

BACKGROUND

- As part of the 2011 AAP health supervision guidelines for children with Down Syndrome (DS), annual screening for iron deficiency anemia (IDA) is recommended between the ages of 1-18 years.
- IDA is associated with cognitive impairment, and children with DS are a particularly vulnerable population for neurocognitive deficits.
- The prevalence of anemia in DS is not well studied and the evidence supporting annual screening is sparse.

OBJECTIVE

- To assess the prevalence of anemia in patients with DS between the ages 1-18 years to provide additional evidence for annual hemoglobin and ferritin screening in patients with DS.

STUDY DESIGN

- Retrospective cohort study from 2012-2016. Data were obtained from electronic medical records (EMR) for all patients with a dx of DS seen in the Medical University of South Carolina's healthcare system between the ages of 1-18 from 2012-2016.
- Data regarding red blood indices, comorbid diagnoses, medications, and demographic information was collected. Patients were excluded if had a hematologic condition, such as leukemia.
- Data were analyzed by Fischer exact test and chi square.

RESULTS & DISCUSSION

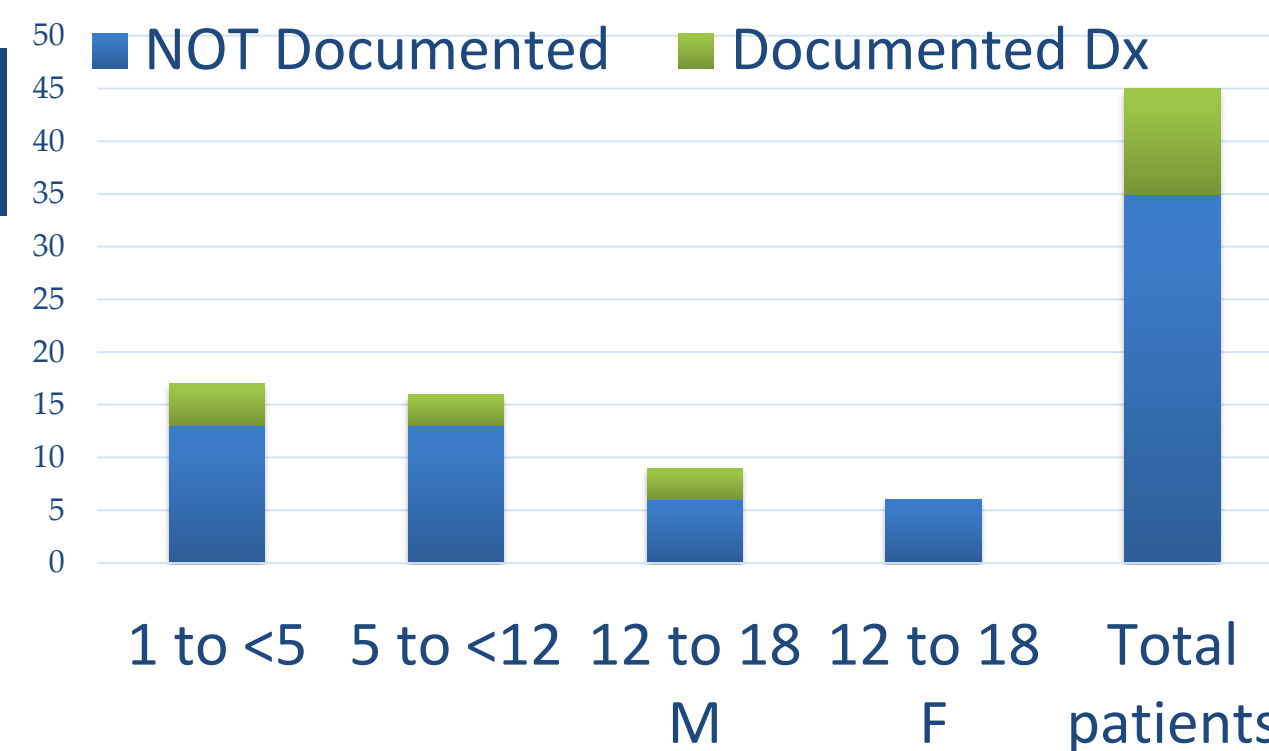
Prevalence of Anemia in DS 0-20

Source	Rate of Anemia
Previous DS syndrome study (0-20)	8.1%
Our study (1-20)	22.5%

