

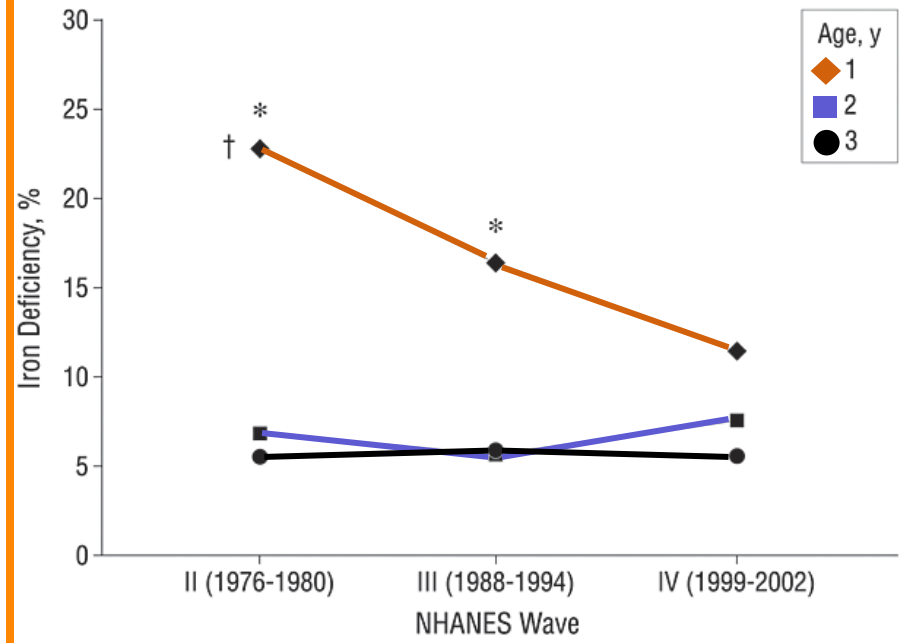
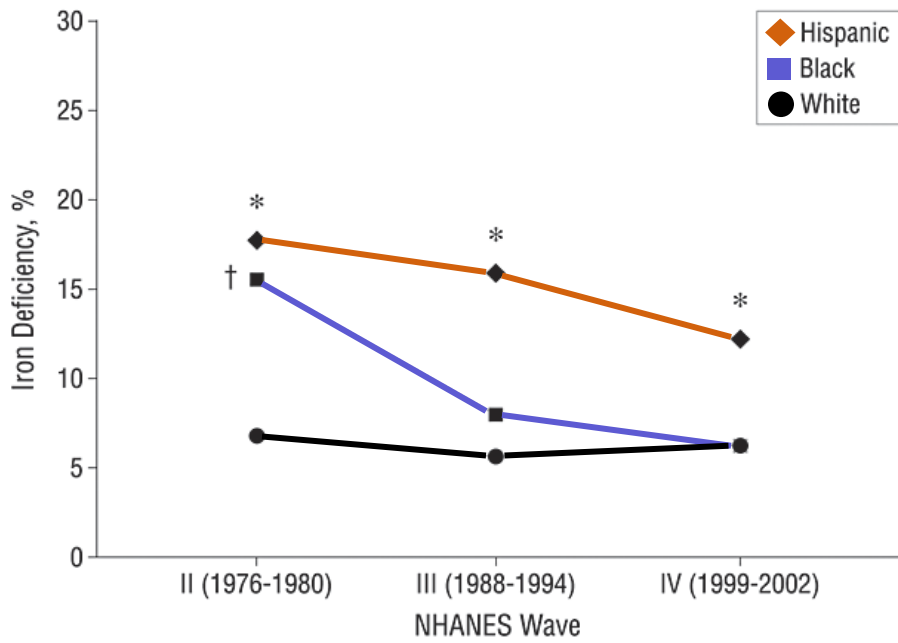
Severe Iron Deficiency Anemia - Effect of Ethnicity

