Severe Iron Deficiency Anemia
- Effect of Ethnicity

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Iron Deficiency Among US Toddlers

- **ID**
  - 4% at 6 months (term infants)
  - 12% at 12 months
  - 9% from 1-3 years

*Brotanek, et al 2008*
Current Prevalence of IDA

- IDA from 1-3 years: 2%
  - NHANES IV

- Baker, et al 2010
Purpose: To Determine the Incidence of Severe Iron Deficiency Anemia at CHRCO

- Retrospective analysis over 10 years
- 80 children with severe iron deficiency anemia
  - Hemoglobin ≤7 g/dL
- 68 were less than 5 years of age

Diagnosis:
- CBC/Ferritin/Transferrin Saturation, therapeutic effect
Iron Deficiency Anemia – Diagnosis by year

- Number of patients <5 years being diagnosed has not declined

Incidence over 2-year periods
Age at Diagnosis

- Median Age at diagnosis = 22 months
Hemoglobin Values

- Median hemoglobin at diagnosis = 5 g/dL
52% of children were transfused
Milk Consumption

- Milk intake >20 oz/day in 80% of patients diagnosed between 12 – 36 months
Development of severe IDA during the second year of life

- 12-month Well Child Visit
- Otitis
- Hgb 6.3
- Iron Started
- Hgb 11.9
- Milk Intake 32 oz. per day
Measures of Iron Status

- MCV (fL)
- FEP (µg/dL)
- Transferrin (%)
- Ferritin (ng/mL)
Gender and Ethnicity

- Male = 55%
- Female = 45%

Oakland Population 2010

<table>
<thead>
<tr>
<th>Group</th>
<th>%</th>
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<tbody>
<tr>
<td>White, Not Hispanic</td>
<td>25.9</td>
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<tr>
<td>Hispanic</td>
<td>25.4</td>
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<tr>
<td>African American</td>
<td>28.0</td>
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<td>Asian</td>
<td>16.8</td>
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<tr>
<td>Other</td>
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Age at Diagnosis of Severe Iron Deficiency and Ethnicity
Trends in severe iron deficiency anemia among US children under 4 years old

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<tr>
<td>&lt;12 mo</td>
<td>47</td>
<td>11</td>
<td>18</td>
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<tr>
<td>12-24 mo</td>
<td>48</td>
<td>49</td>
<td>71</td>
<td>75</td>
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<td>24-48 mo</td>
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<td>40</td>
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<td>HSP</td>
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<tr>
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<td>7</td>
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Los Angeles: Pegelow et al, 1977
Philadelphia: Kwiatkowski et al, 1999
New York: Sandoval et al, 2002
Oakland: Current study, 2007

Percent of total sample
Conclusions: Influence of Ethnicity on Risk of Severe IDA

- Decrease in severe IDA among AA children is maintained

- Asian and ‘Other’ have disproportionate risk
  - These are heterogeneous groups

- Evaluate strategies to prevent anemia in toddlers
  - Hemoglobin check at 9-12 months is optimal?

- Differences in toddler dietary practices may provide strategies for population-wide prevention
  - Lessons from success achieved through nutrition programs
  - Reasons for low risk of anemia in AA toddlers (12-36 mo)
Conclusions: Utility of monitoring incidence rates of severe IDA

- A marker of prevalence rates in wider community
- Real-time
- Very little cost of data collection
- Quality assurance due to hematology review and follow up of cases to exclude non-nutritional IDA
- Identify new population-groups and socio-economic variables with increased risk

- Involvement of hematologists in prevention of IDA
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