The Well Child Exam

Keeping Kids at the Top of Their Game!

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I hope you leave with:

• A Vision of the value of the Well Child Exam (WCE)
• Discovery of some of the many conditions the WCE can catch early
• A desire to encourage families to follow the American Academy of Pediatricians (AAP) guidelines for WCEs
1 month old: “Claw Hand”
Klumpke’s Palsy

- Injury to C8 and T1 nerve roots
  - Often due to traction on an abducted arm
- Paralysis of forearm and hand
  - Presents as a “claw” hand
- Most symptoms resolve with PT
- Some treated surgically
- Few result in permanent impairment
- Can catch and monitor at WCE
The Well Child Exam – The Why

1. Maximize child’s potential
   - Monitor normal and abnormal development
   - The Individuals with Disabilities Education Act (IDEA) mandates early identification and intervention for developmental disabilities

2. Early disease detection

3. Promote disease prevention

4. Provide “Anticipatory Guidance”

- Estimated 16% of children have developmental and/or behavioral disorders
- 70% of these children not identified until after entering school
Well Child Exam – The What

- History
- Surveillance
- Physical examination
- Screening
- Immunizations
- Anticipatory guidance
Well Child Exam – The When

The American Academy of Pediatrics (AAP) Recommends:

**Routine Surveillance at:**
- Prenatal
- Newborn
- 3 to 5 days
- By one month (2 weeks)
- 2 months
- 4 months
- 6 months
- 9 months
- 12 months
- 15 months
- 18 months
- 24 months
- 30 months
- Then yearly (3, 4, 5, etc)

**Formal Screening tools:**
- When surveillance indicates risk
- Developmental Screening tool at:
  - 9 month WCE
  - 18 month WCE
  - 30 month WCE (or 24 month)

**Other tools:**
- Completed at specific ages:
  - Hearing – Newborn and 4 years
  - Lead – 12 months
  - Cholesterol – 9-11 and 17 to 21 years
  - Tobacco/Drug/Alcohol – 11 – 21 years
  - Depression – 12 to 21 years
### Recommendations for Preventive Pediatric Health Care

**Bright Futures/American Academy of Pediatrics**

These recommendations represent a consensus by the American Academy of Pediatrics (AAP) and Bright Futures. The AAP continues to emphasize the great importance of continuity of care in comprehensive health supervision that is consistent with the need to avoid fragmentation of care.


The recommendations in this statement do not indicate an exclusive course of treatment or standard of medical care. Variations, taking into account individual circumstances, may be appropriate.

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####表格内容

| Age Range | Health 
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<td>19-21 Years</td>
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#### Key
- a = to be performed
- b = risk assessment to be performed with appropriate action to follow, if positive
- c = range during which a service may be provided

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[Link to the original document](https://www.aap.org/en-us/documents/periodicity_schedule.pdf)
Meet Miguel – Newborn WCE
• The Newborn Visit

• AAP Recommends all babies have:
  • Comprehensive physical exam within 12 to 18 hours of delivery
  • Primary care provider (PCP) follow-up within 3 to 5 days of life and 48 to 72 hours from hospital discharge

• Jaundice one of many things looked for at initial WCEs
  • Elevated bilirubin (Hyperbilirubinemia) causes yellow discoloration of skin and/or eyes
  • Total Bilirubin (TB) Screening:
    • Completed in hospital soon after birth
    • May be repeated by PCP at the 3 to 5 day visit
Newborn Jaundice - Dangers

Kernicterus:
- Severely high newborn bilirubin: TB >25 mg/dL
  - Risk for bilirubin-induced neurologic dysfunction (BIND)
- Bilirubin crosses blood-brain barrier and binds to brain tissue
  - Kernicterus is the chronic and permanent result of BIND
    - Cerebral palsy, hearing loss, gaze abnormality
Hyperbilirubinemia Treatment

• **Phototherapy – The Blue Light**
  • Most common intervention to treat & prevent severe hyperbilirubinemia
  • Infant’s skin exposed to blue light
    • Blue light breaks down bilirubin so easier to eliminate in stool and urine
  • Done inpatient or at home for healthy term infants (>38 weeks GA)
  • In intermediate risk infants, phototherapy can be achieved by placing baby in indirect (filtered) sunlight 15 minutes 3 times daily

• **Exchange transfusion**
  • Emergency procedure to reduce bilirubin
  • Used if severe hyperbilirubinemia, high risk factors, or poor response to phototherapy