Ashutosh Lal, MD

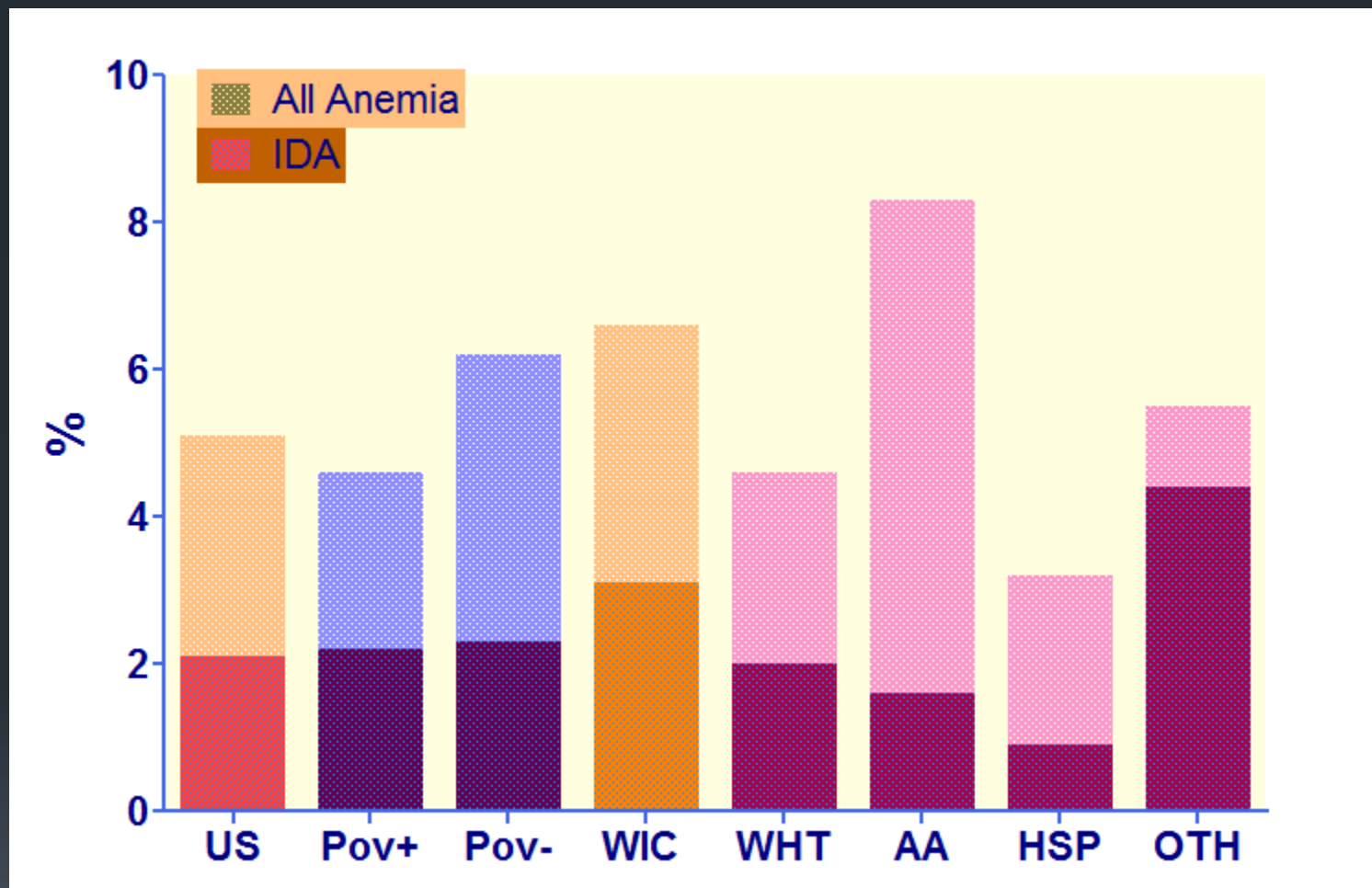
Children's Hospital & Research Center
Oakland, California

