

# Few Pediatric Patients Screened for High Lipid Levels Despite Expert Recommendations

Team A: Dave Little, MD, MS; Joe Deckert, PhD

Team B: Kersten Bartelt, RN; Joe McNitt

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## Key Findings:

- Pediatric lipid screening is uncommon both in 9–11-year-olds and in 2–8-year-olds with identified cardiovascular risk, despite clinical practice recommendations from an expert panel convened by the National Heart, Lung, and Blood Institute.
- Hispanic patients are screened at higher rates than Black and White patients.
- Of patients that are screened, about one-third have a high or borderline-high lipid level.

In 2011, an expert panel convened by the National Heart, Lung, and Blood Institute recommended that all children ages 9–11 should be given a lipid screen to identify early signs of potential future cardiovascular disease and atherosclerosis.<sup>1</sup> Additionally, the panel and the American Academy of Pediatrics recommend patients aged 2–8 who have additional risk factors for early cardiovascular disease development should also have a lipid panel.<sup>1,2</sup>

Previous studies have shown pediatric lipid screening rates are low but on an upward trajectory. However, most of these studies were limited to a single organization or assessed data only for visits through 2016.<sup>3,4</sup>

We evaluated current pediatric cholesterol screening rates by reviewing 165,519 patients aged 2–8 with an identified cardiovascular risk factor that would qualify them for early screening and 237,548 patients aged 9–11. Patients aged 2–8 with an identified risk factor were screened 5.5% of the time. For patients aged 9–11, only 18.8% had a lipid screening test performed. Sensitivity analyses showed similar screening rates across patient sex and social vulnerability indices. There were differences in screening rates by race and ethnicity, with Hispanic patients being screened at the greatest rates, and White patients being screened at the lowest rates.

