

# Overweight and Obesity



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# Overweight and Obesity in Tioga County, Pennsylvania

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## Introduction

In conjunction with the national program Healthy People 2010, the Tioga County Partnership for Community Health is collecting and monitoring indicator data that pertain to key health issues in the area. Healthy People 2010 is a comprehensive national health promotion and disease prevention agenda with set objectives designed to guide health agencies to improve the health of all people. The two main goals of this program are to 1) increase quality and years of healthy life and 2) eliminate health disparities.<sup>1</sup> Of the 28 focus areas and 467 objectives within the national program, the Tioga County Partnership for Community Health is tracking eight focus areas and approximately 35 objectives. The selection of key indicators for Tioga County was based on priority health issues that were identified previously, appropriateness of objectives and availability of data. The focus area for this report is overweight and obesity with an emphasis on healthy eating and physical activity. It addresses the following Healthy People 2010 objectives:

- Reduce the percentage of overweight and obese adults.
- Reduce the percentage of overweight and obese youths.
- Increase the percentage of persons (ages 2+) who eat:
  - two daily servings of fruit,
  - two daily servings of vegetables,
  - two daily servings of grains.
- Increase the percentage of youths and adults who participate in:
  - leisure-time physical activity,
  - moderate physical activity,
  - vigorous physical activity.
- Reduce the age-adjusted death rates for coronary heart disease, stroke and diabetes.

## Background

Across the United States, persons of all races, age, gender and socioeconomic status continue to become overweight or obese. According to the Behavioral Risk Factor Surveillance System<sup>2</sup> (BRFSS), which is based on self-reporting, 36.7% of U.S. adults were overweight while 20.1% were found to be obese in 2000. Data from the 1999 National Health and Nutrition Examination Survey<sup>3</sup> (NHANES) indicate that approximately 13% of children ages 6 to 11 and 11 % of youths aged 12 to 19 are overweight. Over the past 20 years, the percent of overweight children has doubled while the percent of overweight youths has tripled. For those that do not smoke, making healthy dietary choices and being physically active are the most important modifiable determinants of their health.

Each year it is estimated that 300,000 deaths in the United States may be attributed to being obese.<sup>4</sup> Being overweight or obese is associated with heart disease, type-2 diabetes, stroke, arthritis and breathing problems. Pregnant women who are obese are more likely to develop gestational diabetes and may put their babies at a higher risk for birth defects. In addition, research indicates that approximately 1/3 of cancer deaths are due to factors of poor nutrition and physical inactivity.<sup>5</sup>

## Definition of Terms and Measurements

While biological, behavioral, cultural and environmental factors play a role in being overweight and obese, most Americans find themselves with these chronic conditions as a result of eating too many calories and not participating in enough physical activity. Over a long period of time this energy imbalance results in overweight and obesity (Table 1).

Body Mass Index, or **BMI**, ( $\text{weight} \div \text{height}^2 * 703$ ), is a simple measurement that is used as a guideline to determine healthy weights of adults and children (Appendices A-C). Current standards define **overweight** adults as those aged 20 years and older with a BMI ranging from 25.0 - 29.9.<sup>6</sup> This range indicates increased body weight in relation to height. As the Centers for Disease Control<sup>6</sup> (CDC) indicates however, “overweight may or may not be due to increases in body fat.” It may be the result of increased lean muscle. For example, athletes may be lean and muscular with very little body fat. Since muscle weighs more than fat these people may be “overweight” because of their large muscle mass, but they are not necessarily “over fat”.

**Obese** adults are those aged 20 and older who have a BMI of 30.0 or higher.<sup>6</sup> Obese persons have an excessively high amount of body

fat in relation to lean body mass. Fat deposits may be of various sizes and may be deposited at various locations throughout the body. Additional measurement and testing, including skin fold measures, waist-to-hip circumference ratios, or techniques such as ultrasound, computed tomography, and/or magnetic resonance imaging can be done to further assess one’s percent of lean body mass.