Bilirubin risk calculator: [http://biltool.org/](http://biltool.org/)
Hyperbilirubinemia Prevention

- Keep Feeding!
- Breast milk preferred, formula also good
  - Promotes elimination of bilirubin through stool and urine
- Adequate feeding:
  - Infant eating every 2 to 3 hours
  - Infant having at least six wet diapers per day
  - Color of stool should change from dark green to yellow
  - Infant should seem satisfied after feeding
Miguel at 2 Weeks
2 Week Old WCE – The PKU Test

• Checking for “Inborn errors of metabolism”
  • PKU (Phenylketonuria) is one of many
    ☐ Deficiency of enzyme phenylalanine hydroxylase
    ☐ Results in accumulation of phenylalanine and intellectual disability

• If not caught early can lead to irreversible organ injury or death

• If diagnosed and corrected before organ/brain damage child may have normal life

• All 50 states have mandatory newborn screening
Washington State Newborn Screening

Disorders Detected by Newborn Blood Spot Screening

The Washington State Newborn Screening Program tests all infants born in the state for a set of rare but serious health disorders that can be treated if caught early in life. Washington State screens for 28 disorders.

- **Galactosemia**
  1 in 40,000 births
  Babies with galactosemia cannot digest galactose, a sugar present in milk. When babies drink milk (including breast milk), galactose builds up in the body and can cause blindness, mental disability, or death. A lifelong diet without milk products can prevent these complications.

- **Congenital Adrenal Hyperplasia**
  1 in 16,000 births
  Babies with congenital adrenal hyperplasia have adrenal glands that cannot make enough of the hormones needed for healthy body function. These infants can have life-threatening episodes of dehydration and coma. Baby girls may have abnormal genitalia. Early treatment to replace the needed hormones can restore healthy body function.

- **Fatty Acid Oxidation Disorders (5)**
  1 in 13,000 births
  Babies with fatty acid oxidation disorders cannot use fats in the body for energy. If these babies do not eat often, severe damage to the heart, liver and other organs can occur. If untreated, this will result in serious health problems and sometimes death. A special lifelong diet, eating frequently, and medications can help prevent these problems.

- **Congenital Hypothyroidism**
  1 in 1,600 births
  Babies with congenital hypothyroidism do not produce enough thyroid hormone to grow and develop normally. Early treatment with thyroid medication can prevent developmental disability and ensure normal growth and development.

- **Severe Combined Immunodeficiency**
  1 in 45,000 births
  Babies with severe combined immunodeficiency are born without a working immune system. They cannot fight germs that cause disease and even the most common infections can be life-threatening. A bone-marrow transplant early in life cures the baby by giving them a working immune system to prevent and fight infections.

- **Cystic Fibrosis**
  1 in 5,000 births
  Babies with cystic fibrosis develop poor lung function and struggle with malnutrition. This leads to serious health problems and a shortened lifespan. Early treatment can improve growth and development, and decrease the risk of infections and other complications.

- **Sickle Cell & Hemoglobinopathies**
  1 in 10,000 births
  Babies with sickle cell disease or other hemoglobinopathies have abnormal red blood cells that are unable to carry oxygen efficiently throughout the body. These disorders can cause frequent infection, severe pain, anemia and other complications. Early treatment and proper lifelong management can prevent serious health problems. Note: Some babies have a hemoglobin trait; this is not a disease and will not affect their health.

- **Biotinidase Deficiency**
  1 in 60,000 births
  Babies with biotinidase deficiency cannot efficiently use a vitamin called biotin. If untreated, this can cause rashes, hearing loss, seizures and developmental delay. Lifelong treatment with biotin supplements can prevent these problems.

- **Organic Acid Disorders (9)**
  1 in 25,000 births
  Babies with organic acid disorders cannot digest certain parts of proteins found in food. If untreated, harmful substances build up in their blood and urine, which can have serious effects on their health, growth, and learning and can result in death. This can be prevented by early treatment with a special lifelong diet, close monitoring, and medications.