## Pediatric Lipid Screening Rates

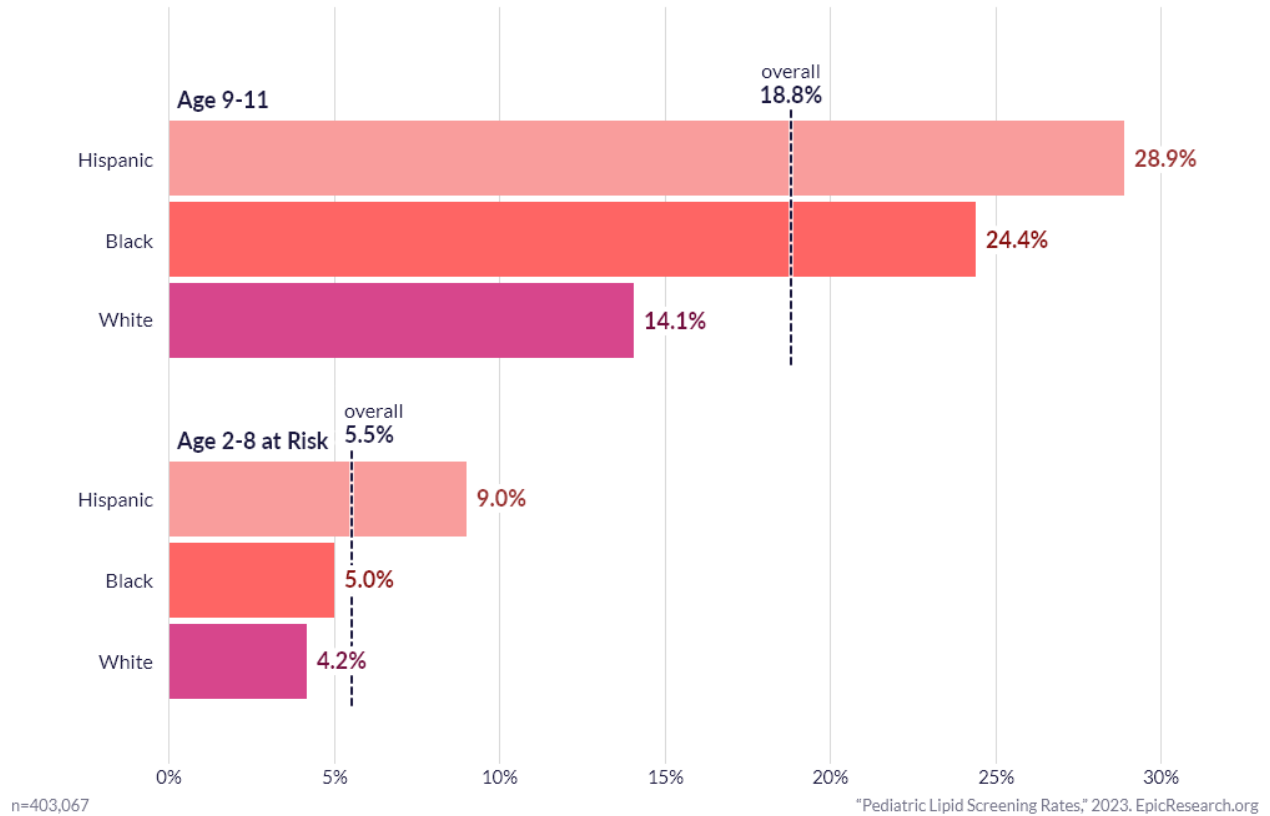
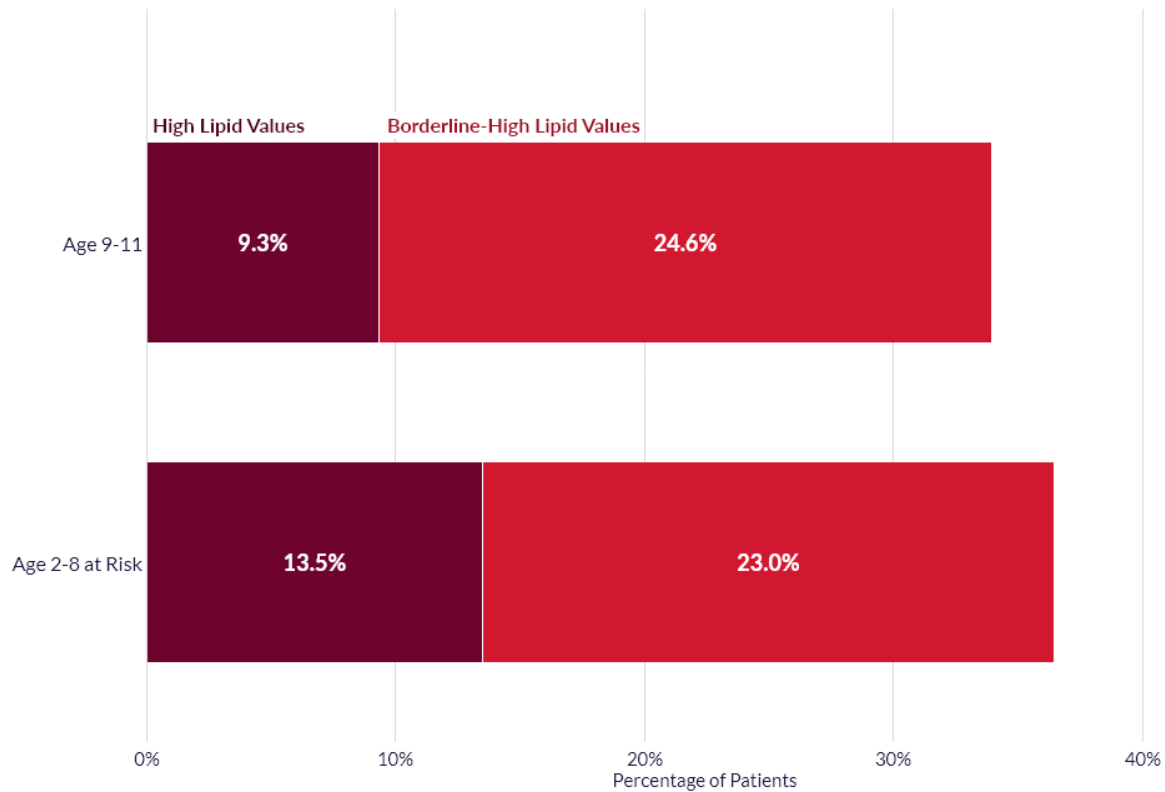


Figure 1. Percentage of pediatric patients recommended to have a lipid screening that had a screening completed stratified by race and ethnicity.

Of those who did have a lipid screening completed, 9.3% of the patients aged 9–11 and 13.5% of patients aged 2–8 with a cardiovascular risk factor had high lipid levels identified. Additionally, around one in four patients had a borderline-high lipid level across both groups assessed, as shown in Figure 2. No statistically significant differences in lipid levels were noted between demographic groups.

## Elevated Pediatric Lipid Screening Values



n=53,812

"Elevated Pediatric Lipid Screening Values," 2023. EpicResearch.org

Figure 2. Percentage of screened pediatric patients with elevated lipid levels. High lipid values are  $\geq 200$  mg/mL, while borderline-high lipid values are from 179-199 mg/mL.

Our findings confirm that pediatric lipid screening rates remain low despite recommendations.