Since these measurements are not always easily available and because BMI is more highly correlated with body fat than any other indicator of height and weight, it is most often used.<sup>7</sup> As an adult’s (20 and older) BMI increases over 25, so does his or her risk of premature death and disability resulting from being overweight or obese.<sup>8</sup>

A BMI can also be calculated for children. However, the interpretation of a child’s BMI is based on age and sex. This is due to the fact that body fatness differs in males and females as they mature. Based on CDC growth chart percentiles, children, ages 2 to 20, are considered underweight if their BMI falls under the 5<sup>th</sup> percentile, at risk of being overweight if their BMI is equal to or is greater than the 85<sup>th</sup> percentile, and overweight if their BMI is equal to or greater than the 95<sup>th</sup> percentile.<sup>9</sup>

**Table 1.** Energy balance equations.

EQUATION	INTAKE (Calories from food)	OUTPUT (Calories used during physical activity)
Weight Gain:	Calories Consumed	> Calories Used
Weight Loss:	Calories Consumed	< Calories Used
Weight Maintained:	Calories Consumed	= Calories Used

Source: Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, 2002.

## Trends In Tioga County

### Adults

Only one third of Tioga County residents are at a healthy weight. While the percent of overweight adults has remained fairly steady between 1995 and 2000 for the county, state and nation, the percent of obese adults in Tioga County has risen dramatically by 7.5 % (Figure 1).<sup>10,11,12</sup>

In Tioga County there is little difference between the percent of overweight and obese when divided into the subgroups of age, sex, education and family income. Only middle aged adults, ages 40-64, show a slightly higher percentage of individuals with BMIs placing them in the overweight to morbidly overweight categories.

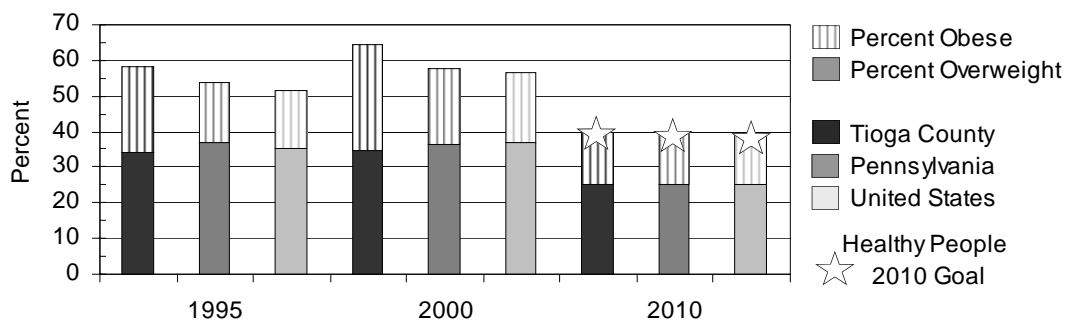
### Lifestyle/Risk Behaviors

There are discrepancies between subgroups when examining Tioga County's dietary choices and physical activity. In the Tioga County Health Survey 2000, 27.5% of adults reported eating fatty foods two or more times a day.<sup>11</sup> This was

most common in young and poorer adults. Likewise, in the same survey, 28.5% of the respondents indicated no interest in avoiding high fat foods. This was most common among males and young adults. In addition, the poor and less educated in Tioga County are less likely to eat healthy foods including fruits, vegetables and grains.

Similar to state data, there are differences among subgroups in Tioga County in regard to physical activity. The old, poor and less educated are less likely to participate in light and/or vigorous activity. However, unlike state data, adult females in Tioga County tend to exercise less often than men. Tioga County residents engage in physical activity lasting 20 minutes or longer an average of 4.2 times per week. The average for males and females are 6.22 and 3.30 times per week respectively.

**Figure 1.** Percent Overweight and Obese Adults (Ages 18 and older).



Sources: CDC, Behavioral Risk Factor Surveillance System (BRFSS), *Trends Data 2002* & The Tioga County Health Survey 1995 & 2000.

