Resource Section

Dental Growth and Development

Primary Dentition						
	Calcification		Eruption		Exfoliation	
	Begins at	Complete at	Maxillary	Mandibular	Maxillary	Mandibular
Central incisors	4th fetal mo	18-24 mo	6-10 mo	5-8 mo	7-8 y	6-7 y
Lateral incisors	5th fetal mo	18-24 mo	8-12 mo	7-10 mo	8-9 y	7-8 y
Canines	6th fetal mo	30-39 mo	16-20 mo	16-20 mo	11-12 y	9-11 y
First molars	5th fetal mo	24-30 mo	11-18 mo	11-18 mo	9-11 y	10-12 y
Second molars	6th fetal mo	36 mo	20-30 mo	20-30 mo	9-12 y	11-13 y

Permanent Dentition					
	Calcification	Crown (enamel)	Roots	Eruption*	
	Begins at	Complete at	Complete at	Maxillary	Mandibular
Central incisiors	3-4 mo	4-5 y	9-10 y	7-8 y (3)	6-7 y (2)
Lateral incisors	Maxilla: 10-12 mo	4-5 y	11 y	8-9 y (5)	7-8 y (4)
	Mandible: 3-4 mo	4-5 y	10 y		
Canines	4-5 mo	6-7 y	12-15 y	11-12y (11)	9-11y (6)
First premolars	18-24 mo	5-6 y	12-13 y	10-11y (7)	10-12 y (8)
Second premolars	24-30 mo	6-7 y	12-14 y	10-12 y (9)	11-13 y (10)
First molars	Birth	30-36 mo	9-10 y	5.5-7 y (1)	5.5-7 (1a)
Second molars	30-36 mo	7-8 y	14-16 y	12-14 y (12)	12-13 y (12a)
Third molars	Maxilla: 7-9 y			17-30 y (13)	17-30 y (13a)
	Mandible: 8-10 y				

*Figures in parentheses indicate order of eruption. Many otherwise normal infants do not conform strictly to the stated schedule.

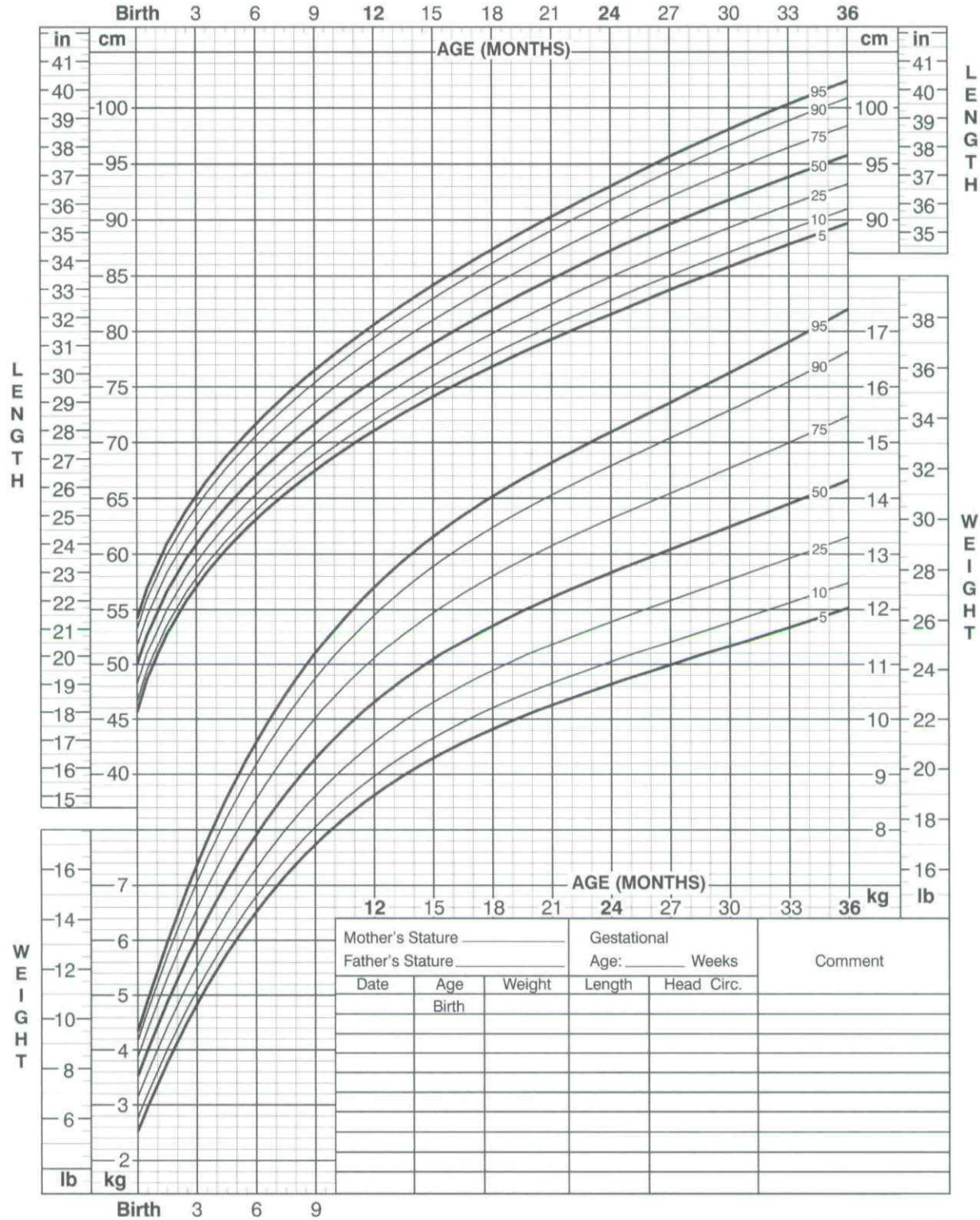
Logan WHG and Kronfeld R. Development of the human jaws and surrounding structures from birth to the age of fifteen years. *J Am Dent Assoc.* 1933;20(3):379-427.