- **Amino Acid Disorders (6)**
  1 in 10,000 births
  Babies with amino acid disorders cannot process foods containing protein. If untreated, amino acids (the building blocks of protein) and other toxic substances build up in the body and have serious effects on health, growth and learning and can result in death. A special lifelong diet and supplements can help prevent these problems. An example of an amino acid disorder is phenylketonuria (PKU).
Miguel – 2 Months Old
2 Month Old WCE – Safe Sleep

• Sudden Infant Death Syndrome (SIDS)
  • Definition: A sudden unexpected death of an infant before age 1 that occurs in their sleep for an unknown reason
  • Sleeping on back reduces chances of SIDS
    • 1.5 SIDS deaths per 1,000 live births in 1980
    • 0.5 SIDS deaths per 1,000 live births in 2010
  • Side sleeping unsafe – 5x greater risk compared to back sleeping
Safe vs Unsafe
Miguel’s now 4 Months old

• This is what you see:
Miguel’s 4 Month Old WCE –

• AAP recommends screening for Developmental Dysplasia of the Hip (DDH)
  • Newborn, 2 wks, 2 mos, 4 mos, 6 mos, 9 mos and 1 yr of age

• DDH - Spectrum of conditions involving Abnormal relationship b/t the femoral head and acetabulum
  • Hip instability found in 1/1000 live births
Developmental Dysplasia of the Hip (DDH)

- Symptoms
  - Newborns will be asymptomatic
- What to look for
  - How infant holds the hips
    - Skin folds asymmetric
    - Hip abduction asymmetric
  - Positive Galleazzi sign
    - Shortening of one thigh
  - Provoking maneuvers
    - Barlow
    - Ortolani
DDH

• Treatment
  • Brace
    • < 10 mos. of age = Pavlik harness
    • > 10 mos. of age = Hip abduction brace

• If not diagnosed before 2 years of age often require surgical treatment
Miguel’s 6 months old
Miguel does look thinner

- Ht: 24.5 inches
- Wt: 13 lbs

- Head circumference: 43 cm
Failure to thrive

• Usually under 3 years of age

• Growth Chart Evidence:
  • Weight below 2nd percentile
  • Weight for height < 2nd percentile
    • Best identifier for under nutrition

• Treatment:
  • Breast feeding every 2 to 3 hours
    • High calorie formulas: Neosure
  • Older child:
    • 5 sit-down meals/day, cook foods in oil/butter
    • Pediasure
  • Consult a dietician
    • Calculate catch up calories
Miguel is 9 months old
Developmental Milestones

- Generalized rules for neurodevelopmental maturation
- Used to form an anticipated developmental trajectory

**Five main domains**
1. Gross Motor
2. Visual-motor/Fine Motor
3. Language/Communication
4. Social-adaptive/Personal Social
5. Cognitive/Problem solving
WCE Pop Quiz – Gross Motor

2 Months
- A: Sits unsupported, transfers objects

4 Months
- B: Holds head midline, smiles socially

6 Months
- C: Raises body using arms, Laughs

9 Months
- D: Crawls, throws object
## Miguel’s 9 Month Old ASQ-3

### Ages and Stages Questionnaire (ASQ-3), birth to 5

#### FINE MOTOR

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>Sometimes</th>
<th>Not Yet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does your baby pick up a small toy with only one hand?</td>
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<tr>
<td>2. Does your baby <em>successfully</em> pick up a small cube of bread by using her thumb and all of her fingers in a raking motion? (If she already picks up a small cube of bread, mark “yes” for this item.)</td>
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<tr>
<td>3. Does your baby pick up a small toy with the <em>tips</em> of his thumb and fingers? (You should see a space between the toy and his palm.)</td>
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<td>4. After one or two tries, does your baby pick up a piece of string with her first finger and thumb? (The string may be attached to a toy.)</td>
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<tr>
<td>5. Does your baby pick up a small cube of bread with the <em>tips</em> of his thumb and a finger? (He may rest his arm or hand on the table while doing it.)</td>
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<tr>
<td>6. Does your baby put a small toy down, without dropping it, and then take her hand off the toy?</td>
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**Fine Motor Total:** 35

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**ASQ-3:** 30 questions divided into 5 areas of development

1- Communication
2- Gross Motor
3- Fine Motor
4- Problem Solving
5- Personal-Social
ASQ-3 Scoring

Scoring
- "Yes" = 10
- "Sometimes" = 5
- "Not yet" = 0

<table>
<thead>
<tr>
<th>Area</th>
<th>Cutoff</th>
<th>Total Score</th>
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<tr>
<td>Communication</td>
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<tr>
<td>Gross Motor</td>
<td>17.82</td>
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<tr>
<td>Fine Motor</td>
<td>31.32</td>
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<tr>
<td>Problem Solving</td>
<td>28.72</td>
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<tr>
<td>Personal-Social</td>
<td>18.91</td>
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1. SCORE AND TRANSFER TOTALS TO CHART BELOW: See ASQ-3 User's Guide for details, including how to adjust scores if item responses are missing. Score each item (YES = 10, SOMETIMES = 5, NOT YET = 0). Add item scores, and record each area total. In the chart below, transfer the total scores, and fill in the circles corresponding with the total scores.