## Youth

Unfortunately, trends in the growing numbers of overweight and obese residents are not limited to adults. Preliminary data indicate that the numbers of overweight and obese children and adolescents are also growing (Table 2). Overweight adolescents have a 70% chance of becoming overweight or obese adults.<sup>12</sup> Like adults, overweight and obese children are at a greater risk of developing high blood pressure, high cholesterol and type-2 diabetes. In addition, overweight and obese adolescents are particularly vulnerable to low self-esteem and social discrimination.

## Health Outcomes

Tioga County residents are not immune to the health outcomes resulting from being overweight or obese. When divided into the categories of overweight (BMI $\geq$ 25) and healthy weight (BMI<25), a higher percentage of those in the overweight category reported being diagnosed with these health outcomes.<sup>10,11</sup> These differences are greatest for diabetes and high blood pressure (Figure 2). Likewise, when divided by the same subgroups, those in the healthy weight category were more likely to report their health status as excellent or very good. Those overweight were more likely to report their health status as very good or good (Figure 3).

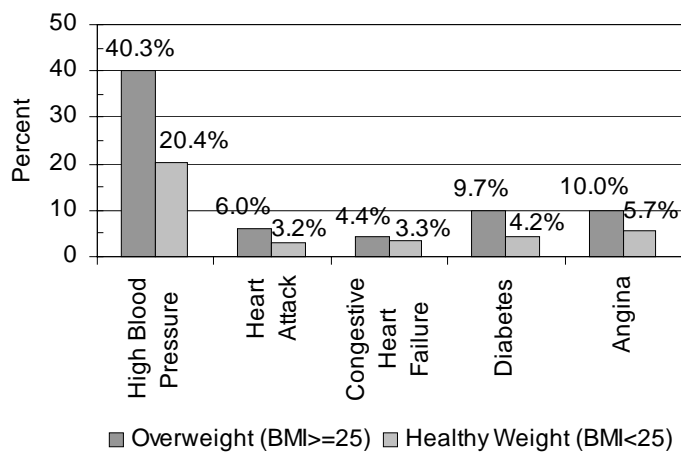
Because weight plays such an important role in one's health, the death rates for three chronic, often weight-related, conditions are being used as indicators to monitor the obesity epidemic occurring not only in the U.S. and Pennsylvania, but also in Tioga County. These indicators include age-adjusted death rates based on the 2000 standard population for coronary heart disease, stroke and diabetes.

**Table 2.** Percent of overweight and obese students.

Grade	2000-2001		2001-2002	
	Percent of students		Percent of students	
	Overweight	Obese	Overweight	Obese
K	26.3	<b>12.1</b>	27.6	<b>10.8</b>
1	24.4	<b>13.0</b>	27.7	<b>15.2</b>
2	35.9	<b>17.3</b>	36.4	<b>15.8</b>
3	34.8	<b>19.3</b>	38.7	<b>22.6</b>
4	40.1	<b>21.6</b>	44.2	<b>25.8</b>
5	36.9	<b>21.6</b>	43.5	<b>20.9</b>
6	43.8	<b>22.5</b>	45.8	<b>25.1</b>
7	41.2	<b>23.8</b>	48.7	<b>27.2</b>
8	39.9	<b>21.6</b>	46.8	<b>23.4</b>

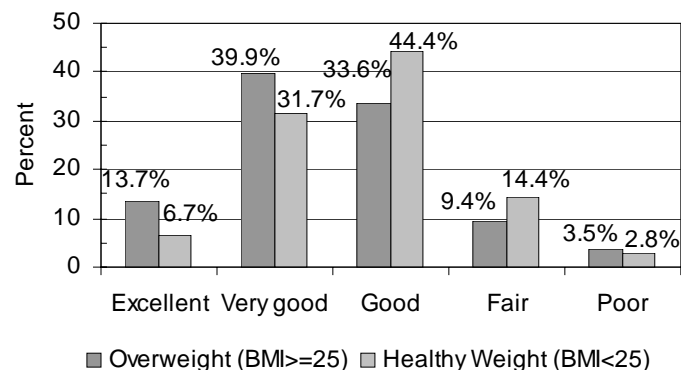
Source: Tioga County Fit for Life Program.

