GrowthXP

Discover the Power *of* Enhanced Growth Charting...

Imagine...

A decision support system for monitoring and analyzing growth and development in real time:

Reading patient data directly from the patient's health record

Providing reference charts for dozens of auxological parameters

Overlaying disease specific growth charts on population references

Displaying multiple parameters in the same chart

Performing 100+ calculations including percentiles, SD scores and adult height predictions

Improving clinic management, payer authorization and richly enhancing decision making support

"Amazing, beautifully done software."

Pediatrician

Introducing GrowthXP...

A comprehensive growth, analysis and decision support system with advanced features:

- Optimal use of auxological EHR data collected in clinical practice.
- Accurate, proportional representation of CDC and WHO growth charts.
- Multiple growth parameter viewing at a glance, giving a more complete picture of growth and maturation.
- Instant presentation of high definition charts with zoom-in capabilities.
- Real-time calculation of percentiles and standard deviation scores, growth velocities, BMI, target height, and corrected age for prematures.
- Automatic adult height predictions based on bone age.
- Easily exportable to PDF, PNG, and JPEG formats for inclusion in reports, billing, and other forms of communication.

"Where has this been all my life?"

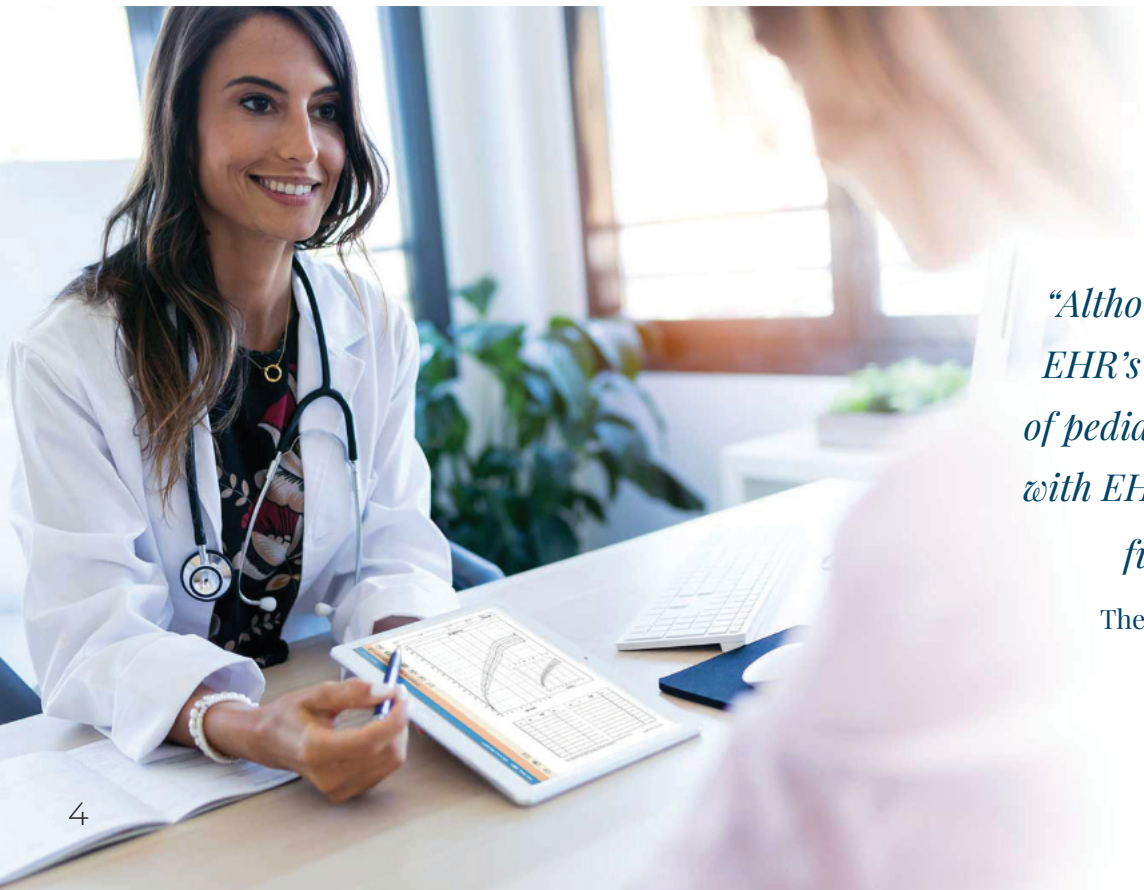
Nutritionist, Vermont Dept. of Health Nutrition Program

The Problem with Basic EHR Growth Charts...

