

Procedure For Charting Growth

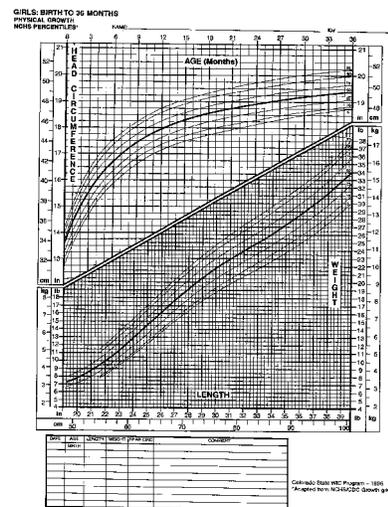
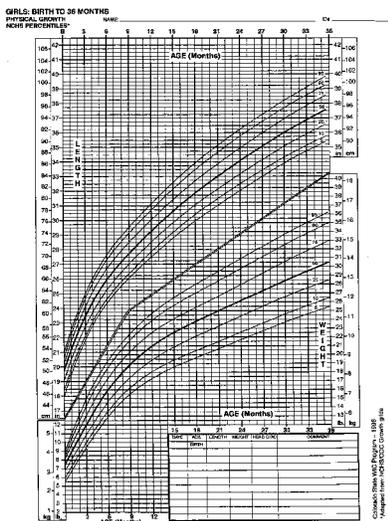
Why Use Growth Grids?

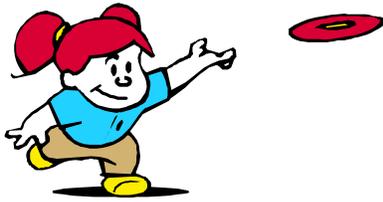
Growth grids are designed to represent the normal growth of healthy children. In the WIC Program we use grids developed by the National Center for Health Statistics (NCHS). These grids were developed from studies on normal, healthy children in the United States. There are four basic NCHS growth grids used by the Colorado WIC Program. Two are for boys and two are for girls. The boys' and girls' grids are divided into those for children 0-36 months of age and those for children 2-5 years of age. The grids can be ordered from the State WIC Office using the Administrative Order form.

The NCHS growth grids contain individual grids for length/height-for-age, weight-for-age, weight-for-height, and head circumference-for-age. In the Colorado WIC Program we use all of the individual grids except head circumference-for-age.

The growth grids contain smoothed percentile curves depicting growth percentiles of 5, 10, 25, 50, 75, 90, and 95. Each percentile serves as a reference for comparison. For example, a female child who is at the 25th percentile height-for-age is taller than 25% of the girls her age and shorter than 75% of the girls her age. Any child whose height is between the 10th and 90th percentile is considered to be in the "normal range."

Plotting measurements from two or more visits provides a visual presentation of a child's growth pattern. In theory a child whose height is at the 25th percentile should continue to grow so that her height stays at the 25th percentile over time. This is not always true. However, the greater the variation from a percentile line the more concern there is that something unusual is going on with the child's growth. Growth that varies greatly from a normal growth line needs to be referred to the WIC dietitian or nurse for evaluation. Growth grids are a very important tool for assessing a child's nutritional status since nutrition plays a major role in growth. Poor growth can indicate poor nutrition (though poor growth can be caused by other factors such as illness).



