

Social Determinants of Health and Vaccines Disparity

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Kerri M. Lockhart, MD, FAAP	Faculty/Presenter	No	N/A
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Objectives

01

Define and identify Social Determinants of Health (SDOH).

02

Understand critical role SDOH plays in health inequities.

03

Explore opportunities for disrupting inequities caused by SDOH to improve pediatric vaccine access and overall health equity.



Social Determinants of Health:

“Social determinants of health are conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks.”

-Healthypeople.gov

Social Determinants of Health:

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5 Key Domains:

- Economic Stability
- Education
- Social and Community Context
- Health and Health Care
- Neighborhood and Built Environment



Examples of SDOH:

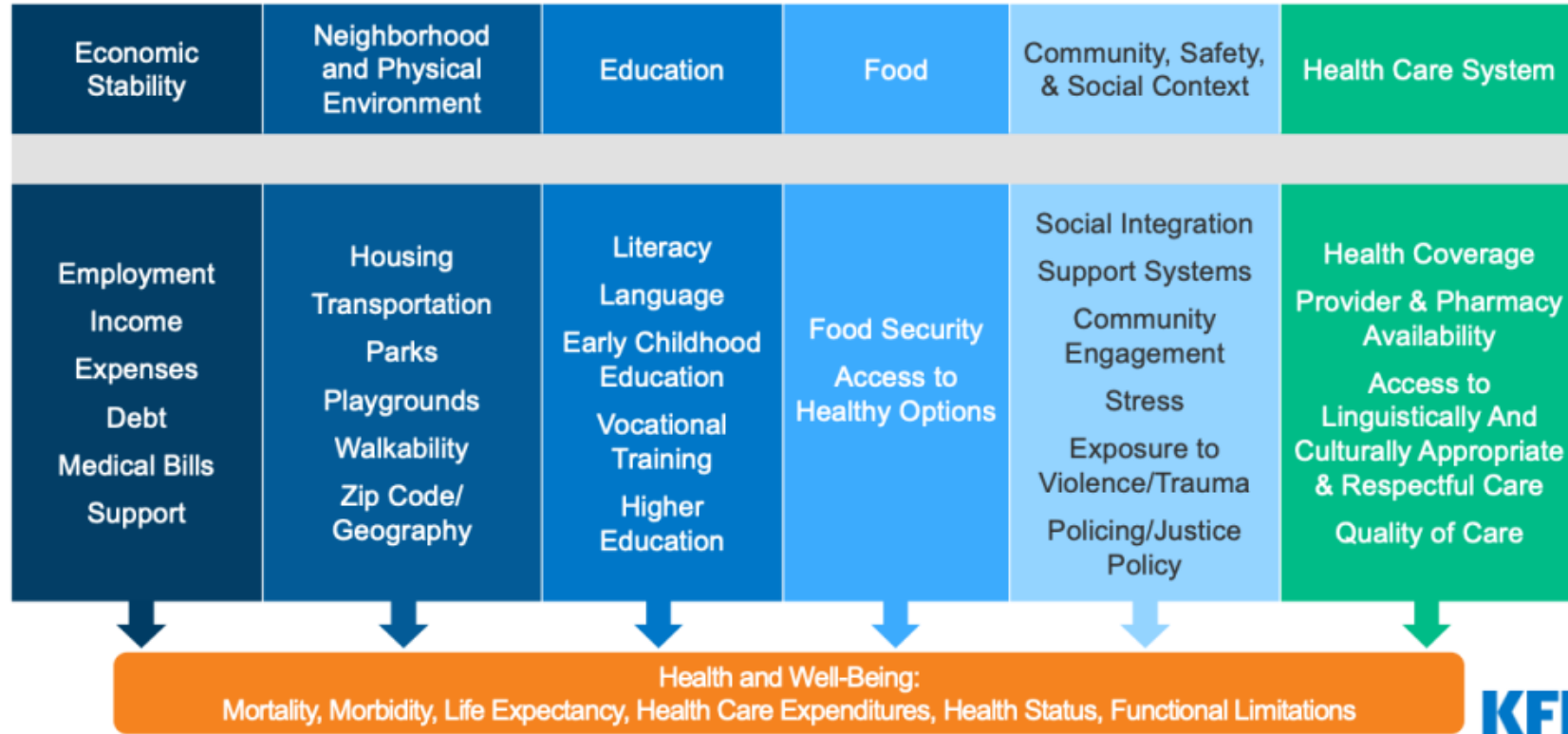
- Access to stable employment
- Schools in community are well resourced
- Communities are safe from crime
- Have medical insurance coverage
- Ease of access to PCP
- Community well resourced
- Ease of access to healthy food choices
- Access to community green spaces

SDOH:



Figure 2

Social Determinants of Health



SDOH: The Root Causes

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- Identify and screen for SDOH in pediatric patients
- Resources addressing immediate needs
- Limited in its effect on health disparities
- Must address root causes --- historical structures that led to the development of SDOH and support their persistence today

We will be challenged to meaningfully address SDOH without addressing Structural Determinants of Health.