Most current EHR systems **don't allow** you to view different measurements all on a single page, such as:

- Height
- Weight
- Bone Age
- Parental Heights
- Target Height
- Puberty Stages

This lack of ability to combine data into a single comprehensive overview can make it more difficult to detect growth anomalies or underlying disorders.



"Although the adoption of EHR's has increased, 80% of pediatricians are working with EHRs that lack optimal functionality..."

The Journal of Pediatrics [1]

Common Problems Solved...

THE ISSUE

You're following a child with Down's Syndrome and are plotting her height on a standard growth curve. Children with Down's Syndrome grow slower than other children, and hypothyroidism, a common problem, will slow growth velocity even further, but it is difficult to detect this on standard growth charts.

THE SOLUTION

GrowthXP provides Down's Syndrome-specific growth charts and can overlay them on the standard reference growth curve. GrowthXP also contains disease-specific growth curves for Turner's Syndrome and Achondroplasia.[2]

"The American Academy of Pediatrics has recommended that EHR systems incorporate syndrome-specific growth charts where feasible."

American Journal of Medical Genetics[3]

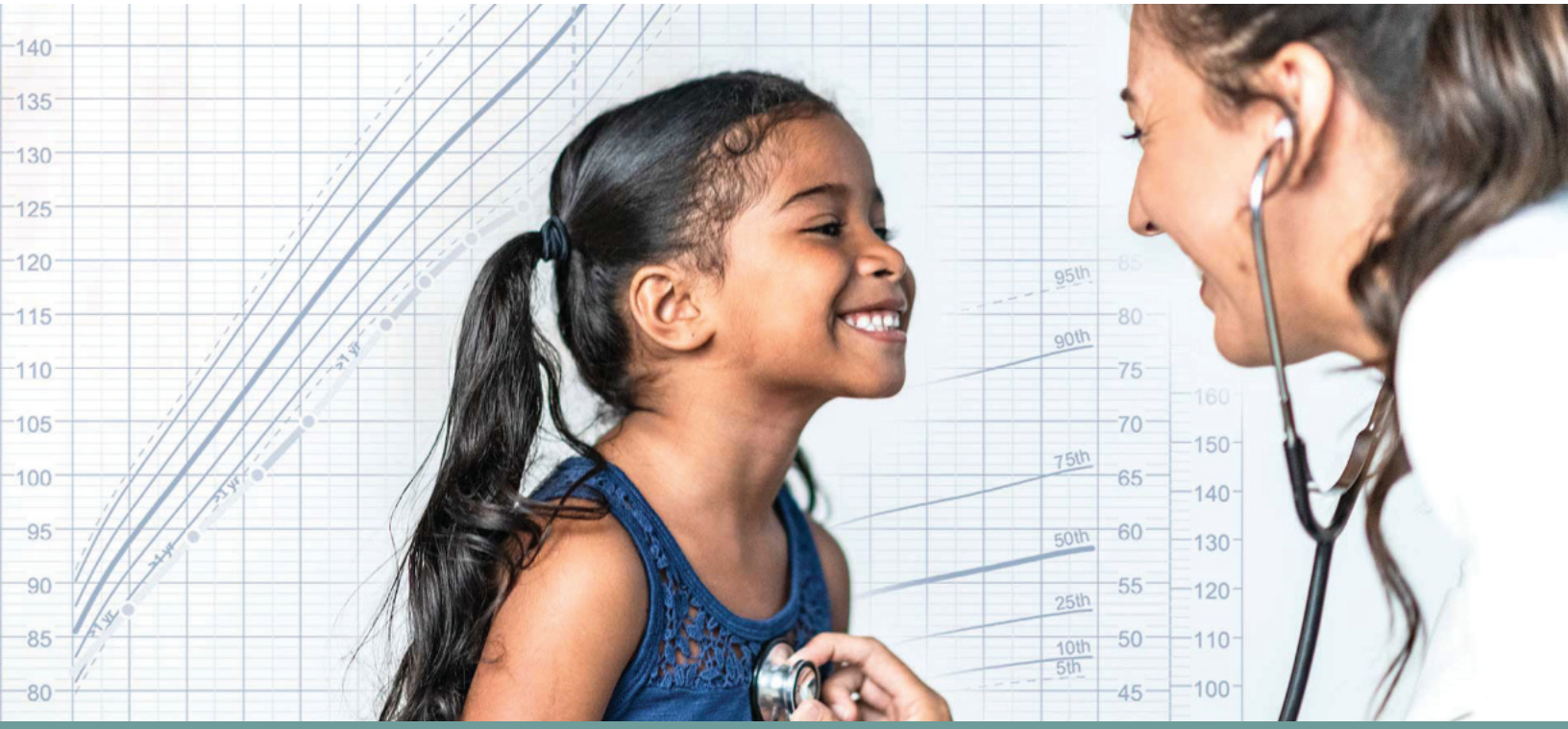
Common Problems Solved...