3. ASQ SCORE INTERPRETATION AND RECOMMENDATION FOR FOLLOW-UP: You must consider total area scores, overall responses, and other considerations, such as opportunities to practice skills, to determine appropriate follow-up.

4. FOLLOW-UP ACTION TAKEN: Check all that apply.
   - Provide activities and rescreen in ___ months.
   - Share results with primary health care provider.
   - Refer for (circle all that apply) hearing, vision, and/or behavioral screening.
   - Refer to primary health care provider or other community agency (specify reason):
   - Refer to early intervention/early childhood special education.
   - No further action taken at this time
   - Other (specify): ___

5. OPTIONAL: Transfer item responses (Y = YES, S = SOMETIMES, N = NOT YET, X = response missing).

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<thead>
<tr>
<th>Area</th>
<th>1</th>
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Miguel at 12 months of age
WCE: 12 month old Miguel
Hemoglobin or Hematocrit

• Regular screening for anemia is done at 12 months
  • Can be done before or after based on risk assessment

Hematocrit Normal Levels:

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<th>Age</th>
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<tr>
<td>1 year to 6 years</td>
<td>30% to 40%</td>
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Miguel’s Hematocrit: 28%
Miguel 12 month old WCE

Iron deficiency anemia treatment:
• Supplemental Iron:
  • Fer-in-Sol Drops 75mg (15mg Fe)/0.6ml
    • 3 mg/kg, usually 1 dropper once daily

• Recheck @ 15month old WCE
  • Iron stores generally replenished with 3 months of therapy
Miguel is 15 Months Old
Genu Varum (bowed legs)

- Majority physiologic and considered a variation of normal in toddlers
- Hallmark is symmetrical and painless bowing
- Almost always corrects spontaneously
  - Typically resolves by age 3
- Treatment – Observation
  - Parental education, correction with time

- Minority are pathologic - When to suspect pathologic cause?
  - Unilateral
  - Pain
  - Previous trauma/fracture
Miguel is 18 months old:

• What should his language level be at 18 months?
  A- Says only Mama and Dada
  B- Can use two word sentences
  C- Simply babbles and makes sounds
  D- Speaks 7 to 10 words
Miguel’s 18 month old WCE:

• Language delay is the most common 1st sign of an Autism Spectrum Disorder (ASD)

• Autism screening: Recommended at 18 & 24 months
  • Modified Check list for Autism in toddlers - Revised(MCHAT-R)
  • Pervasive Developmental Disorders Screening test-II (PDDST-II)
Scoring:

- 2, 5, 12 – If “Yes” = ASD risk
- All other questions if answered “No” = ASD risk

- Low Risk = 0-2
- Medium Risk = 3-7
- High Risk = 8-20
Miguel is 2, Wahoo! Or maybe not? He has a new baby sister – HURRAY
Miguel at 2 – Temper Tantrums!

- 50%-80% of 2 to 3 year olds throw tantrums (Normal)
  - 20% on a daily basis
  - Most resolve by 4

- Remain calm, acknowledge child’s feelings
  - Help learn self regulation
  - Give child choices

- Any correlations?
  - Hunger, Sleep, Change in family, Unmet needs

- Teach & praise desired behaviors

- Consistent expectations and restrictions
  - Avoid over punishing
  - Distraction, redirection
  - Time out, restrain if in danger
Miguel is 4 and ready to start preschool
Miguel is 4 – Early Childhood
WCE 1 to 4 years old

• An exam of the eye is performed at every WCE
• Vision screening occurs at the Pediatrician’s office at each WCE visit starting from age 3
  • Visual acuity chart and/or photo refraction device

• Miguel’s results:
  OD: 20/50, OS: 20/70 & OU: 20/50
Strabismus – Meet Jack
Miguel is 10 and Starting Middle School
Bullying

• Asserting power over another through aggression or repeated targeting through emotional, social or physical means

• National Center for Education Statistics and Bureau of Justice Statistics reported about 21% of students ages 12-18 experienced bullying
Bullying

• Approaching the Victim:
  • Only 50% of victims confide in anyone
  • Show empathy
    • “I’m sorry, this must be really hard!”
  • Inquire
    • Do other children frequently bother you? How?
    • Have you seen other children being bullied?
    • What do you do during recess or lunch?
    • Do you frequently go to school nurse for physical complaints?