**Figure 2.** Diagnosed Conditions for Those Overweight vs. Those at a Healthy Weight, 2000.



Source: Tioga County Health Survey, 2000.

**Figure 3.** Reported Health Status of Those Overweight vs. Those at a Healthy Weight, 2000.



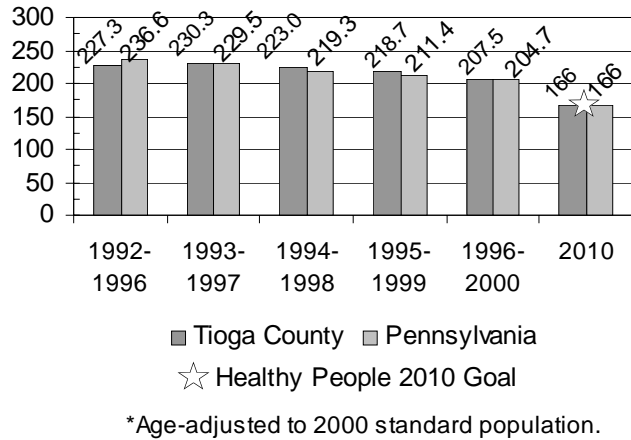
Source: Tioga County Health Survey, 2000.

### Coronary Heart Disease

Coronary heart disease morbidity and mortality are currently on the decline in Tioga County. In the Tioga County Health Survey 2000, only 4% reported having been diagnosed.<sup>11</sup> This is down from 4.5% in the 1995.<sup>10</sup> Those most likely to have coronary heart disease are older residents (65+) and those without a high school diploma. Respondents in the categories of poor and near poor were found to be more than twice as likely to have been diagnosed than those with middle/high incomes.

Similar to state and national levels, coronary heart disease is the leading cause of death in Tioga County. Over the past several years both the state and Tioga County have seen continued decline in coronary heart disease deaths. Because the risk factors of increased age and unhealthy weight are increasing in Tioga County, prevention efforts must continue if Tioga County is to reach the Healthy People 2010 goal of 166 coronary heart disease deaths per 100,000 (age-adjusted, 2000 standard population) (Figure 4).

**Figure 4.** Age-adjusted\* Coronary Heart Disease Death Rate Per 100,000

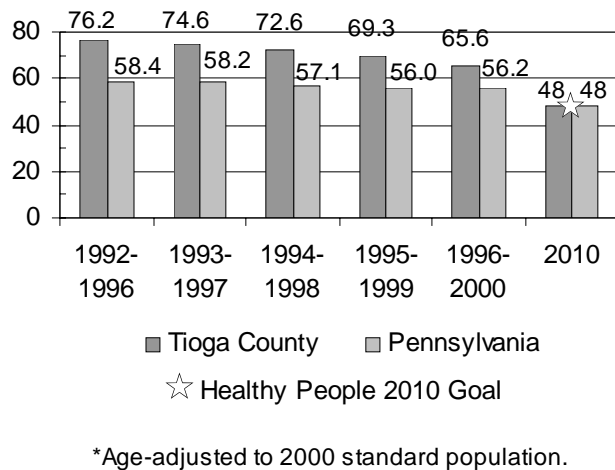


Source: Pennsylvania Department of Health, 2002.

### Stroke

Stroke is the third major cause of death on all levels, including Tioga County.<sup>13,14</sup> At the national level, strokes are the primary cause of serious, long-term disability. Risk factors include smoking, increased age, high blood pressure, diabetes, being overweight and having heart disease. Stroke death rates for Tioga County are currently higher than the state but are gradually declining. If this decline continues, Tioga County will most likely be able to reach the Healthy People 2010 goal of 48 stroke deaths per 100,000 (age-adjusted, 2000 standard population) (Figure 5).

**Figure 5.** Age-adjusted\* Stroke Death Rate Per 100,000.



Source: Pennsylvania Department of Health, 2002.