THE ISSUE

You're seeing a child with a height well below the third centile on the CDC chart whose parents are from India and are now living in the United States and you are trying to determine if a child's height is appropriate compared to the parents height.

THE SOLUTION

GrowthXP automatically calculates the target height and target range for the child using the parental height data and displays it on the height curve, and will also calculate the difference between the current SD position and the target height SDS.



"GrowthXP is an excellent application, I use it regularly in my clinic."

Consultant Pediatrician and Clinical Lead for Pediatric Diabetes

THE ISSUE

Some short children have a mild genetic problem affecting the growth plates of the long bones in the legs. This can easily go unnoticed clinically, but it will become evident when you measure the standing height and sitting height and analyze the body proportions.

THE SOLUTION

Evaluate sitting height in relation to total height on appropriate growth charts. GrowthXP contains the 2020 US reference charts for sitting height, leg length, and sitting height/height for different ethnic groups.[4]

"The features of GrowthXP cover many needs that users don't even know they have and is yet easy to use."

Pediatrician, Karolinska Institute Stockholm

Communicating with Parents...

A 2009 study of 1,000 American parents found that most of those who thought they understood growth charts actually had trouble interpreting them.[5]

The study, pubished in the journal Pediatrics, found that 79% of the parents surveyed said they were familiar with growth charts, and yet only:

64% could identify a child's weight when shown a plotted point on a growth chart

68% could identify the percentile of the plotted point

23% correctly interpreted charts containing height/weight measurements in tandem

Chart and reports in GrowthXP provide comprehensive information for better conversations with parents and patients alike.

"A very important tool."

Pediatrician, University Hospital, Rouen

Comprehensive Technical Features...

CHART GROUPS

1) Individual: Length 0-2 years (WHO), Weight 0-2 years (WHO), Head circumference 0-2 years (WHO), Weight for length 0-2 years (WHO), Stature 2-20 years, Weight 2-20 years, BMI 2-20 years
2) Clinical: Length and weight 0-2 years (WHO), Head circumference and weight for length 0-2 years (WHO), Weight and Stature 2-20 years, Weight for stature, BMI 2-20 years
3) 0-36 months: Length 0-3 years, Weight 0-3 years, Head circumference 0-3 years, Weight for length 0-3 years, Length and weight 0-3 years (WIC), Head circ. and weight for length 0-3 years (WIC), Length and weight 0-3 years, Head circ. and weight for length 0-3 years
4) Measurement: Height, Weight, Head circ., Sitting height, Arm span, Foot length, Waist circ.
5) Calculated: Leg length, Height velocity, Sitting height velocity, Leg length velocity, Rel. sitting height, BMI, IOTF BMI
6) SD scores: Height SDS and BMI SDS, Height SDS and Relative Sitting Height % SDS, BMI SDS and Waist SDS, Height SDS and Height Velocity SDS
7) Lists: Visit list, Visit list (SDS or Percentile), Corrected age list (SDS or Perc), Bone age list, Predicted Adult Height list, Calculated list, Complete patient data extract list
8) Premature: 22-44 weeks, 22-52 weeks, birth summary report
9) Turner syndrome: Height and weight 0-2 years, Height and weight 2-5 years, Height and weight 2-20 years, Weight for length 0-2 years, BMI 0-18 years, Height velocity 0-18 years
10) Down syndrome: Height and weight 0-2 years, Height and weight 2-5 years, Height and weight 2-20 years, Head circ. 0-5 years
11) Achondroplasia: Length/height, weight and head circ 0-48 months, Height and weight 4-20 years, BMI and Waist circumference 0-20 years, Sitting height and height/height ratio 2-20 years, Arm span and leg length 2-20 years, Head circumference and foot length 0-20 years