• Approaching the Bully:
  • Label behavior as bad, not the child as bad
  • Label behavior as harmful to victim and bully
  • Bullying is serious behavior with consequences
  • Ask about concerns at home and school.
Bullying - Intervention

- Reassure victim that it will STOP!
- Whole-School approach
  - School wide rules, teacher and student training
  - Social worker counseling for victim and bully
  - Eliminate unsafe areas with adult supervision
- Bystander activation
  - Empowering and expecting intervention
- Parental involvement
  - Work with school
  - Limit glamorizing violence
  - Check devices for cyberbullying
- stopbullying.gov
Miguel is 12 – He’s gained weight
Obesity – A Growing Problem

• 17% of children 2 to 19 years old (12.7 million)
  • CDC: Nutrition, Physical Activity and Obesity: Data, Trends and Maps
    • https://nccd.cdc.gov

• The Dangers:
  • Decreased physical capacity
  • Cholesterol, Heart Disease, Diabetes
  • Poor self image

• The cause:
  • Physical inactivity
    • TV, Video Games & Apps, Electronic devices = Sedentary
  • Foods that taste so good but bad for us
    • Hot Cheetos and Takis
Obesity Treatment and Prevention: The 9-5-2-1-0 Rule

- 9- Nine hours of sleep per night
- 5- Eat 5 fruits & vegetables a day
- 2- Cut screen time to 2 hours or less a day
- 1- At least one hour of moderate to vigorous physical activity daily
- 0- Restrict soda and sugar-sweetened sports and fruit drinks
  - Drink water and 3-4 servings/day of fat-free/skim or 1% milk
Miguel is 15 – The Adolescent WCE ages 11 to 21
Vaping – Among Adolescents

• 2013 to 2014 National Youth Tobacco Survey of Middle and High school students:
  • 2.4 million teenagers had tried e-cigarettes
  • Use tripled from 2013 to 2014

• Vaping is an e-cigarette, teens call it:
  • Hooka pen, E-hookas, Vape pipes/pens, Vapes, Mods

• Why teens vape?
  • Curiosity, Toy to blow smoke rings
  • Taste – Candy, Fruit, Soda, Alcohol
  • Less harm than cigarettes
  • Discrete, can hide in pocket and odorless
Vaping – What’s in there anyway?

- No regulation
  - We don’t know what is in some

- Those we do know:
  - Nicotine
  - Propylene glycol/glycerol
  - Flavorings – 7,000 flavors
  - Metals (tin, lead, nickel, chromium)
  - Nitrosamines, carbonyl compounds, organic compounds, phenolic compounds - Carcinogenic???
  - Water
  - Cannabis oil
Vaping – Affect on Adolescents

• Vaping being viewed as normal social activity

• Bottom line:
  • Nicotine addictive no matter how ingested
  • Nicotine affects brain development
  • Vaping = More likely to use cigarettes and other substances
    • Trying an e-cigarette related to a 6 fold increase of being a regular smoker

• How to prevent:
  • Inform kids young that vaping is smoking and nicotine is addictive and harmful
  • Set the example! DON’T Vape!
The Adolescent WCE 11 to 21 – What do we say?

Developmental/Behavioral Assessment:

- HEADSS
- (H)ome - family dynamics, sleeping
- (E)ducation/Employment - School attendance/attitude, goals
- (A)ctivities – hobbies, exercise, fast and furious
- (D)rugs - tobacco, vaping alcohol, illicit drugs, prescription drugs
- (S)exuality - sexual feelings towards opposite or same sex
  - Intercourse/abstinence
  - STDs
  - Contraception
- (S)uicide/depression -
  - Suicidal thoughts
  - Feelings of sadness/anhedonia

The WCE
How we Keep Kids at the Top of Their Game!
Conclusion: WCE's – They Make a Difference
References:

Hurray For Well Child Exams!