Growth Charts

Birth to 36 months: Boys
Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 4/20/01).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
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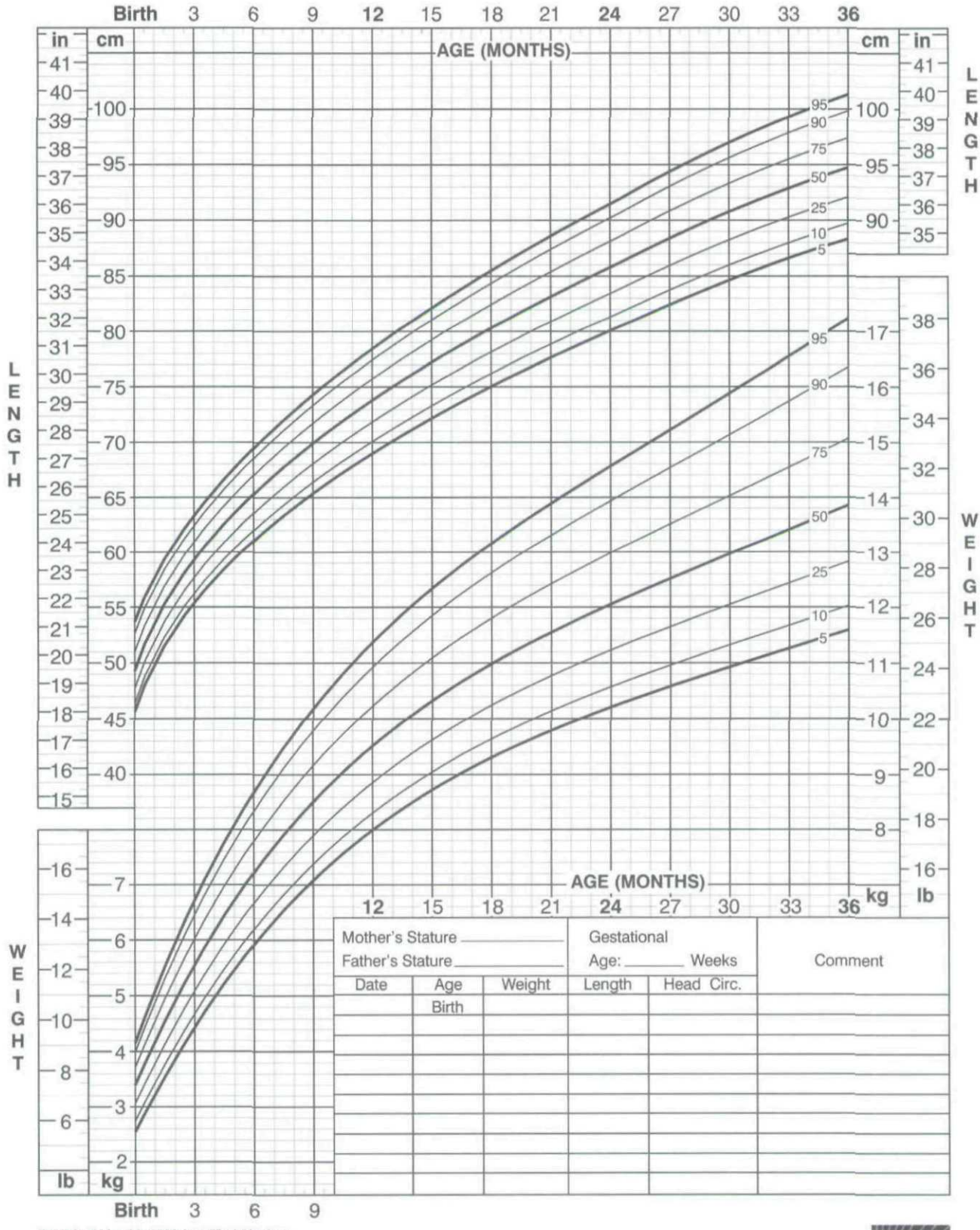
Birth to 36 months: Girls
Length-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 4/20/01).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
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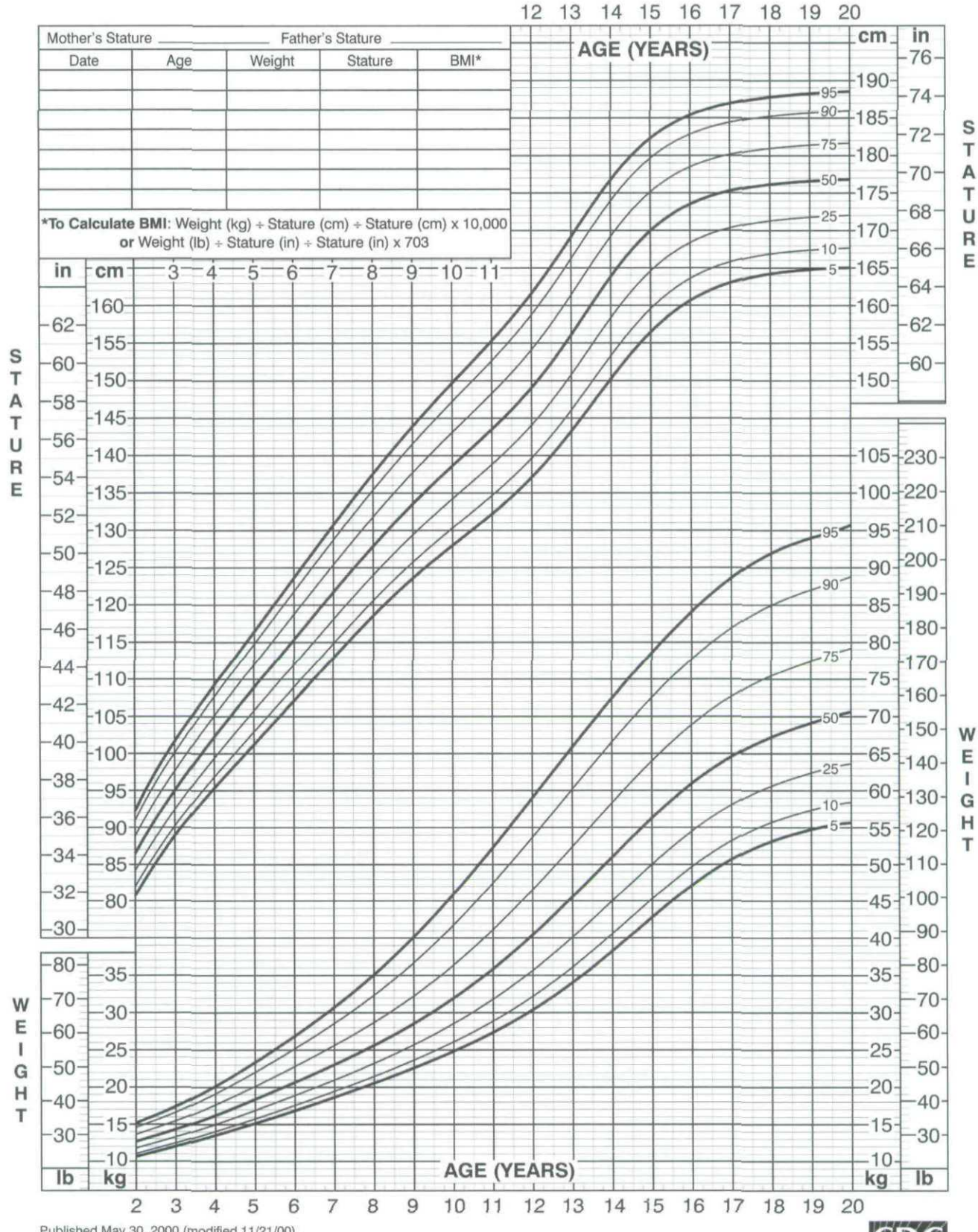
2 to 20 years: Boys
Stature-for-age and Weight-for-age percentiles