Iron Deficiency Among US Toddlers

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



Current Prevalence of IDA



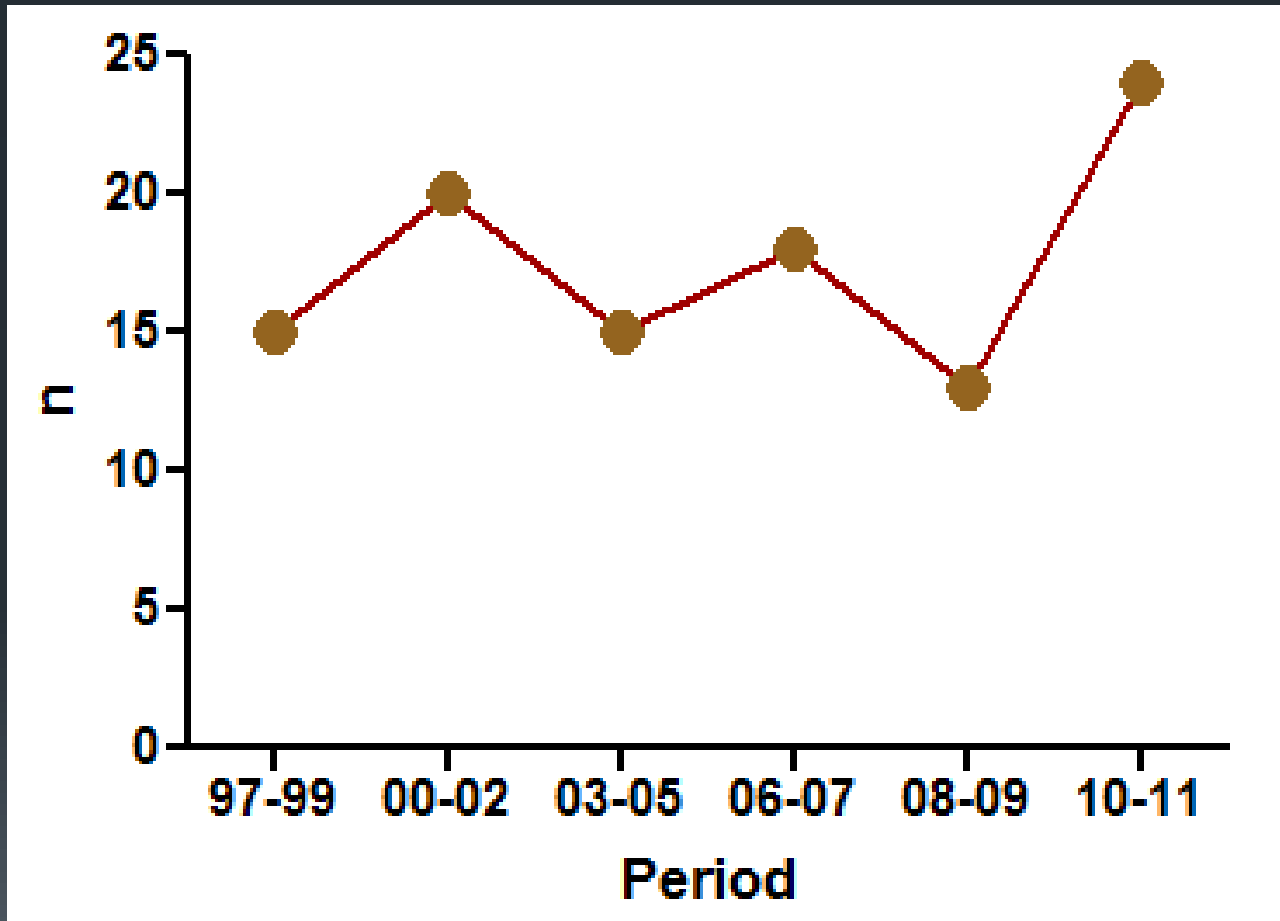
- IDA from 1-3 years: 2%
NHANES IV

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

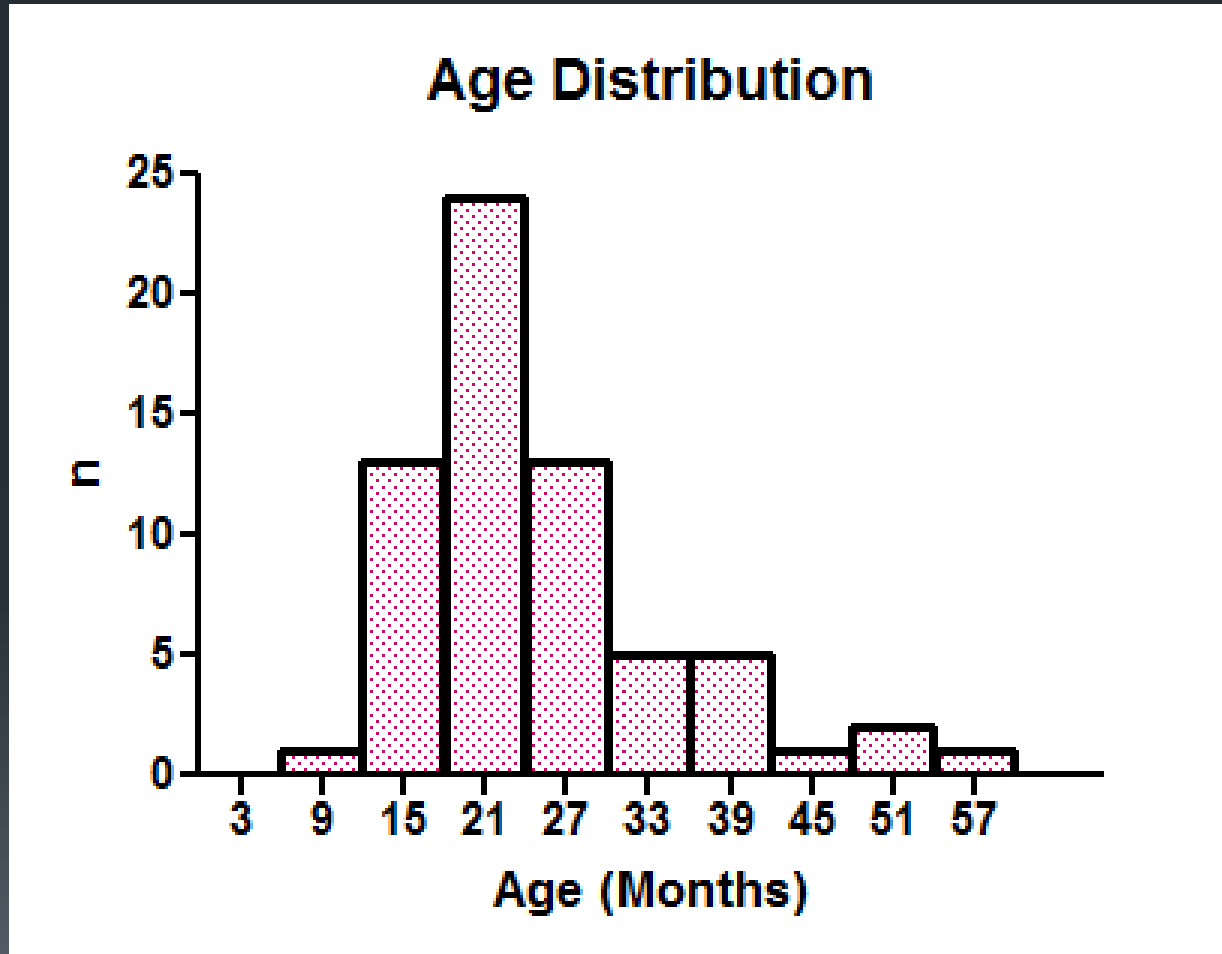
- Number of patients <5 years being diagnosed has not declined



