Background:

Sickle cell disease (SCD) is an inherited disorder where abnormal hemoglobin causes red blood cells to become sickled and dense, leading to ongoing hemolysis and vaso-occlusion. Chronic organ damage, ischemia, and renal complications that often start in the first decade of life.
It is well known that GFR has been an unreliable marker of kidney function in pediatric SCD due to hyperfiltration. We aimed to compare the new 2021 GFR calculations – one includes cystatin C (GFRCysCr) and one only Cr (GFRCr) – with markers of kidney function in pediatric patients with SCD.
We hypothesized there would be a find difference between GFR calculations when compared to markers of kidney function and erythropoietin (EPO) in pediatric patients with SCD and that the relationship will be more significant in the younger age group due to hyperfiltration.

Objectives: Evaluation of both 2021 GFR calculations in patients with SCD and their relation to markers of kidney damage and erythropoietin

Design/Method: Data gathered through retrospective chart review of pediatric patients with SCD seen at St. Christopher's Hospital in Philadelphia. Data collected from appointments between 3/1/21 and 8/15/21. Data was excluded for patients who had ever undergone EPO treatment, those with underlying kidney disease, or if laboratory tests were conducted during disease exacerbation.

Results: 137 patients included in analysis, ages 1-28. Genotypes included SS(60%), SB+(9%), SBO(7%), and SC(24%). Patients were split into two groups: <12 years old and ≥ 12 years old. Nonparametric correlation was used to compare each GFR calculation with EPO. Pearson's correlation was used to compare each GFR calculation with urine protein, Cr, and cystatin C. In both groups <12 y/o and ≥ 12 y/o there was a statistically significant relationship between EPO, Cystatin C, and Cr with both GFRCysCr and GFRCr.
Urine protein had no statistically significant correlation to either GFR calculation in either group. Patients taking hydroxyurea had statistically significantly higher EPO in both groups vs those who did not. GFR was significantly lower in the older age group. GFRCysCr relationships were more statistically significant in <12 y/o group than in the group ≥ 12 y/o

***Conclusion*:** Both GFR calculations showed statistically significant relationships with markers of kidney function in both groups. The relationship between GFRCysCr and markers of kidney function were more significant in the <12y/o age group, possibly due to cystatin C not as affected by hyperfiltration. Further studies necessary to evaluate utility of GFRCysCr in younger patients with SCD.