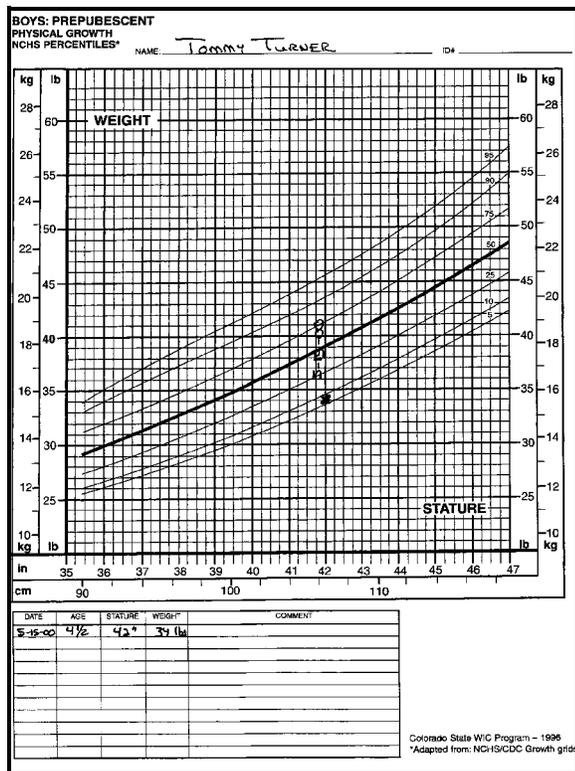


Height/length and weight measurements need to be accurately plotted on the growth grids. Small errors in plotting can obscure growth failure or growth recovery. It is recommended that a tool called an “accuplot” be used when plotting growth points. An accuplot is a clear piece of plastic with a small hole in the center. The hole is crossed by two black lines. The accuplot is placed over a grid. One black line is lined up with the child’s age, the other with the child’s weight or height (depending on which is being graphed). On the weight-for-height grid, one line is placed on the child’s height and the other on their weight. If an accuplot is not available a ruler or right angle tool may be used to plot the growth points. Again, it is very important that growth measurements be plotted accurately.

Heights/lengths and weights must be plotted at each certification/recertification and any other time that lengths/heights and/or weights are obtained. The information must also be entered into the ASPENS system. For the growth grids to correctly reflect the percentiles calculated by ASPENS the following must occur:

1. Plotting must be according to the child’s or infant’s month and weeks of age rather than just months. ASPENS displays infant and children ages in weeks, months, and years.
2. Children 2 years of age or younger must be measured using the infant length board and weighed on the infant scale. Growth grids for birth to 36 months should be used.
3. Children one day over 2 years of age must be measured standing up and weighed using the adult scale, regardless if they are less than 36 inches in height. The child’s growth should be plotted on the 2-5 years of age growth grids. When the child’s height is less than 36 inches, the percentile calculated by the ASPENS system can be used to assist in estimating where the plot should occur on the growth grid. (Special needs children who cannot stand can be measured on the infant scale and/or length board, but should still be charted on the 2-5 year grid. In this case, document use of the length board or infant scale on the grid.)

1. Because Tommy is more than 2 years of age, use the grid for boys ages 2 to 5 years of age.
2. Tommy's name and birth date are written in ink on the top of the growth grid.
3. In the table on the right hand side of the grid, the date, Tommy's age, his height and his weight are recorded.
4. Tommy's weight-for-age and height-for-age are plotted on the front side of the grid. Along the top and bottom of the grid are listed "age." Each hatch mark represents 2 months. Since Tommy is exactly 4 years and six months old it is easy to find the line that represents his age. At the bottom of the grid his weight is plotted where the line for his age intersects with the line that represents 34 pounds. A dot is drawn at this point and the date written above it. His height is plotted where the line for his age intersects with 42 inches. A dot is drawn and the date written above it.
5. On the reverse side of the graph is plotted Tommy's weight-for-height. Along the bottom of the graph is listed "height." Since Tommy is 42 inches tall the line is followed going up from 42 inches until it intersects with the line for his weight (34 pounds) which is listed along the sides of the graph. A point is made where the height and weight intersect and the date is listed above the point.



Weight alone cannot tell you if a child is over or underweight. It depends on how tall the child is. Think about this with adults. If you were told that a 30 year old man weighs 150 pounds you cannot say if he is underweight or overweight. It depends on how tall he is. If he is five feet tall he is overweight. If he is 6 feet 5 inches tall he is underweight.