Incidence over 2-year periods

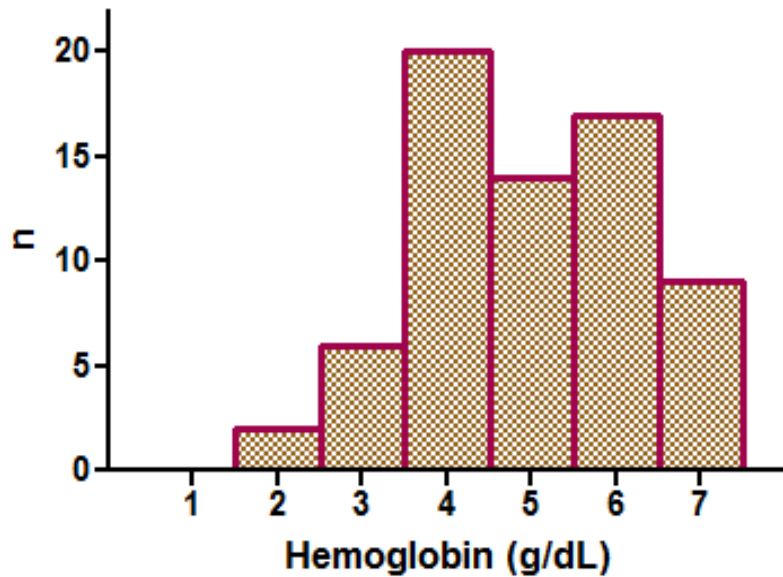
Age at Diagnosis

- Median Age at diagnosis = 22 months

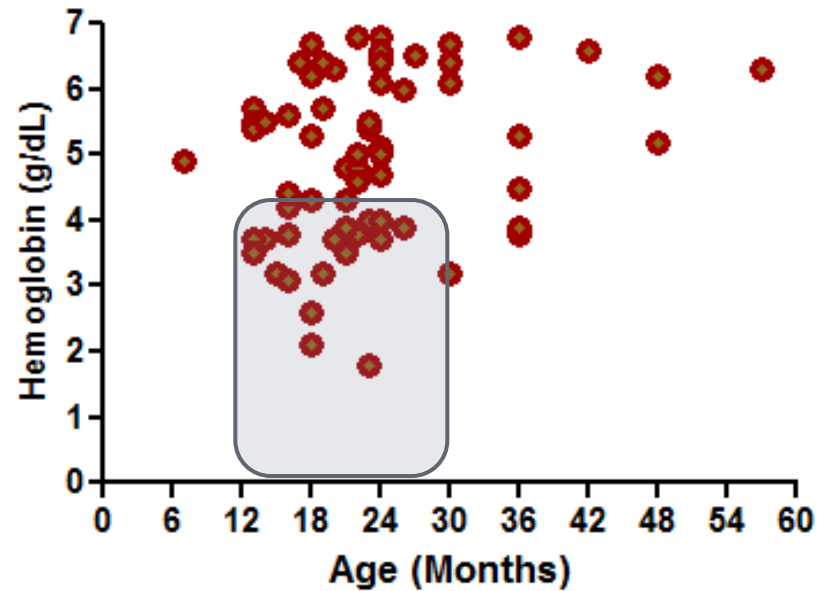