*These data come from Cosmos, a HIPAA-defined Limited Data Set of more than 185 million patients from 200 Epic organizations including 1,147 hospitals and more than 25,000 clinics, serving patients in all 50 states and Lebanon. This study was completed by two teams that worked independently, each composed of a clinician and research scientists. The two teams came to similar conclusions.*

## References

1. Expert panel on integrated guidelines for cardiovascular health and risk reduction in children and adolescents: summary report. *Pediatrics*. 2011;128 Suppl 5(Suppl 5):S213-S256. doi:10.1542/peds.2009-2107C
2. Howard T, Grosel J. Updated guidelines for lipid screening in children and adolescents. *JAAPA*. 2015;28(3):30-36. doi:10.1097/01.JAA.0000460916.60015.88
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4. Eichberger L, Kern L, Wang H, Crow J, Rhee KE. Universal Lipid Screening Among 9- to 11-Year-Old Children: Screening Results and Physician Management. *Clin Pediatr (Phila)*. 2022;61(3):280-288. doi:10.1177/00099228221075409

## Data Definitions

Term	Definition
<b>Study period</b>	1/1/2019 – 12/31/2022
<b>Study population</b>	9–11-year-old patients and 2–8-year-olds with cardiovascular risk factor
<b>9–11-year-old patients</b>	Patients who turned nine years old between 1/1/2019 and 1/1/2020 and had at least four face-to-face encounters during the study period
<b>2–8-year-olds with cardiovascular risk factor</b>	Patients who turned 2-8 years old between 1/1/2019 and 1/1/2020 and had a cardiovascular risk factor diagnosis between 1/1/2019 and 10/1/2022 and at least one face-to-face encounter during the study period
<b>Cardiovascular risk factor</b>	An encounter, billing, or problem list diagnosis with ICD-10-CM codes: <ul style="list-style-type: none"> <li>• Dyslipidemia – E78.5</li> <li>• Obesity – E66.9</li> <li>• Diabetes mellitus – E10* or E11*</li> <li>• Hypertension – I10*, I11*, I12*, I13*, or I15*</li> <li>• Family history of ASCVD – Z82.4*</li> <li>• Secondhand smoke exposure – Z77.22</li> </ul>
<b>Face-to-face encounter</b>	An encounter with any of the following types: Allied Health, Ancillary procedure, Anticoagulation visit, Appointment, Audiology, Case management, Clinical support, Confidential, Diagnostic services, Education, Follow-up, Genetics, Home care visit, Hospital, Hospital encounter, Immunization, Infusion, Injection, Multidisciplinary visit, Nurse only, Nutrition, Office visit, Ophth exam, Occupational/Physical therapy, Procedural consult, Procedure visit, Radiology appointment, Research encounter, Sleep study, Social work, Speech therapy, Surgery, Transplant evaluation, Transplant follow-up, Treatment, Urgent care, Walk-in, or Well child.
<b>Lipid screening</b>	A lab test with LOINC code 2093-3, 14647-2, or 35200-5 completed for 9–11 or within 90 days of identification of a cardiovascular risk factor for 2-8-year-olds
<b>Borderline-high lipid level</b>	Total cholesterol 179-199 mg/dL
<b>High lipid level</b>	Total cholesterol 200 mg/dL or higher

**Table 1a: Pediatric Lipid Screening Rates by Race**

Group	Race/Ethnicity	Total	Screened	Screened (%)	Normal (%)	Borderline-High (%)	High (%)
9–11-year-olds	All	237,548	44,658	18.80	66.05	24.60	9.34
	Black	36,108	8,799	24.37	66.38	24.30	9.32
	Hispanic	43,326	12,519	28.89	68.16	23.16	8.68
	White	134,158	18,865	14.06	65.07	25.14	9.77

	Other	23,956	4,478	18.70	63.62	26.95	9.43
2–8-year-olds with risk	All	165,519	9,154	5.53	63.52	22.96	13.51
	Black	39,539	1,991	5.04	64.14	23.96	11.90
	Hispanic	33,999	3,058	8.99	64.94	23.90	11.15
	White	78,855	3,286	4.17	62.78	21.52	15.70
	Other	13,126	819	6.24	59.71	22.83	17.46

**Table 1b: Pediatric Lipid Screening Rates by Sex**

Group	Sex	Total	Screened	Screened (%)	Normal (%)	Borderline-High (%)	High (%)
9–11-year-olds	Female	114,113	21,420	18.77	68.61	23.10	8.29
	Male	123,414	23,234	18.83	63.69	25.99	10.32
2–8-year-olds with risk	Female	76,687	4,442	5.79	64.16	21.86	13.98
	Male	88,824	4,712	5.30	62.92	24.00	13.07

**Table 1c: Pediatric Lipid Screening Rates by SVI**

Group	SVI Quartile	Total	Screened	Screened (%)	Normal (%)	Borderline-High (%)	High (%)
9–11-year-olds	1	70,817	15,832	22.36	67.85	23.67	8.48
	3	55,475	10,203	18.39	64.99	25.51	9.50
	4	56,764	8,256	14.54	63.87	25.59	10.54
	2	54,492	10,367	19.02	66.08	24.32	9.57
2–8-year-olds with risk	1	69,954	4,117	5.89	64.68	23.56	11.76
	4	21,903	1,176	5.37	60.46	24.23	15.31
	3	31,973	1,655	5.18	62.42	21.69	15.89
	2	41,689	2,206	5.29	63.83	22.12	14.05