What does Tommy's growth grid tell us about his growth? The lines that cross the graphs and are labeled 5, 10, 25, 50, 75, 90, & 95 are referred to as percentile or channel lines. On the height-for-age grid Tommy's height falls on the 50th percentile channel line. This tells us that 50% of the boys Tommy's age are taller than he is and 50% are shorter. We would expect in the future that Tommy will continue to grow and that the next time we see Tommy his new height at his new age will still fall on the 50th percentile channel line.

Tommy's weight-for-age is just slightly above the 10th percentile channel line. This tells us that he weighs less than about 90 percent of the children his age. Weight-for-age does not in and of itself tell us if Tommy is underweight or overweight. On the back of the growth grid the graph that shows his weight-for-height tells us this.

Tommy's weight-for-height is between the channel lines for the 5th and 10th percentiles. This tells us that Tommy is on the slender side. Being between the 5th and 10th percentile may be a cause for concern because it indicates that Tommy is very slender.

When looking at growth grids it is important to remember a couple of points:

1. Heights and weights between the 10th and 90th percentiles are considered in the normal range. Some people think that everyone should be at the 50th percentile, but this is incorrect. It is normal for some children to be at the 25th percentile or even the 10th percentile.
2. One height and weight measurement cannot tell if a child is growing well or not. If a child is only seen once and both his height and weight are at the 50th percentile, it may be tempting to say the child has "normal" growth. For this to be true we would need to know where the child was in the past. If the child had been at the 80th percentile 6 months ago and now is at the 50th percentile then the child's growth is not "normal" and there is reason for concern.

There is more information about interpreting growth grids in the module that covers nutrition risk factors.

#7 Practice!



1. Linda White is 18 months old today (birth date December 20, 1998). Today's date is June 20, 2000. Linda's weight today is $25\frac{1}{2}$ pounds and her length is $31\frac{1}{4}$ inches. On October 4, 2000, she returns to your clinic ($21\frac{1}{2}$ months of age). Her weight on October 4 is 29 pounds and her length is $32\frac{1}{2}$ inches.

Complete the growth grid on the following pages to show both sets of weight and lengths for Linda.

2. Juan Martinez is three years, 7 months old today (birth date November 20, 1996). Today's date is June 20, 2000. His weight is 31 pounds and his length is 39 inches.

Complete the growth grid on the following pages.

More #7 Practice!

Use the growth grids which you have just completed for Linda White and Juan Martinez and answer the following questions:

1. What percentile weight-for-age is Linda White at 18 months of age? _____
Between what percentiles is her weight-for-length at 18 months of age? _____
Would Linda White be considered overweight at 18 months of age? _____ Why?
2. Is there a reason to be concerned about Linda's weight? Why?
3. Does Juan's growth grid indicate that he is growing well? Explain.

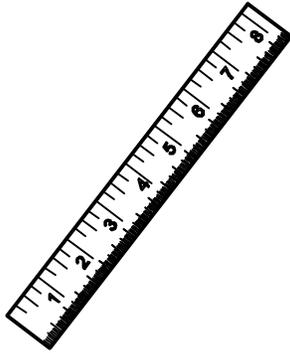


Table 1

What Growth Grids Tell Us

1. Height and weight plotted at one age gives information as to how a child ranks in size in relation to other children of the same sex and age.
2. The plot for weight-for-height/length tells us whether a child is overweight, underweight, or normal weight compared to other children of the same height and sex.
3. Several measurements plotted at different ages gives information on whether the child's growth is progressing adequately. Most children stay at approximately the same percentile during growth, although some change above and below is normal.
4. Measurements <10th and >90th may indicate the child is at risk for medical/nutritional problems and should be carefully checked for accuracy; referral may be indicated.
5. Based on the growth percentiles calculated by ASPENS, the system will objectively assign nutrition risk factors for underweight, overweight, and short stature at certification visits. At mid-certification visits these risk factors must be assigned manually if they did not apply at the time of the certification visit. The nutrition risk factors for "inadequate or potentially inadequate growth" are subjective risk factors and must always be assigned manually based on the WIC staff person's calculations.