NAME _____

RECORD # _____



Published May 30, 2000 (modified 11/21/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
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2 to 20 years: Girls
Stature-for-age and Weight-for-age percentiles

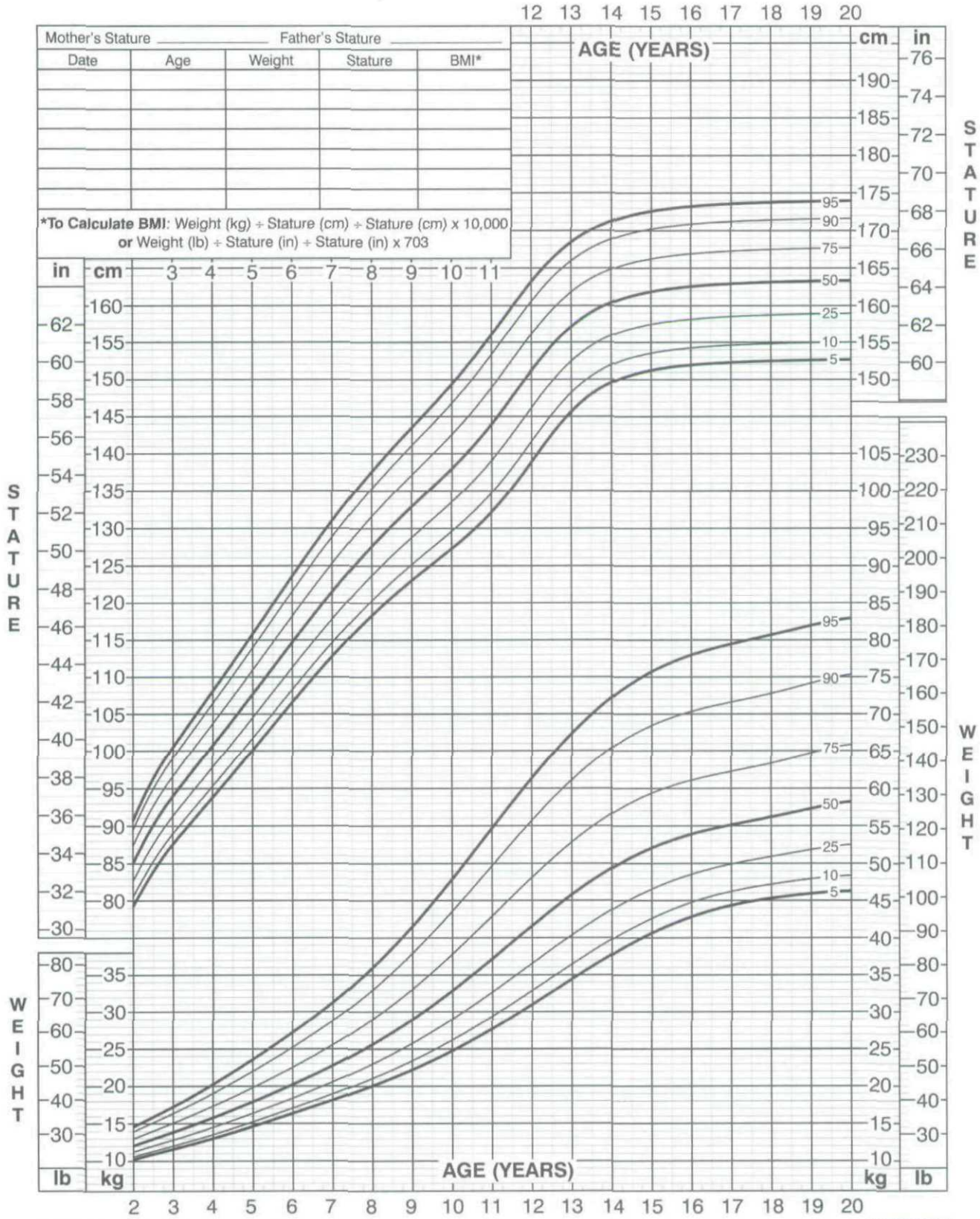
NAME _____

RECORD # _____

Mother's Stature _____ Father's Stature _____

Date	Age	Weight	Stature	BMI*

***To Calculate BMI:** Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



Published May 30, 2000 (modified 11/21/00).

SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

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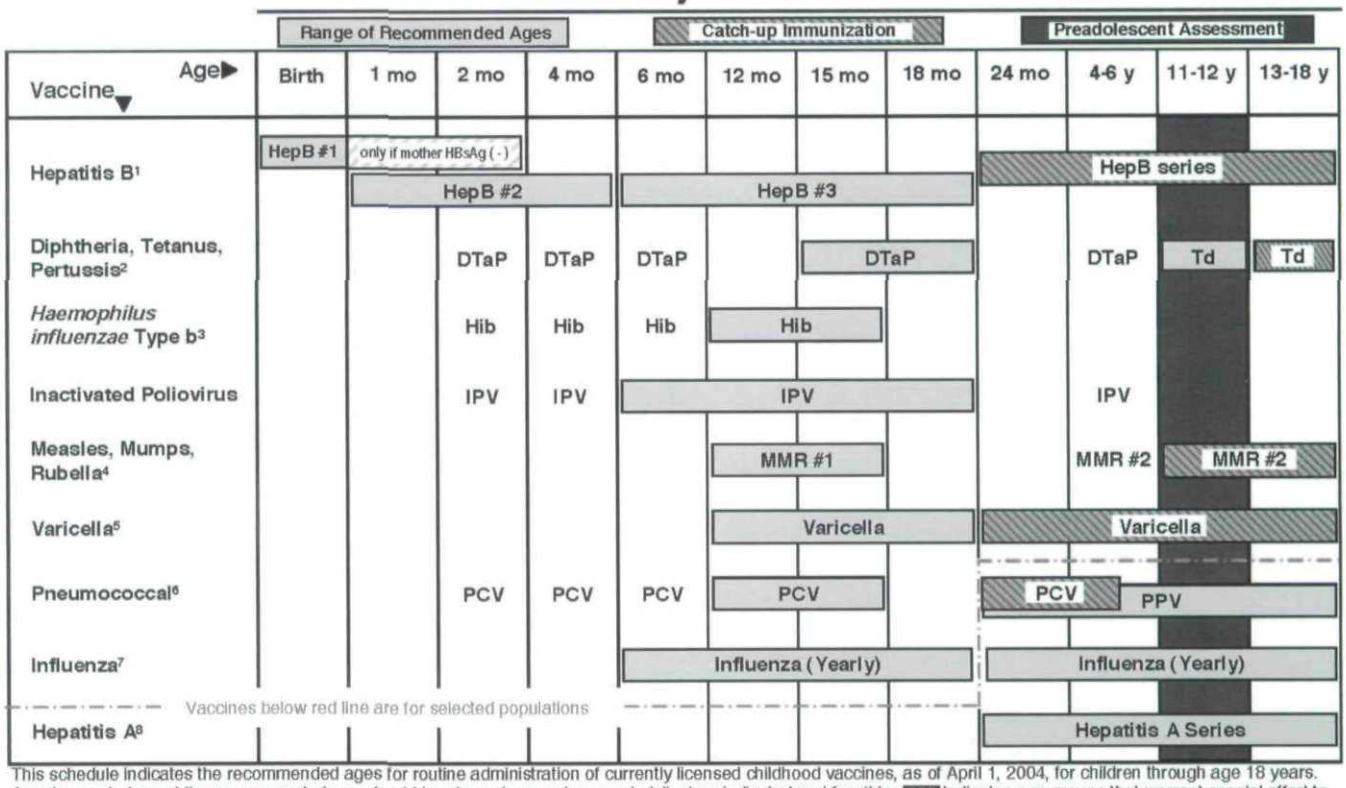
Recommended Childhood and Adolescent Immunization Schedule
United States · July–December 2004



This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of April 1, 2004, for children through age 18 years. Any dose not given at the recommended age should be given at any subsequent visit when indicated and feasible. ▨ Indicates age groups that warrant special effort to administer those vaccines not previously given. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and the vaccine's other components are not contraindicated. Providers should consult the manufacturers' package inserts for detailed recommendations. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form can be found on the Internet: www.vaers.org or by calling 800-822-7967.

1. Hepatitis B (HepB) vaccine. All infants should receive the first dose of hepatitis B vaccine soon after birth and before hospital discharge; the first dose may also be given by age 2 months if the infant's mother is hepatitis B surface antigen (HBsAg) negative. Only monovalent HepB can be used for the birth dose. Monovalent or combination vaccine containing HepB may be used to complete the series. Four doses of vaccine may be administered when a birth dose is given. The second dose should be given at least 4 weeks after the first dose, except for combination vaccines which cannot be administered before age 6 weeks. The third dose should be given at least 16 weeks after the first dose and at least 8 weeks after the second dose. The last dose in the vaccination series (third or fourth dose) should not be administered before age 24 weeks.

Infants born to HBsAg-positive mothers should receive HepB and 0.5 mL of Hepatitis B Immune Globulin (HBIG) within 12 hours of birth at separate sites. The second dose is recommended at age 1–2 months. The last dose in the immunization series should not be administered before age 24 weeks. These infants should be tested for HBsAg and antibody to HBsAg (anti-HBs) at age 9–15 months.

Infants born to mothers whose HBsAg status is unknown should receive the first dose of the HepB series within 12 hours of birth. Maternal blood should be drawn as soon as possible to determine the mother's HBsAg status; if the HBsAg test is positive, the infant should receive HBIG as soon as possible (no later than age 1 week). The second dose is recommended at age 1–2 months. The last dose in the immunization series should not be administered before age 24 weeks.

2. Diphtheria and tetanus toxoids and acellular pertussis (DTaP) vaccine. The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose and the child is unlikely to return at age 15–18 months. The final dose in the series should be given at age ≥4 years. **Tetanus and diphtheria toxoids (Td)** is recommended at age 11–12 years if at least 5 years have elapsed since the last dose of tetanus and diphtheria toxoid-containing vaccine. Subsequent routine Td boosters are recommended every 10 years.

3. *Haemophilus influenzae* type b (Hib) conjugate vaccine. Three Hib conjugate vaccines are licensed for infant use. If PRP-OMP (PedvaxHIB or ComVax [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required. DTaP/Hib combination products should not be used for primary immunization in infants at ages 2, 4 or 6 months but can be used as boosters following any Hib vaccine. The final dose in the series should be given at age ≥12 months.

4. Measles, mumps, and rubella vaccine (MMR). The second dose of MMR is recommended routinely at age 4–6 years but may be administered during any visit, provided at least 4 weeks have elapsed since the first dose and both doses are administered beginning at or after age 12 months. Those who have not previously received the second dose should complete the schedule by the visit at age 11–12 years.

5. Varicella vaccine. Varicella vaccine is recommended at any visit at or after age 12 months for susceptible children (i.e., those who lack a reliable history of chickenpox). Susceptible persons age ≥13 years should receive 2 doses, given at least 4 weeks apart.