Hemoglobin Values

Hemoglobin Distribution



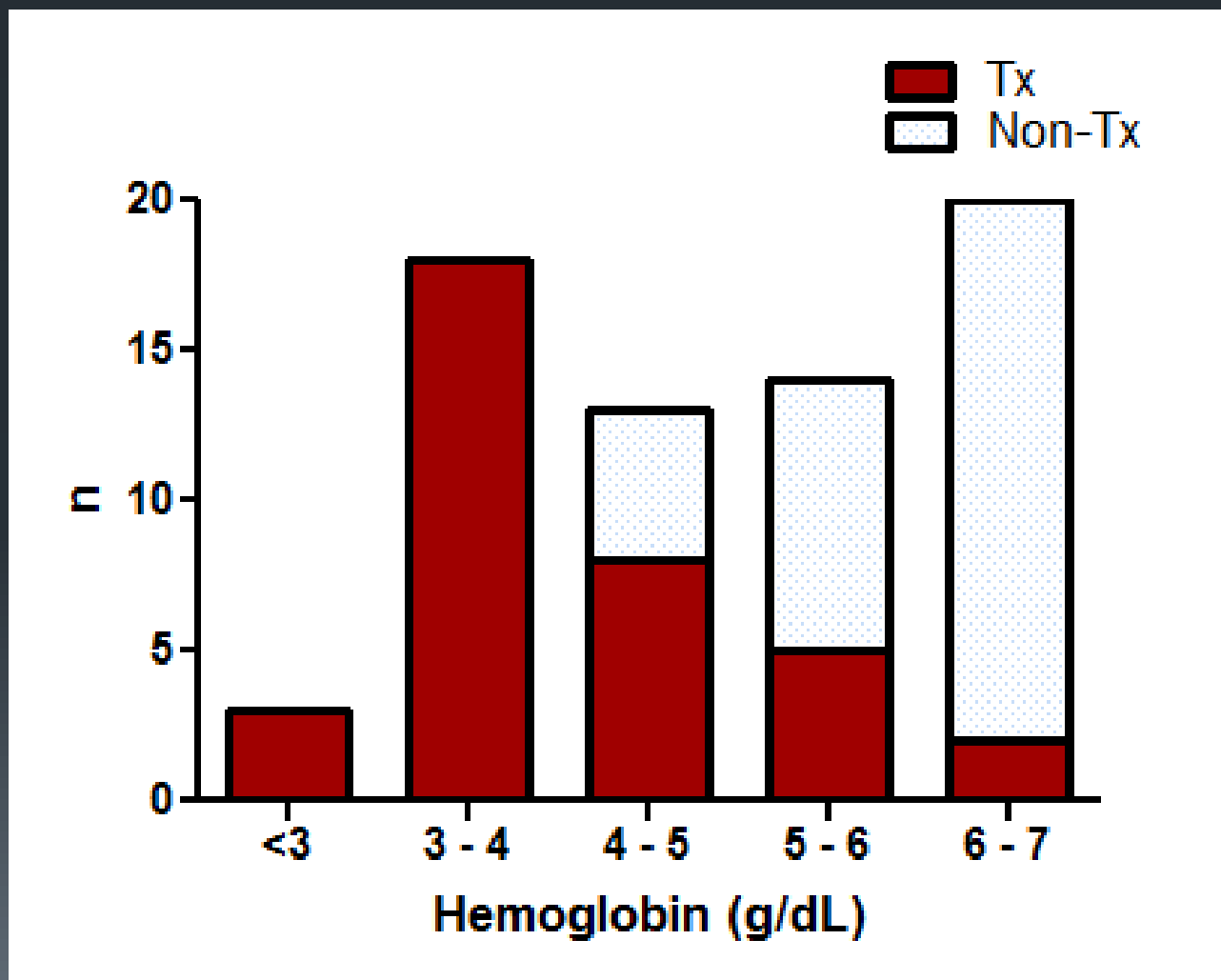
Age vs Hb



- Median hemoglobin at diagnosis = 5 g/dL