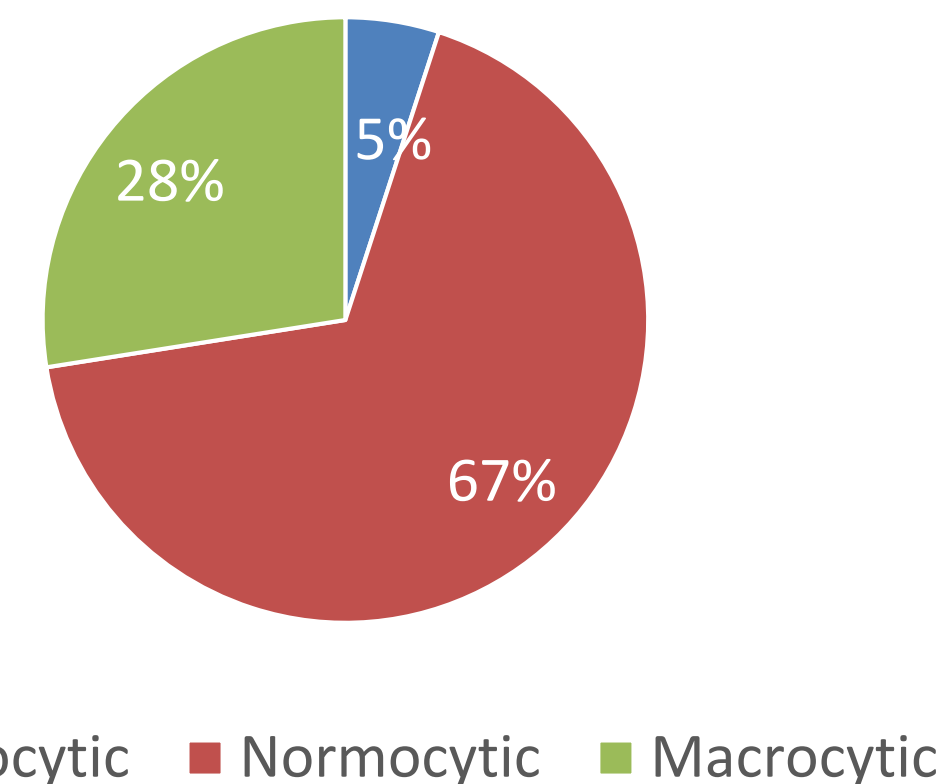
Prevalence of Anemia by Age

Age of Patient	Percentage with Anemia
1 to < 5	18.7%
5 to < 12	33%
12 to 18 Males	26.1%
12 to 18 Females	30%
Total	22.5%

Was Anemia Documented in the Medical Record?



Type of Anemia



KEY FINDINGS

- A total of 200 patients were identified. 22.5% of patients were found to have anemia, which is significantly greater than 8.1% previously reported in a study of 149 children 0-20 with DS.**
- The general population of children aged 1-4 had rates of **3.2%**, while our population had a rate of **18.7%**.
- Adolescent males and females had a surprisingly high rate of anemia - 26% and 30% respectively.
- Down syndrome patients had a high rate of macrocytic anemia (27.5%)**
- The diagnosis of anemia was only documented in 22% (10/45) electronic medical records.**

CONCLUSIONS

- The prevalence of anemia in this cohort of children with DS to be significantly higher than the general population.**
- Adolescent males and females experience similar rates of anemia as younger children, supporting AAP guidelines for annual screening until the age of 18 years.
- A large number of patients had macrocytic anemia. Macrocytosis in DS can mask the low MCV typically seen in iron deficiency anemia.**
- Obtaining a ferritin level can be a useful diagnostic tool for iron deficiency anemia in children with DS.**
- Untreated anemia is associated with neurocognitive impairment, and it is concerning that the diagnosis of anemia was often missed by physicians in an already high risk population.
- This results of this study have led to changes in clinical practice and improved screening for anemia in the Down Syndrome Clinic at MUSC.

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