6. Pneumococcal vaccine. The heptavalent **pneumococcal conjugate vaccine (PCV)** is recommended for all children age 2–23 months. It is also recommended for certain children age 24–59 months. The final dose in the series should be given at age >12 months. **Pneumococcal polysaccharide vaccine (PPV)** is recommended in addition to PCV for certain high-risk groups. See *MMWR* 2000;49(RR-9):1-35.

7. Influenza vaccine. Influenza vaccine is recommended annually for children aged ≥6 months with certain risk factors (including but not limited to asthma, cardiac disease, sickle cell disease, HIV, and diabetes), healthcare workers, and other persons (including household members) in close contact with persons in groups at high risk (see *MMWR* 2004;53:[RR-6]:1-40) and can be administered to all others wishing to obtain immunity. In addition, healthy children aged 6–23 months and close contacts of healthy children aged 0–23 months are recommended to receive influenza vaccine, because children in this age group are at substantially increased risk for influenza-related hospitalizations. For healthy persons aged 5–49 years, the intranasally administered live, attenuated influenza vaccine (LAIV) is an acceptable alternative to the intramuscular trivalent inactivated influenza vaccine (TIV). See *MMWR* 2004;53:[RR-6]:1-40. Children receiving TIV should be administered a dosage appropriate for their age (0.25 mL if 6–35 months or 0.5 mL if ≥3 years). Children aged ≤8 years who are receiving influenza vaccine for the first time should receive 2 doses (separated by at least 4 weeks for TIV and at least 6 weeks for LAIV).

8. Hepatitis A vaccine. Hepatitis A vaccine is recommended for children and adolescents in selected states and regions and for certain high-risk groups; consult your local public health authority. Children and adolescents in these states, regions, and high-risk groups who have not been immunized against hepatitis A can begin the hepatitis A immunization series during any visit. The 2 doses in the series should be administered at least 6 months apart. See *MMWR* 1999;48(RR-12):1-37.

For additional information about vaccines, including precautions and contraindications for immunization and vaccine shortages, please visit the National Immunization Program Web site at www.cdc.gov/nip/ or call the National Immunization Information Hotline at 800-232-2522 (English) or 800-232-0233 (Spanish).

Approved by the Advisory Committee on Immunization Practices (www.cdc.gov/nip/acip), the American Academy of Pediatrics (www.aap.org), and the American Academy of Family Physicians (www.aafp.org).

Speech and Language Milestones

Hearing and Understanding	Talking
Birth-3 Months • Startles to loud sounds. • Quiets or smiles when spoken to. • Seems to recognize your voice and quiets if crying. • Increases or decreases sucking behavior in response to sound.	**Birth-3 Months** • Makes pleasure sounds (cooing, gooing). • Cries differently for different needs. • Smiles when sees you.
4-6 Months • Moves eyes in direction of sounds. • Responds to changes in tone of your voice. • Notices toys that make sounds. • Pays attention to music.	**4-6 Months** • Babbling sounds more speech-like with many different sounds, including *p, b,* and *m.* • Vocalizes excitement and displeasure. • Makes gurgling sounds when left alone and when playing with you.
7 Months-1 Year • Enjoys games like peek-o-boo and pat-a-cake. • Turns and looks in direction of sounds. • Listens when spoken to. • Recognizes words for common items like "cup", "shoe", "juice". • Begins to respond to requests ("Come here", "Want more?").	**7 Months-1 Year** • Babbling has both long and short groups of sounds such as "tata upup bibibibi." • Uses speech or non-crying sounds to get and keep attention. • Imitates different speech sounds. • Has 1 or 2 words (bye-bye, dada, mama) although they may not be clear.
1-2 Years • Points to a few body parts when asked. • Follows simple commands and understands simple questions ("Roll the ball", "Kiss the baby", "Where's your shoe?"). • Listens to simple stories, songs, and rhymes. • Points to pictures in a book when named.	**1-2 Years** • Says more words every month. • Uses some 1-2 word questions ("Where kitty?" "Go bye-bye?" "What's that?"). • Puts 2 words together ("more cookie", "no juice", "mommy book"). • Uses many different consonant sounds of the beginning of words.
2-3 Years • Understands differences in meaning ("go-stop", "in-on", "big-little", "up-down"). • Follows two requests ("Get the book and put it on the table.").	**2-3 Years** • Has a word for almost everything. • Uses 2-3-word "sentences" to talk about and ask for things. • Speech is understood by familiar listeners most of the time. • Often asks for or directs attention to objects by naming them.
3-4 Years • Hears you when call from another room. • Hears television or radio at the same loudness level as other family members. • Understands simple, "who?" "what?" "where?" "why?" questions.	**3-4 Years** • Talks about activities at school or at friends' homes. • People outside family usually understand child's speech. • Uses a lot of sentences that have 4 or more words. • Usually talks easily without repeating syllables or words.
4-5 Years • Pays attention to a short story and answers simple questions about it. • Hears and understands most of what is said at home and in school.	**4-5 years** • Voice sounds clear like other children's. • Uses sentences that give lots of details (e.g. "I like to read my books"). • Tells stories that stick to topic. • Communicates easily with other children and adults. • Says most sounds correctly except a few like *l, s, r, v, z, ch, sh, th.* • Uses the same grammar as the rest of the family.