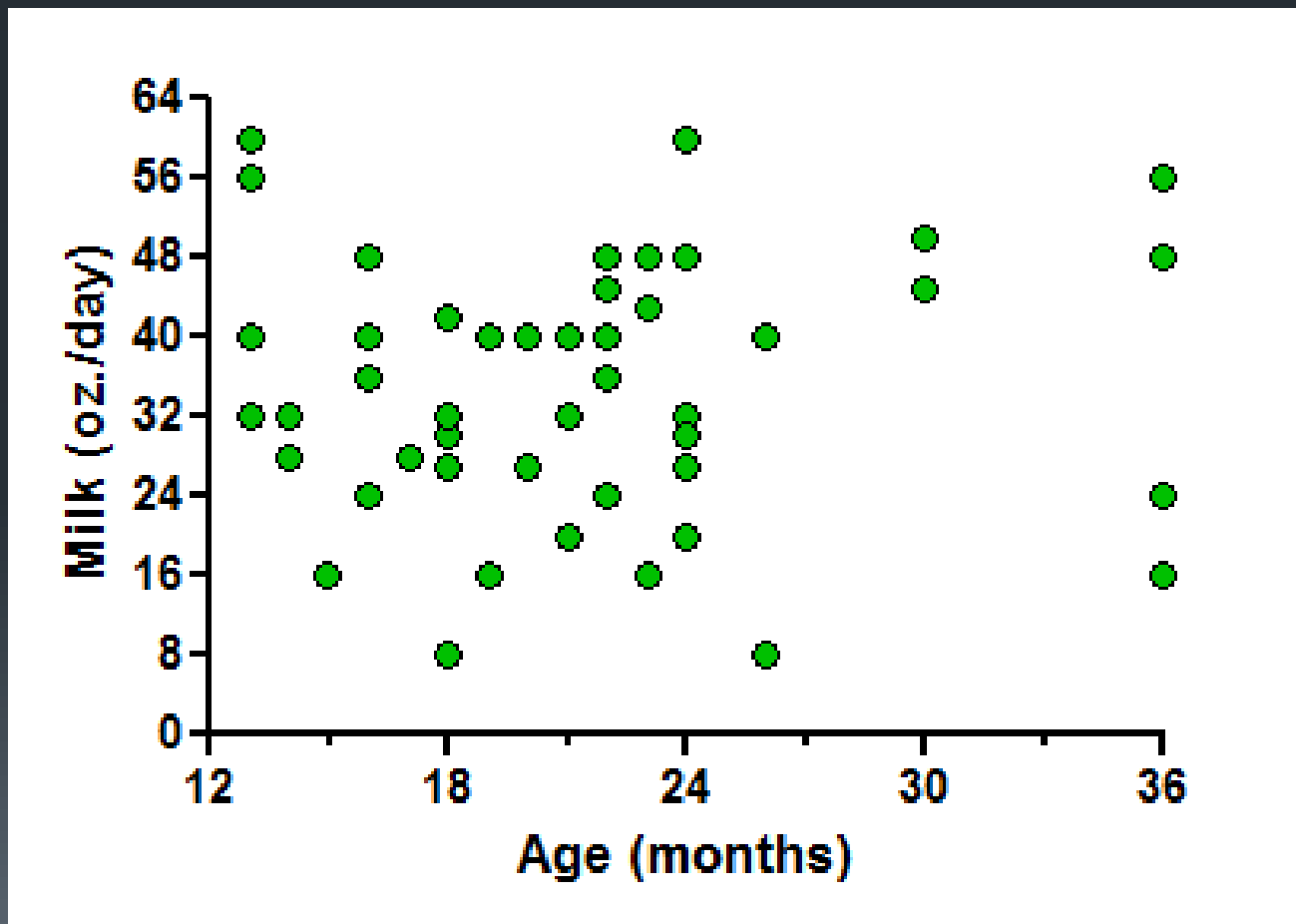
Hb at Diagnosis and Transfusions

- 52% of children were transfused

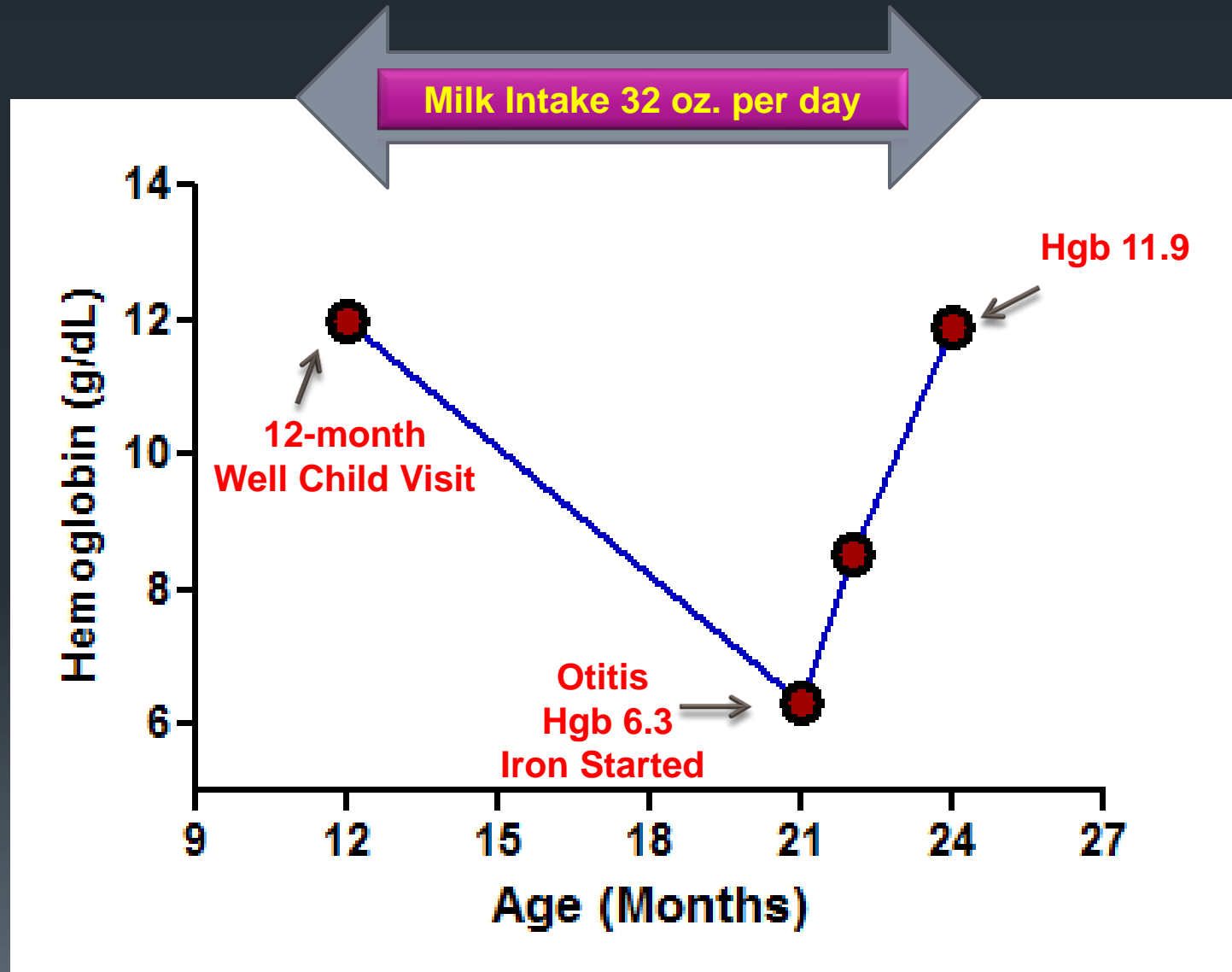