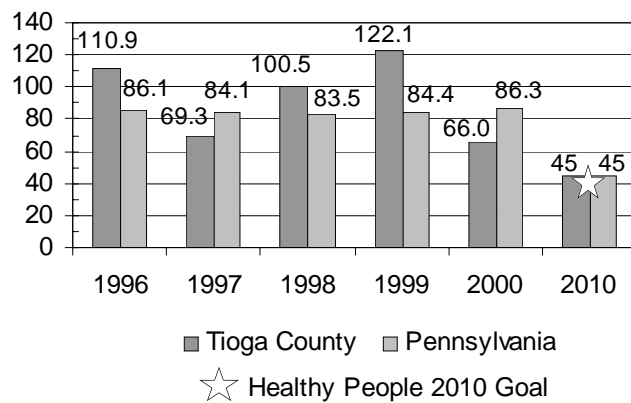
## Diabetes

Diabetes morbidity (not including gestational diabetes) in Tioga County appears to be declining while diabetes mortality has fluctuated greatly in past years (Figure 6). Diabetes is the seventh major cause of death in Tioga County (1998-2000).<sup>14</sup> Both state and national levels of diabetes prevalence is around 6-7% of the population. Results from the Tioga County Health Survey 2000 indicate that approximately 7.8% of residents have been diagnosed with diabetes. This is down from 8.4% in 1995. Percentages of those diagnosed with diabetes were found to increase greatly with age. In addition, those with lower incomes and less education were more likely to have been diagnosed with diabetes.

The fluctuation in the diabetes death rate may be the result of complexities related to the disease itself, diagnostic procedures and mortality documentation. It is estimated that one third of those who actually have the disease do not know they have it.<sup>15</sup> This would make results of self-reporting lower than the actual prevalence. In addition, diabetes death rates are based on death certificates that list diabetes as the underlying cause of death.

While diabetes may be listed as a contributing factor, those who die from diabetes often do not have the disease entered on their death certificate. The American Diabetes Association<sup>16</sup> estimates “that only 35% to 40% have it listed anywhere on the certificate and only about 10% to 15% have it listed as the underlying cause of death.” It is hoped that in the future diagnostic and documentation procedures for diabetics will improve. Only then will it be clear how close Tioga County is to the Healthy People 2010 goal of 45 deaths from diabetes per 100,000 (2000 standard population).

**Figure 6.** Age-adjusted Diabetes Death Rate Per 100,000\*.



\*Age-adjusted to 2000 standard population.  
 (Includes deaths listing diabetes as an underlying or contributing cause.)

Source: Pennsylvania Department of Health, 2002.

## Action

Health care providers are doing an excellent job of advising Tioga County residents on diet, exercise, proper weight and the related health risks. In all but one subgroup, higher percentages of Tioga County residents reported being advised of these issues in 2000 than in 1995.<sup>10,11</sup> The advising of the poor about the risks for heart disease and high blood pressure decreased slightly in 2000. The poor, younger adults (ages 18-39) and women are less likely to be advised about all of these health issues. In order to increase primary prevention it is hoped that health care professionals will continue their efforts in advising these subgroups about proper nutrition, physical activity, healthy weight and the resulting health outcomes.

Physical activity, which is work or exercise that makes you breath heavier and your heart beat faster, is crucial when trying to maintain or achieve a healthy weight. In addition, physical activity is good for overall health. Physical activity contributes to healthy bones, builds muscle, reduces falls by the elderly and decreases the risk of high blood pressure, diabetes and heart disease. Following consultation with a primary healthcare provider, the National Institutes of Health<sup>8</sup> recommend that persons of all ages begin a physical activity regimen. Persons should start with moderate levels of physical activity for 30-45 minutes three to five times per week. Long-term goals should aim for 30 minutes or more of moderate-intensity activity most, if not all, days of the week.

Those beginning a physical activity regimen should select activities they enjoy and that fit into their daily schedule. Physical activity is not limited to exercise or sports and it does not have to be vigorous in order to gain the health benefits. Examples of physical activity include occupational work like farming or waiting tables, household chores like gardening and vacuuming and leisure activities like bicycling, walking or aerobics. Because the benefits of physical activity are a function of duration, intensity and frequency, similar results can be obtained in longer sessions of moderately intense activities (walking) as in shorter sessions of more vigorous activities (running) (Appendix D).