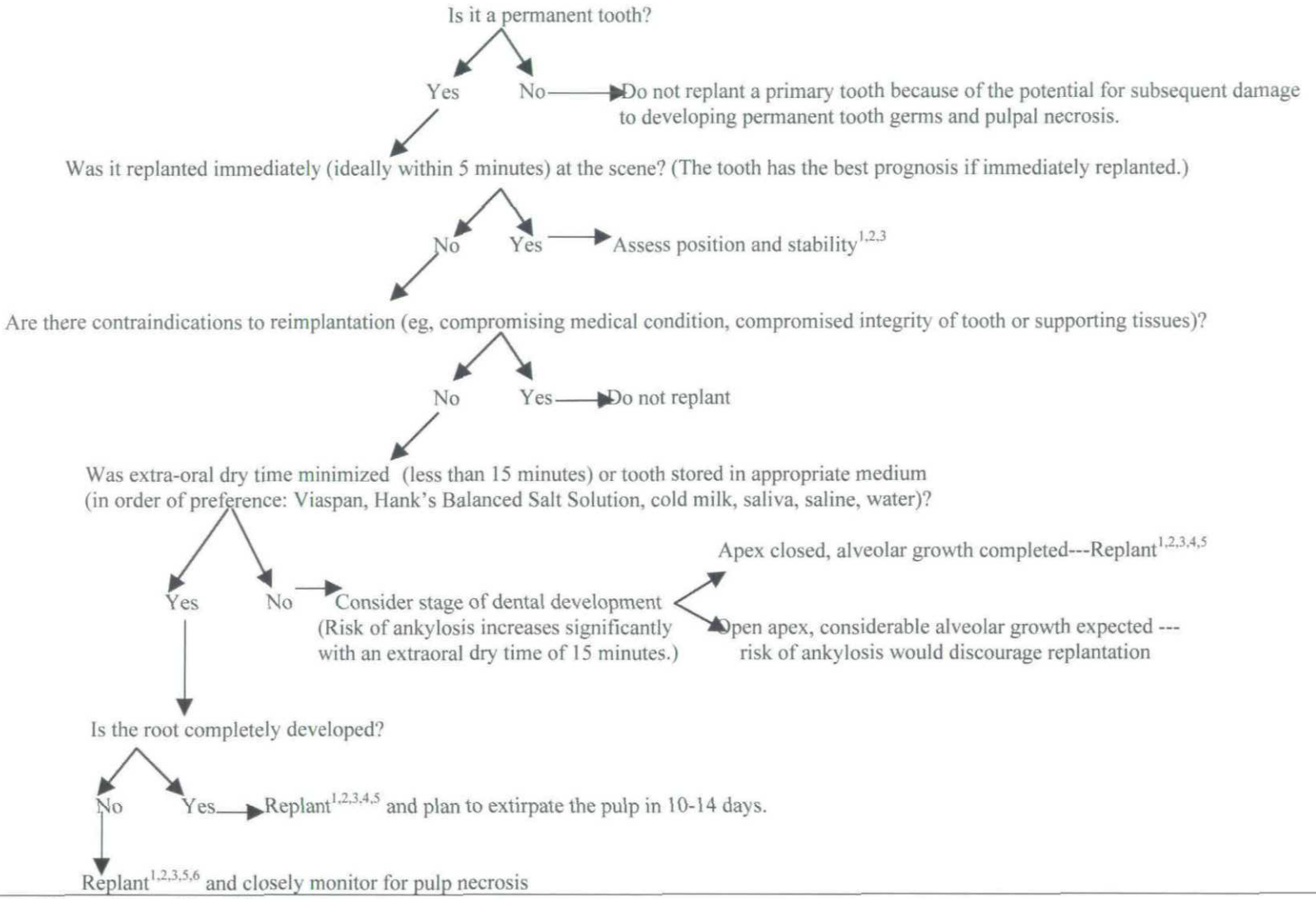
AMERICAN ACADEMY OF PEDIATRIC DENTISTRY CARIES-RISK ASSESSMENT*

RISK FACTORS TO CONSIDER (For each item below, circle the most accurate response found to the right under "Risk Indicators".)	**RISK INDICATORS**		
	HIGH	**MODERATE**	**LOW**
Part 1 - History (determined by interviewing the parent/primary caregiver)			
Child has special health care needs.	Yes		No
Child has condition that impairs salivary flow/composition.	Yes		No
Child's use of dental home	None	Irregular	Regular
Time lapsed since child's last cavity	<12 months	12 to 24 months	>24 months
Child wears braces or orthodontic/oral appliances.	Yes		No
Child's mother has active decay present.	Yes		No
Socioeconomic status of child's caregiver	Low	Mid-level	High
Frequency of exposure to between meal sugars/cariogenic foods (include ad lib use of bottle/sippy cup containing juice or carbonated beverage)	≥3	1 to 2	Mealtime only
Child's exposure to fluoride	Does not use fluoridated toothpaste; drinking water is not fluoridated; not taking fluoride supplements	Uses fluoridated toothpaste; usually does not drink fluoridated water; does not take fluoride supplements	Uses fluoridated toothpaste; drinks fluoridated water or takes fluoride supplements
Part 2 - Clinical evaluation (determined by examining the child's mouth)			
Visible plaque on anterior teeth	Present		Absent
Gingivitis		Present	Absent
Areas of demineralization (white-spot lesions)	More than 1	1	None
Enamel characteristics: hypoplasia, defects, retentive pits/fissures	Present		Absent
Part 3 - Supplemental assessment (Optional)			
Radiographic enamel caries	Present		Absent
Levels of mutans streptococci	High	Moderate	Low

*Based on AAPD Policy on Use of a Caries-risk Assessment Tool (CAT) for Infants, Children, and Adolescents. *Pediatr Dent. 2004:26(7):25-27.*

Each child's overall assessed risk for developing decay is based on the highest level of risk indicator circled above (ie, a single risk indicator in any area of the "high risk" category classifies a child as being "high risk").

DECISION TREE FOR AN AVULSED TOOTH



1. Obtain a radiograph to verify position
2. Flexible splinting for 7 days is indicated. Additional splinting may be required with concomitant bone fracture.
3. Consideration should be given to antibiotic therapy and tetanus immunization.
4. Use of a preconditioning protocol may help delay/prevent the expected replacement resorption process.
5. Holding the tooth by the crown, irrigate with sterile saline and gently replant with digital pressure.
6. Use of a preconditioning protocol may enhance pulp revascularization.

Common Laboratory Values

CBC

Test	Normal value	Function	Significance
Hemoglobin	12-18 g/100 mL	Measures oxygen carrying capacity of blood	Low: hemorrhage, anemia High: polycythemia
Hematocrit	35%-50%	Measures relative volume of cells and plasma in blood	Low: hemorrhage, anemia High: polycythemia, dehydration
Red blood cell	4-6 million/mm^3	Measures oxygen-carrying capacity of blood	Low: hemorrhage, anemia High: polycythemia, heart disease, pulmonary disease
White blood cell Infant 4-7 y 8-18 y	 8,000-15,000/mm^3 6,000-15,000/mm^3 4,500-13,500/mm^3	Measures host defense against inflammatory agents	Low: aplastic anemia, drug toxicity, specific infections High: inflammation, trauma, toxicity, leukemia