Milk Consumption

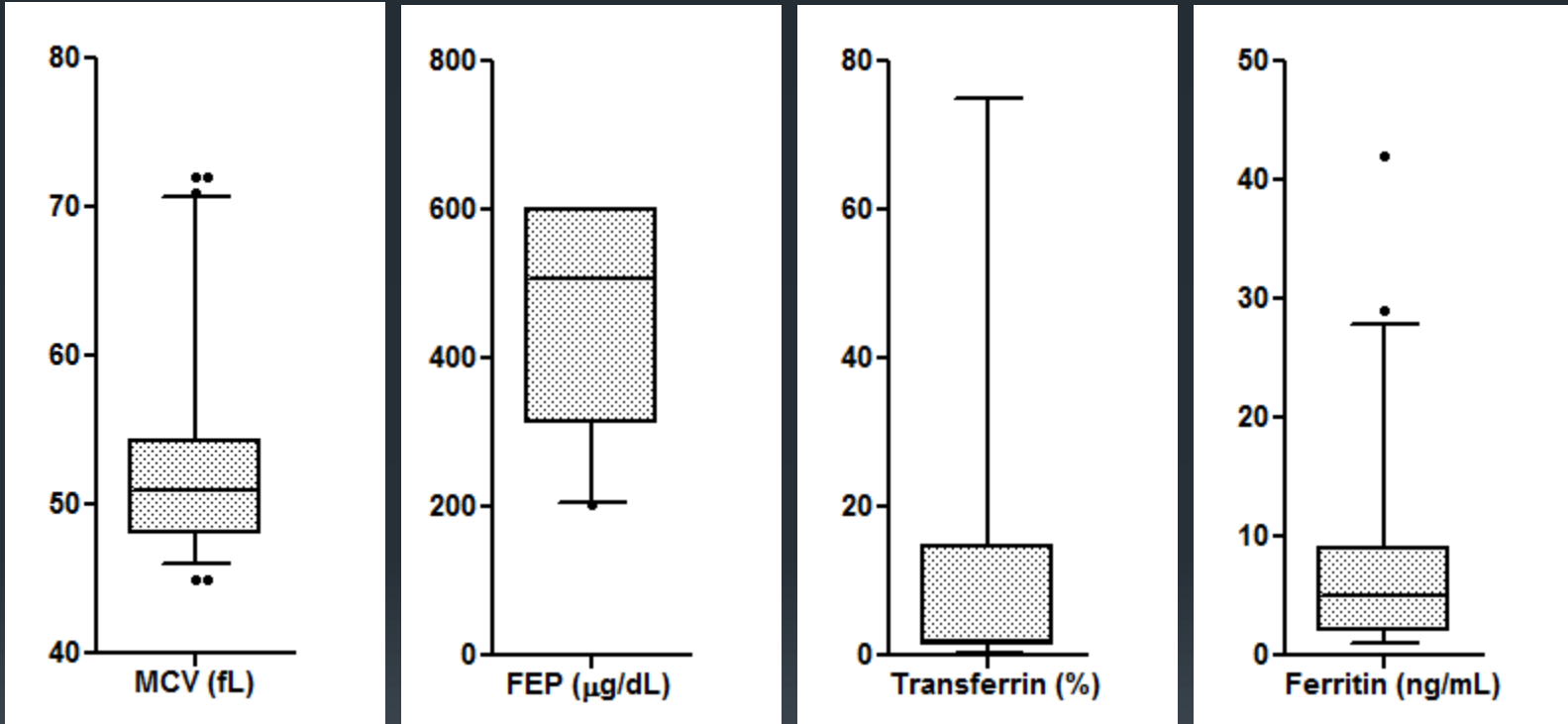
- Milk intake >20 oz/day in 80% of patients diagnosed between 12 – 36 months



