Growth and Growth Charts in Children

Growth is a result of your child's genetics, environment, and culture.

When your children come to a well-child check, their pediatrician will measure their height and weight at each visit and head circumference when they are 3 years and younger. Not only can it be fun to see how much they have grown between visits, but these measurements also provide important information about their health and development. Growth charts can be on paper or in an electronic medical record. These charts are standardized graphs that use information from a larger population to show how your child compares with other children of the same age and sex. Pediatricians are interested in the "percentile" in which your child falls, as well as if your child is tracking along the same percentile over time. For example, if your child is on the 50% percentile, it means that on average, 50% of children of the same age and sex are bigger than your child and 50% are smaller.

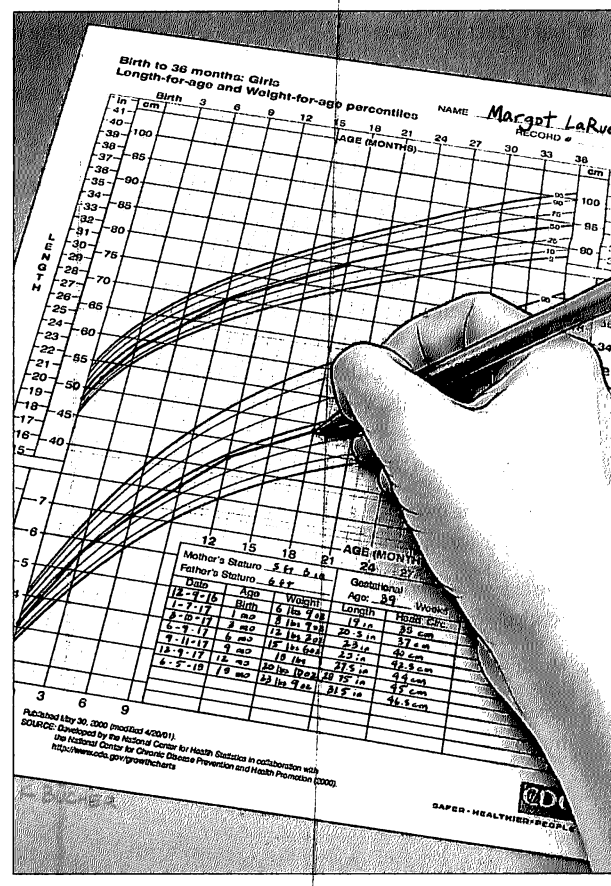
Weight and Height, Which Together Make Body Mass Index

- Children grow at different rates. As an infant, they may gain an ounce (30 g) a day. Teenagers usually have a growth spurt in which they can grow up to 4 inches in a year. All of this can be normal.
- Children who have medical illnesses, undereat, or have chronic stress often have trouble gaining or maintaining weight or growing taller. Pediatricians use weight loss, inadequate weight gain, or slowed growth as early sign of a problem.
- In contrast, children who gain more weight than expected could have a medical problem or be at risk for lifelong overweight or obesity.
- Parents sometimes have questions about feeding their child and appropriate growth. Ask your child's pediatrician if their growth is on track.
- Children grow in bits and spurts, not smoothly as the growth charts appear, so differences usually are normal.
- Pediatricians calculate body mass index (BMI) from a child's weight in kilograms divided by height in meters squared. For children and teenagers, this calculation is standardized based on their age and sex.

Head Circumference

- Up to age 3 years, your health care professional will measure your child's head circumference and plot it on a growth chart.
- While less common, inadequate or excessive head growth may represent a medical problem that a pediatrician can address.

If you are concerned about your child's growth, talk to your pediatrician to see whether closer monitoring or additional tests are needed. Enjoy watching your child grow.



FOR MORE INFORMATION
Visit the CDC website:
https://www.cdc.gov/growthcharts/growthchart_faq.htm

To find this and other *JAMA Pediatrics* Patient Pages, go to the For Patients collection at *jamanetworkpatientpages.com*.

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Online Quiz Questions

Development and Validation of a Calculator for Estimating the Probability of Urinary Tract Infection in Young Febrile Children

1. Approximately what proportion of children younger than 2 years who present to an emergency department with fever have a urinary tract infection?

   A. 1%.

   B. 7%.

   C. 20%.

   D. 35%.

2. This study used a nested case-control study design in which cases and controls are obtained from the population in a quantifiable cohort of individuals. Which of the following advantages of a case-control design prompted the authors to use this approach?

   A. The outcome (prevalence of urinary tract infection) was relatively low.

   B. The exposure (maximum temperature) was relatively rare.

   C. Multiple outcomes could be assessed.

   D. Children could be randomized to a particular treatment group.

3. The accuracy of a test depends on how well the test distinguishes between those with and without the disease. Accuracy is measured by the area under the receiver operator curve. What was the area under the curve of the clinical model in the training database?

   A. 0.4.

   B. 0.5.

   C. 0.8.

   D. 0.98.

4. Compared with empirically treating all children who had a leukocyte esterase result of 1+ or higher, the dipstick component of UTICalc would have reduced the number of children whose treatment was delayed by what percent?

   A. 0.5%.

   B. 10.6%.

   C. 25%.

   D. 45.5%.

Educational Objective
To develop and test a calculator (UTICalc) that can first estimate the probability of urinary tract infection based on clinical variables and then update that probability based on laboratory results.

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Read the **CME designated article** on page 550

To receive **CME credit**, you must complete the quiz online at jamanetwork.com/learning.

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