Differential Count

Test	Normal value	Significance
Neutrophils	54%-62%	Increase in bacterial infections, hemorrhage, diabetic acidosis
Lymphocytes	25%-30%	Viral and bacterial infection, acute and chronic lymphocytic leukemia, antigen reaction
Eosinophils	1%-3%	Increase in parasitic and allergic conditions, blood dyscrasias, pernicious anemia
Basophils	1%	Increase in types of blood dyscrasias
Monocytes	0%-9%	Hodgkin's disease, lipid storage disease, recovery from severe infections, monocytic leukemia

Absolute Neutrophil Count (ANC)

Calculation	Normal value	Significance
$\frac{(\%\ \text{Polymorphonuclear Leukocytes} + \%\ \text{Bands}) \times \text{Total White Cell Count}}{100}$	>1500	<1000 Patient at increased risk for infection; defer elective dental care

Bleeding Screen

Test	Normal value	Function	Significance
Prothrombin time	1-18 sec	Measures extrinsic clotting factors	Prolonged in liver disease, impaired Vitamin K production, surgical trauma with blood loss
Partial thromboplastin time	By laboratory control	Measures intrinsic clotting of blood, congenital clotting disorders	Prolonged in hemophilia A,B, and C and Von Willebrand's disease
Platelets	140,000-340,000/mL	Measures clotting potential	Increase in polycythemia, leukemia, severe hemorrhage; decrease in thrombocytopenia purpura
Bleeding time	1-6 min	Measures quality of platelets	Prolonged in thrombocytopenia

Urinalysis

Test	Normal value	Function	Significance
Volume	1,000-2,000 mL/d		Increase in diabetes mellitus, chronic nephritis
Specific gravity	1.015-1.025	Measures the degree of tubular reabsorption and dehydration	Increase in diabetes mellitus; decrease in acute nephritis, diabetes insipidus, aldosteronism
pH	6-8	Reflects acidosis and alkalosis	Acidic: diabetes, acidosis, prolonged fever Alkaline: urinary tract infection, alkalosis
Casts	1-2 per high power field		Renal tubule degeneration occuring in cardiac failure, pregnancy, and hemoglobinuric-nephrosis

Electrolytes

Test	Normal value	Function	Significance
Sodium (Na)	135-147 mEq	Reflects acid-base balance	Increase in Cushing's syndrome
Potassium (K)	3.5-5 mEq		Increase in tissue breakdown
Bicarbonate (HCO_3)	24-30 mEq		
Chloride (Cl)	100-106 mEq		Increase in renal disease and hypertension

Common Pediatric Medications

Antibiotics*

Penicillin
How supplied: 125 or 250 mg/5mL or 250 mg tablets
Dosage: Children<12=25-50 mg/kg/d in 3-4 divided doses; max=3 g/d
Children>12 and adults=1-2 g/d in 3-4 divided doses
Sig: Take _____ tsp/tablet q6h for 10 d

Amoxicillin
How supplied: 125 or 250 mg/5mL or 125 or 250 chewable tablets
Dosage: Children<12=20-40 mg/kg/d in 3 divided doses
Children>12 and adult=250-500 mg 3 times/d; max=2-3 g/d
Sig: Take _____tsp/tablet q8h for 10 d

Erythromycin ethylsuccinate
How supplied: 200 mg/5mL or 200 mg chewable tablets
Dosage: Children<12=30-50 mg/kg/d in 4 divided doses; max=2 g/d
Children>12 and adults=250-1,000 mg/4 times/d; max=4 g/d
Sig: Take _____tsp/tablet q6h for 10 d

Clindamycin
How supplied: 75 mg/5 mL or 150, 300, 450, 600, 750, 900 mg tablets
Dosage: Children<12=10-25 mg/kg/d in 3 divided doses
Children>12 and adults=600-1,800 mg/d in 3 divided doses; max=4-8 g/d
Sig: Take _____tsp/tablet q8h for 10 d

Cephalexin
How supplied: 125 or 250 mg/5 mL
Dosage: 25-50 mg/kg/d in 4 divided doses; max=4 g/d
Sig: Take ____tsp q6h for 10 d

Augmentin
How supplied: 125 or 250/5 mL or 125 or 250 mg chewable tablets
Doses: 20-40 mg/kg/d in 3 divided doses; max=2 g/d
Sig: Take _____tsp/tablet q8h for 10 d

Analgesics*

Ibuprofen
How supplied: 20 mg/mL (120 mL) or 200, 400 mg tablets
Dosage: Children <12=20 mg/kg/d in 3 divided doses
Children>12 and adults=400-800 mg/d in 3 divided doses; max=1.2 g/d
Sig: Take _____tsp/tablets q8h prn pain

Acetaminophen
How supplied: drops=100 mg/mL (15 mL) or 80 mg/0.8 mL (15 mL); elixir=32 mg/mL (120 mL)
Tablets=325 mg or 80 mg chewable
Dosage: Children<12=65 mg/kg/d in 6 divided doses
Children>12 and adults=325-650 mg/d in 6 divided doses or 1,000 mg/d in 3 or 4 divided doses; max=4 g/d
Sig: Take _____tsp/drops/tablets q4h prn pain

Acetaminophen with codeine
How supplied: elixir=120 mg acetaminophen and 12 mg codeine/5 mL or No. 2=300 mg acetaminophen and 15 mg codeine; No. 3=300 mg acetaminophen and 30 mg codeine; No. 4=300 mg acetaminophen and 60 mg codeine
Dosage: Children 3-6 y=5 mL 4 times/day
Children 7- 12=10 mL 4 times/d
Adults=15 mL or 1 tablet No. 2 or No. 3 4 times/day
Sig: Take _____tsp/tablets q6h prn pain

Local Anesthesia†

	Dose mg/kg	Dose mg/lb	Maximum dose mg
Lidocaine	4.4	2.0	300
Mepivacaine	4.4	2.0	300
Articaine	7.0	3.2	500
Prilocaine	6.0	2.7	400
Bupivacaine	1.3	0.6	90

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†Reprinted from Malamed, SF: Handbook of local anesthesia. 5th edition. © 2004 Mosby, Inc. Page 58, with permission from Elsevier.