Development of severe IDA during the second year of life



Measures of Iron Status

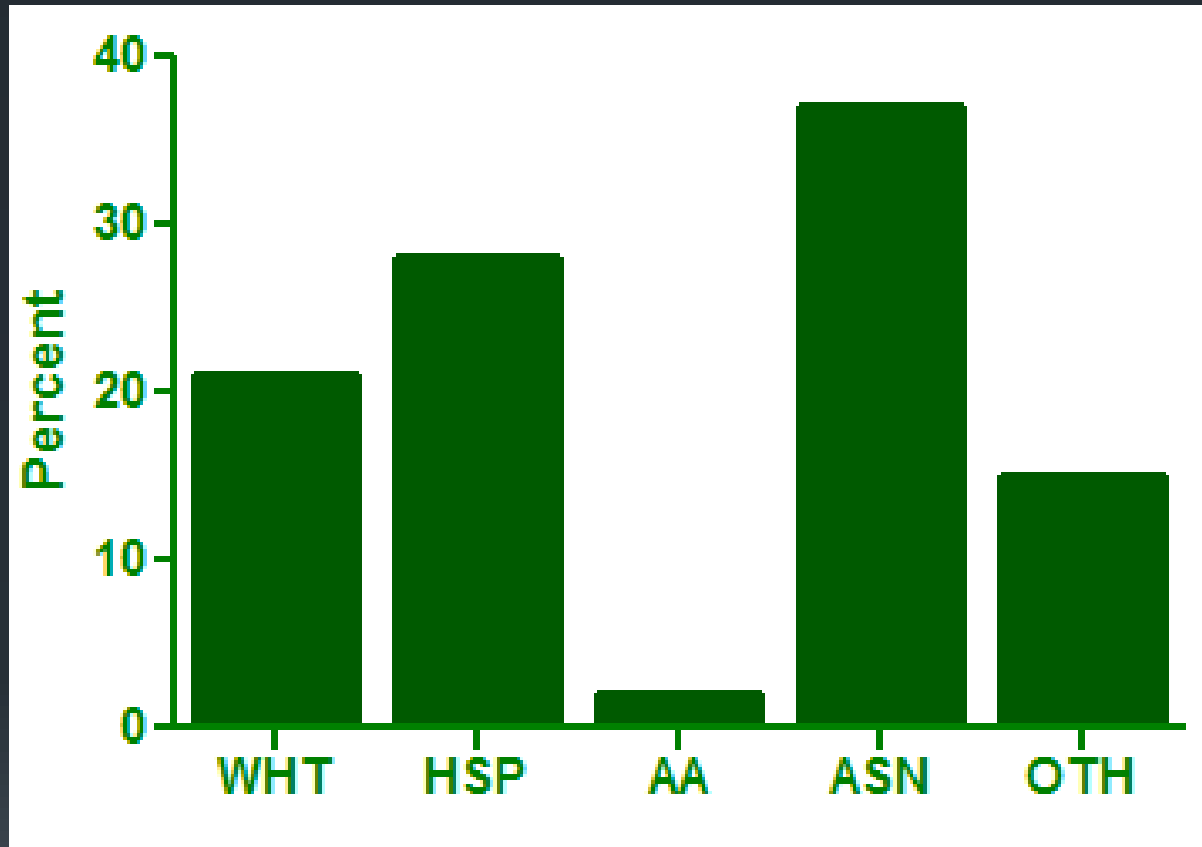


Gender and Ethnicity

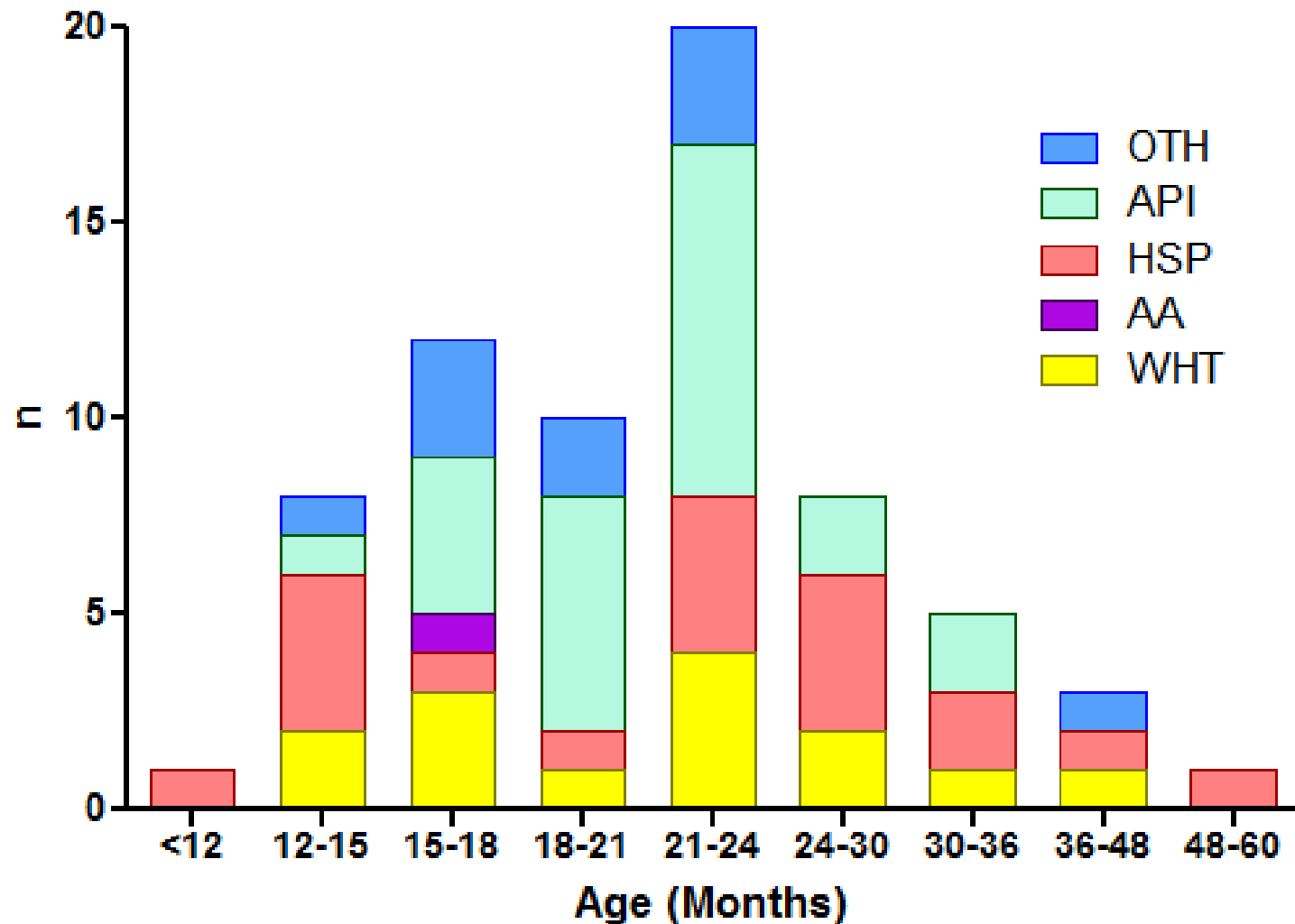
- Male = 55%
- Female = 45%

Oakland Population 2010

Group	%
White, Not Hispanic	25.9
Hispanic	25.4
African American	28.0
Asian	16.8
Other	3.9



Age at Diagnosis of Severe Iron Deficiency and Ethnicity



Trends in severe iron deficiency anemia among US children under 4 years old

Age at presentation	LA	PH	NY	OAK
	1977	1999	2002	2007
<12 mo	47	11	18	1
12-24 mo	48	49	71	75
24-48 mo	5	40	11	24

Ethnicity	LA	PH	NY	OAK
	1977	1999	2002	2007
WHT	12	47	--	21
AA	25	5	--	1
HSP	58	--	--	28
ASN	--	40	--	35
OTH	5	7	--	15

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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