CALCULATIONS

1) Relation to statistical dispersion: Percentile and Standard deviation score for every variable
2) Age: Chronological age, Gestational corrected age
3) Basic: BMI, Leg length, Relative sitting height, Weight for height %, Age for height, Body Surface Area, Arm span/Height ratio, Sitting height/Leg length ratio
4) Target height: Target height, Target height SDS and percentile, Target height range, Height SDS corrected for target height
5) Velocity: Height velocity, Sitting height velocity, Leg length velocity
6) Adult height predictions: BoneExpert, Bayley-Pinneau, TW2, TW3, including SDS and percentiles as well as confidence intervals

MEASUREMENTS/DATA SUPPORTED

Medical Record Number, First name, Surname, Birth Date, Gender, Visit Date, Height, Weight, Height measure type, Sitting height, Head circumference, Arm span, Foot length, Waist line, Pubic hair stage (1-5 according to Tanner), Breast (girls) or genital stage (boys) (1-5 according to Tanner), Testicular volume left and right (for boys only), Evaluation method (self-estimated or observed), Menarche (for girls only), Menarche date (for girls only), Bone age (methods: BoneXpert, G&P, TW2, TW2 RUS, TW3), Gestational age weeks, Gestational age additional days, Birth weight, Birth length, Birth head circumference, Mother's height, Mother's weight, Mother's head circumference, Father's height, Father's weight, Father's head circumference

CHART FEATURES

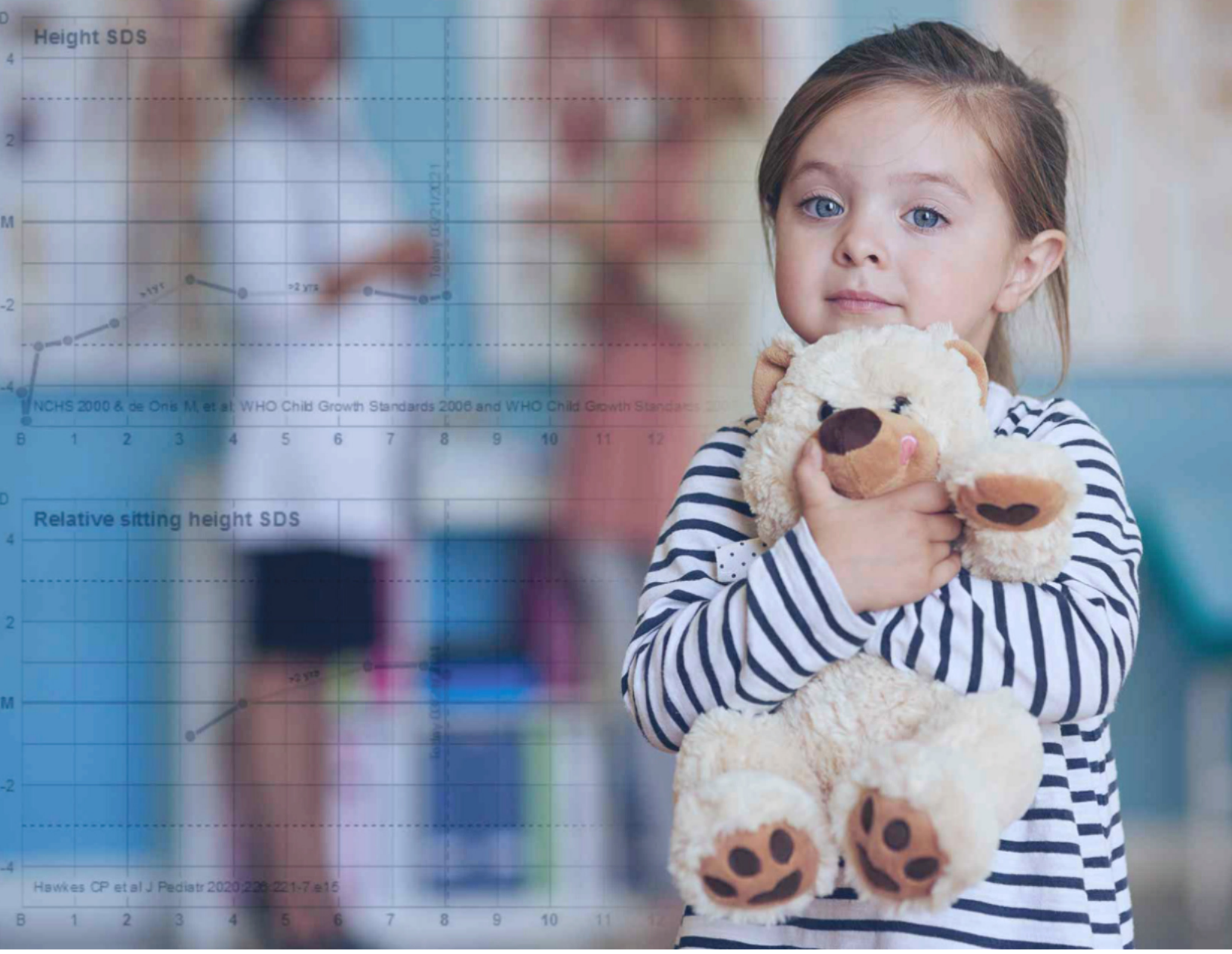
- Zoom / Detail: Page width, Page height, Free form zoom, Return to previous zoom state
- Detailed Hints/Tooltips in all charts
- Save image as: PDF, JPEG, PNG, RTF
- Save data as: JSON
- Briefcase PDF, Briefcase RTF
- All charts are printable
- Chart display settings (varies according to chart/report): Language (English, Spanish & French), Make chart anonymous, Hide patient data, Show Today line,
- Draw line between measurements, Different line between distant points, Show corrected age curve for premature children (GA <37 weeks), Show bone age, Show pubertal section, Show target height and parental heights, Show visit table, Show visits in descending order, Show Comments in visit table, Show shadow reference, Switch age range 1yr / 20 yrs, Switch reference type (percentile/SD), Use metric system, Ethnicity

