMs dance classes were offered 5 days a week, and girls were encouraged to attend the dance classes as often as possible over the 3-month study period. Each daily class lasted up to 2.5 hours, starting with a healthful snack, an hour homework period, and 45-60 minutes of moderate-to-vigorous dance. The sessions ended with 30 minutes of GEMS talks exploring the meaning of dance. The START intervention consisted of 5 lessons delivered during home visits. Specific behavioral goals were based on self-monitoring, a 2-week TV turn-off, and budgeting TV viewing. The intervention resulted in reductions of more than 20% in television, videotape, and video game use among the intervention group of girls, and statistically significant reductions in reported household television viewing.

Source: Robinson TN, Killen JD, Kraemer HC, et al. Dance and reducing television viewing to prevent weight gain in African-American girls: the Stanford GEMS pilot study. *Ethnicity & Dis* 2003;13 (Suppl 1):S65-77.

## **Literature Review on Television**

### **Behavior Recommendations**

The American Academy of Pediatrics recommends that children under 2 years of watch no television and only 1-2 hours of quality television for children older than 2.

### **Mechanisms**

Several potential mechanisms exist for how TV screen time and obesity are connected:

- Advertisements for non-nutritious food on TV prompts children to ask for and eat more unhealthy foods
- Consumption of foods while watching TV leads to higher calories consumed
- Sedentary activity of TV watching displaces active time

### **Current TV Behavior**

A recent survey found that 61% of children under age two use screen media and 43% watch TV every day, and 41% of 2- to 3-year-olds and 43% of 4- to 6-year-olds use screen media for 2 hours or more on an average day (1). Children 8-18 years of age watch an average of 3 hours of television every day (2). Fifty-nine percent of U.S. adults report watching more than 2 hours a day of television (3). More time is spent watching television by African American and Hispanic children than white children, and, among children 6 years old and under, by those in households with lower socio-economic status (1, 2).

### **TV Behavior and Association with Weight**

Studies have found a positive association between the number of hours children and adults watch television and the prevalence of overweight and obesity (2, 3, 4), and a school-based intervention has shown that children who reported a decrease in time watching television also had a decrease in body mass index (BMI) (5). Research also shows a link between TV viewing in childhood and obesity in adulthood (6, 7). Proposed mechanisms for the relationship between TV viewing and obesity include a reduction of resting metabolic rate while watching TV, displacement of physical activity, excess energy intake while watching TV, and exposure to marketing of high-energy-dense foods (6, 7).

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### **Qualitative Studies on TV**

The Division of Nutrition, Physical Activity and Obesity funded RTI International and the Annenberg Public Policy Center of the University of Pennsylvania to conduct focus groups on TV viewing among children and parents. Results showed numerous barriers to reducing television watching (8). Watching TV is common in most U.S. households, and many children and adults enjoy watching television without perceiving the amount of time they watch as a problem. There also is substantial confusion as to what television limits would entail and what “counts.” Reducing TV time would require parents to find alternative activities to keep their children safely and quietly engaged, and it could also prevent parents from accomplishing other tasks, could increase conflict between parents and children or between siblings, and would require parents to change their own TV-viewing behavior.

### **Sources**

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3. Bowman SA. Television-viewing characteristics of adults: correlations to eating practices and overweight and health status. *Prev Chronic Dis* 2006;3(2). [Available On-line] [http://www.cdc.gov/pcd/issues/2006/apr/05\\_0139.htm](http://www.cdc.gov/pcd/issues/2006/apr/05_0139.htm).
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6. Viner RM, Cole TJ. Television viewing in early childhood predicts adult body mass index. *J Pediatr* 2005;147:429-35.
7. Hancox RJ, Milne BJ, Poulton R. Association between child and adolescent television viewing and adult health: a longitudinal birth cohort study. *Lancet* 2004;364:257-62.
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## **Structure for Communications and Decisions**

Based on discussion with the planning team, the structure for making decisions is that the planning team will attempt to come to a consensus about major decisions. All decisions will then need to be approved by both Heartland State Health Department’s chronic disease coordinator (Dr. Richards) and the Wellington Community Coalition. Both will have veto power if a decision is not approved. If a consensus cannot be reached, it is up to the Heartland State Health Department’s chronic disease coordinator (Dr. Richards) to make the final decision. Wellington Community Coalition will also be directly involved in decision making, mostly through the representation of Bob Lee.