Management of Medical Emergencies

For all emergencies

1. Discontinue dental treatment
2. Call for assistance/someone to bring oxygen and emergency kit
3. Position patient: ensure open and unobstructed airway
4. Monitor vital signs
5. Be prepared to support respiration, support circulation, call for additional help

Condition	Signs and symptoms	Treatment	Drug dosage	Drug delivery
Allergic reaction (mild or delayed)	Hives, itching, edema, erythema of skin, mucosa, conjunctiva	1. Discontinue all sources of allergy-causing substances 2. Administer diphenhydramine	Diphenhydramine 1 mg/kg Child: 10-25 mg qid Adult: 25-50 mg qid	Oral
Allergic reaction (sudden onset): anaphylaxis	Urticaria – itching, flushing, hives; rhinitis; wheezing/difficulty breathing; bronchospasm; laryngeal edema; weak pulse; marked fall in blood pressure; loss of consciousness	This is a true, life-threatening emergency 1. Call for medical help 2. Administer epinephrine 3. Administer oxygen 4. Monitor vital signs	Epinephrine 1:1000 0.01 mg/kg every 5 min until recovery or until help arrives	IM or SubQ
Acute asthmatic attack	Shortness of breath, wheezing, coughing, tightness in chest, cyanosis, tachycardia	1. Sit patient upright or in a comfortable position 2. Administer oxygen 3. Administer bronchodilator 4. If bronchodilator is ineffective, administer epinephrine	1. Try patient's inhaler or one from emergency kit 2. Epinephrine 1:1000 0.01 mg/kg every 15 min as needed	Inhale IM or SubQ
Anesthetic toxicity	Light-headedness, changes in vision and/or speech, changes in mental status, confusion, agitation, tinnitis, tremor, seizure, tachypnea, bradycardia, unconsciousness, cardiac arrest	1. Assess and support airway, breathing, and circulation 2. Administer oxygen 3. Monitor vital signs 4. Transport to emergency center as indicated	Supplemental oxygen	Mask
Anesthetic reaction: vasoconstrictor	Anxiety, tachycardia/palpitations, restlessness, headache, tachypnea, chest pain, cardiac arrest	1. Reassure patient 2. Assess and support airway, breathing, and circulation 3. Administer oxygen 4. Monitor vital signs 5. Transport to emergency center as indicated	Supplemental oxygen	Mask
Overdose: benzodiazepine	Somnolence, confusion, diminished reflexes, respiratory depression, apnea, respiratory arrest, cardiac arrest	1. Assess and support airway, breathing, and circulation 2. Administer oxygen 3. Monitor vital signs 4. Establish IV access and reverse with flumazenil 5. Monitor recovery	Flumazenil 0.01 mg/kg (not to exceed a total of 1 mg) at a rate not to exceed 0.2 mg/min	IV
Overdose: narcotic	Decreased responsiveness, respiratory depression, respiratory arrest, cardiac arrest	1. Assess and support airway, breathing, and circulation 2. Administer oxygen 3. Monitor vital signs 4. Reverse with naloxone 5. Monitor recovery	Naloxone 0.01 mg/kg (may repeat after 2-3 min)	IV, IM, or SubQ
Seizure	Warning aura; disorientation, blinking, or blank stare; uncontrolled muscle movements; muscle rigidity; unconsciousness; posticta phase: sleepiness; confusion; amnesia; slow recovery	1. Recline and position to prevent injury 2. Ensure open airway and adequate ventilation 3. Monitor vital signs 4. If status is epilepticus, give diazepam	Diazepam Child up to 5 y: 0.2-0.5 mg slowly every 2-5 min with maximum=5 mg Child 5 y and up: 1 mg every 2-5 min with maximum=10 mg	IV
Syncope (fainting)	Feeling of warmth, skin pale and moist, pulse rapid initially then gets slow and weak, dizziness, hypotension, cold extremities, unconsciouness	1. Recline, feet up 2. Loosen clothing that may be binding 3. Ammonia inhaler 4. Administer oxygen 5. Cold towel on back of neck 6. Monitor recovery	Ammonia in vials	Inhale

Cardiopulmonary Resuscitation: Comparison of Age Groups

CPR/Rescue Breathing	Adult and Older Child	Child (≈1-8 y old)	Infant (<1 y old)	Newly Born
Establish unresponsiveness, activate EMS				
Open airway (Head tilt–chin lift or jaw thrust	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)	Head tilt–chin lift (If trauma is present, use jaw thrust)
Check for breathing: (Look, listen, feel) If victim is breathing: place in recovery position If victim is not breathing: give 2 effective slow breaths				
Initial	2 effective breaths at 2 sec/breath (unless oxygen available)	2 effective breaths at 1 to 1½ sec/breath	2 effective breaths at 1 to 1½ sec/breath	2 effective breaths at ≈1 sec/breath
Subsequent	12 breaths/min (approximate)	20 breaths/min (approximate)	20 breaths/min (approximate)	30 to 60 breaths/min (approximate)
Foreign-body airway obstruction	Abdominal thrusts	Abdominal thrusts	Back blows and chest thrusts (no abdominal thrusts)	Back blows and chest thrusts (no abdominal thrusts)
Signs of circulation: Check for breathing, coughing, movement, or pulse If signs of circulation are present: provide airway and breathing support If signs of circulation are absent: begin chest compressions interposed with breaths	Pulse check (healthcare providers)* Carotid	(Healthcare providers)* Carotid	(Healthcare providers)* Brachial	(Healthcare providers)* Umbilical
Compression landmarks	Lower half of sternum	Lower half of sternum	Lower half of sternum (1 finger's width below intermammary line)	Lower half of sternum (1 finger's width below intermammary line)
Compression method	Heel of one hand, other hand on top	Heel of one hand	2 fingers or 2 thumb–encircling hands for 2-rescuer trained providers	2 fingers or 2 thumb–encircling hands for 2-rescuer trained providers
Compression depth	≈1½ to 2 in (4 to 5 cm)	≈⅓ to ½ the depth of the chest	≈⅓ to ½ the depth of the chest	≈⅓ the depth of the chest for newly born
Compression rate	≈100/min	≈100/min	≥100/min	≈120 events/min (90 compressions/ 30 breaths)
Compression-ventilation ratio	15:2 (1 or 2 rescuers, unprotected airway) 12 to 15 breaths/min asynchronous with compressions (2 rescuers, protected airway)	5:1 (1 or 2 rescuers)	5:1 (1 or 2 rescuers)	3:1 (1 or 2 rescuers)

*Pulse check is performed as one of the signs of circulation assessed by healthcare providers. Lay rescuers check for other signs of circulation (breathing, coughing, movement).