TECHNICAL INTEGRATION

- Integrated with Cerner (App Gallery) and Epic (App Orchard)
- Also compatible with other FHIR-compliant EHRs
- HIPAA compliant (USA), and PIPEDA compliant (Canada), with no external data storage
- Cloud-hosted by PC PAL in USA and in Canada
- Pure HTML 5 and JavaScript application
- No use of 3rd party libraries or frameworks
- Responsive application design suitable for all devices
- Comprehensive technical support and maintenance
- Listing of references used

"A successfully simple and impressive product."

Microsoft Engineer



GrowthXP is the leading Growth Chart Module used across Maternity, Neonatology, Pediatrics, Endocrinology, Gastroenterology, Nephrology, Nutrition, and all other services requiring the most accurate monitoring tools of growth and development today.

REFERENCES

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2. Neumeyer L, Merker A, Hagenäs L. Clinical charts for surveillance of growth and body proportion development in achondroplasia and examples of their use. Am J Med Genet A. 2021 Feb;185(2):401-412. doi: 10.1002/ajmg.a.61974. Epub 2020 Nov 21. PMID: 33220165; PMCID: PMC7839678.

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4. Hawkes CP, Mostoufi-Moab S, McCormack SE, Grimberg A, Zemel BS. "Sitting Height to Standing Height Ratio Reference Charts for Children in the United States". J Pediatr. 2020 Jun 21:S0022-3476(20)30754-X. doi: 10.1016/j.jpeds.2020.06.051. PMID: 32579888.

5. Ben-Joseph EP, Dowshen SA, Izenberg N. "Do Parents Understand Growth Charts? A National, Internet Based Study" Pediatrics. 2009 Oct;124(4):1100-9. doi: 10.1542/peds.2008-0797. PMID: 19786446.

FURTHER READING

Endocrine Kids, "What Kid's Growth Charts Don't Tell You", March 2017.

Harvard Business Review, "It's Time For a New Kind of Electronic Health Record" John Glaser, June 2020

Washington Post, "Pediatric growth charts often leave parents confused and concerned" Marlene Cimons, June 2012.

Clinical growth charts for achondroplasia.
www.achondroplasia-growthcharts.com

Discover GrowthXP Yourself…

Contact us at the links below to schedule your own personally guided experience of GrowthXP to see for yourself why healthcare providers all over the world have made PC PAL and GrowthXP their choice for advanced Growth Analysis Software.

Europe: +33 953 21 44 00
USA, Canada: +1-877-469-7272

sales@GrowthXP.com

www.GrowthXP.com