## Conclusion

While the age-adjusted death rates for coronary heart disease, stroke and diabetes are declining in Tioga County, two facts remain when trying to meet Healthy People 2010 obesity goals. First, Tioga County is experiencing an increase in the number of older residents and, secondly, Tioga County is experiencing an increase in the number of persons who are overweight or obese. Both of these risk factors for coronary heart disease, stroke and diabetes, are likely to influence the county's progress toward Healthy People 2010 goals. Many health facilities and organizations are committed to reducing overweight and obesity, but it is also necessary for the residents of Tioga County to be involved.

There are a number of activities that individuals can do to help Tioga County meet the national goals of Healthy People 2010. By doing so, individuals will help improve the health of Tioga County. Readers of this report are encouraged to do the following:

- Reduce fat intake while increasing intake of fruits and vegetables.
- Make physical activity a priority and make it a part of daily routine.
- Reduce sedentary activities at home by limiting time spent watching television, playing video games and using the computer.
- Encourage children to drink milk or whole fruit juices instead of soda.
- Read food labels for nutritional information and be aware of portion sizes. (Serving size of fruits/vegetables equals ½ cup. Serving size of meat is approximately the size of a deck of cards.)
- Promote opportunities for physical activity in the community.
- Ask for support from friends and family; likewise, support people who are trying to be physically active.

Appendix A. Body Mass Index (BMI) for adults.


<b>BMI</b>	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height (ft'in")	Weight (lbs)																
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173
5'0"	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179
5'1"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185
5'2"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191
5'3"	107	113	118	124	130	135	141	146	152	158	163	169	175	180	186	191	197
5'4"	110	116	122	128	134	140	145	151	157	163	169	174	180	186	192	197	204
5'5"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210
5'6"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216
5'7"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223
5'8"	125	131	138	144	151	158	164	171	177	184	190	197	203	210	216	223	230
5'9"	128	135	142	149	155	162	169	176	182	189	196	203	209	216	223	230	236
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250
6'0"	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258
6'1"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265
6'2"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272
6'3"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279

Source: National Health Institute (NIH)/National Heart, Lung and Blood Institute (NHLBI), 1998.





Appendix D. Examples of moderate amounts of physical activity.

<b>Common Chores</b>	<b>Sporting Activities</b>	
Washing and waxing a car for 45-60 minutes	Playing volleyball for 45-60 minutes	<p><b>Less Vigorous, More Time</b></p>  <p><b>More Vigorous, Less Time</b></p>
Washing windows or floors for 45-60 minutes	Playing touch football for 45 minutes	
Gardening for 30-45 minutes	Walking 1¾ miles in 35 minutes	
Wheeling self in wheelchair 30-40 minutes	Basketball (shooting baskets) for 30 minutes	
Raking leaves for 30 minutes	Dancing fast (social) for 30 minutes	
Walking 2 miles in 30 minutes	Water aerobics for 30 minutes	
Shoveling snow for 15 minutes	Basketball (playing game) for 15-30 minutes	
Stair walking for 15 minutes	Bicycling 4 miles in 15 minutes	
	Jumping rope for 15 minutes	
	Running 1½ miles in 15 minutes	

Source: U.S. Surgeon General (2001).

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... to improve the health and quality of life of individuals and communities in Tioga County.

### Work Groups and Committees

Charlie's Place	Community and Family Health
Elder Services	Fit for Life
Healthy Families	Planning Committee
Immunization	Kids First
Mental Health	Measurement & Outcomes
Countryside Council	Tobacco Coalition
Communities that Care (CTC)	Disability Awareness Network
Community Access Program (CAP) Operating Committee	Alcohol, Tobacco and Other Drugs (ATOD)

If you would like to learn more about these groups or would like to be a member please contact the Tioga County Partnership for Community Health.

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