SDOH: The History

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Structural determinants of health:

- Are policies, practices, and social institutions that shape the distribution and experience of SDOH across populations
- They are the ultimate drivers of health inequities by **race**, **class**, and **sex**



The History

- In 1906 W.E.B. Dubois noted “social conditions” (i.e. SDOH), rather than genetics cause health disparities and increased mortality for Black people
- In 2010, the U.S. government formally recognized SDOH as the cause of racial health disparities
 - Disparities persist because of the absence of dedicated efforts to tackle the root cause: **structural racism**



History: SDOH & Structural Racism

Structural racism: how our systems are structured to create racial inequities between whites and racialized and ethnic minorities in the SDOH. This results in racial health disparities.



History: SDOH & Structural Racism

Dr. Jessica Isom MD, MPH: “Structural understanding explains why **Black** communities frequently have worse health outcomes.”

Discriminatory policies lead to reduced wealth (red-lining) and income (de-industrialization of cities) for **Black** families



These neighborhoods are more likely to have restricted access to fresh food, green spaces for exercise, good schools, safe housing, etc.



Black patients have diminished access to quality health interventions due to discriminatory referral practices and insurance limitations



History: SDOH & Structural Racism

Structural understanding explains why **White** communities frequently have better health outcomes:

Discriminatory policies have increased wealth and income for **White** families

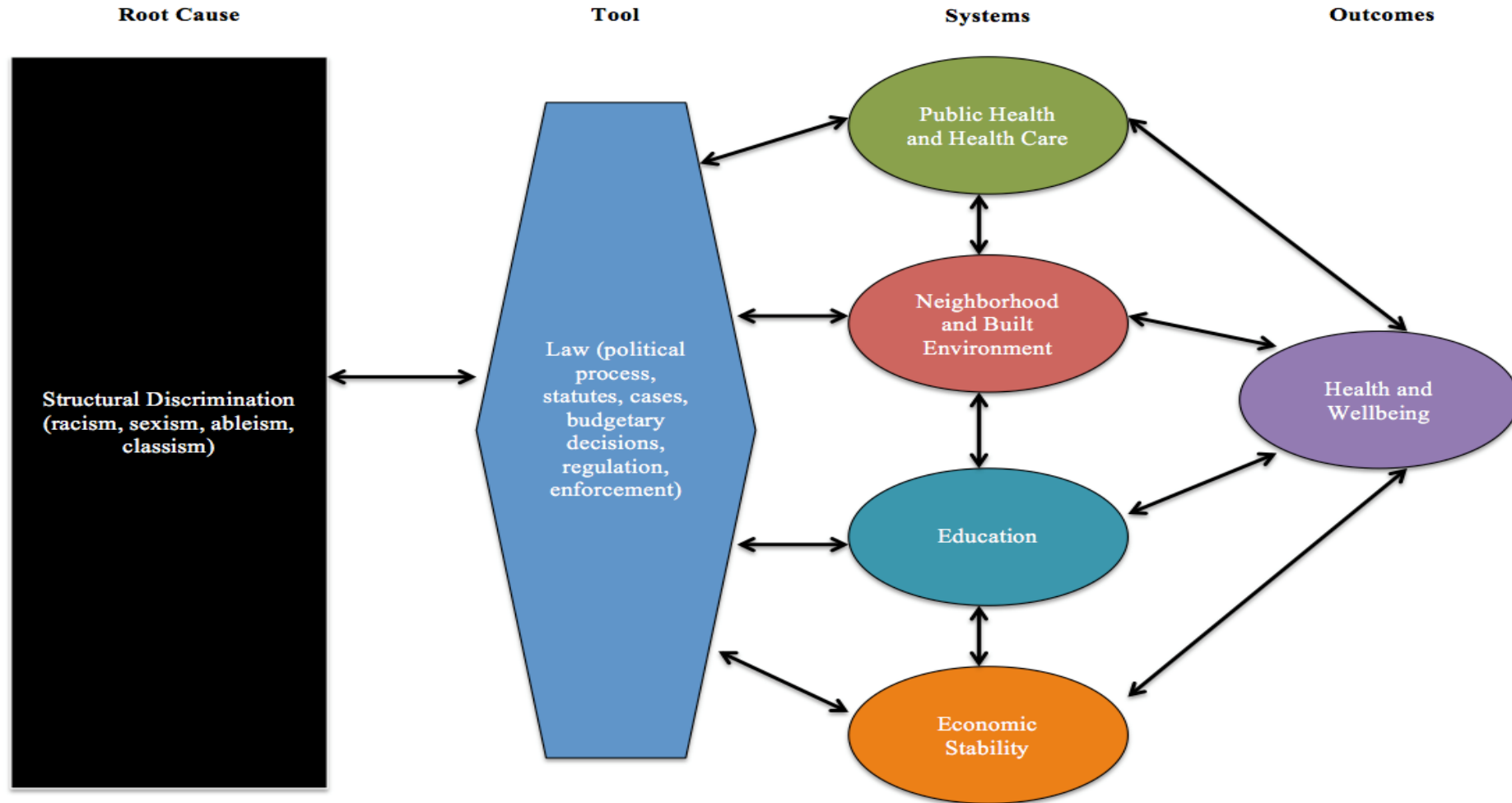


These neighborhoods are more likely to have access to fresh food, green spaces for exercise, good schools, safe housing, etc.



White patients have more access to quality health interventions due to advantageous referral practices and insurance benefits

The History:



Revised SDOH Framework created by Ruqaiijah Yearby (2020)



History: SDOH & Structural Racism

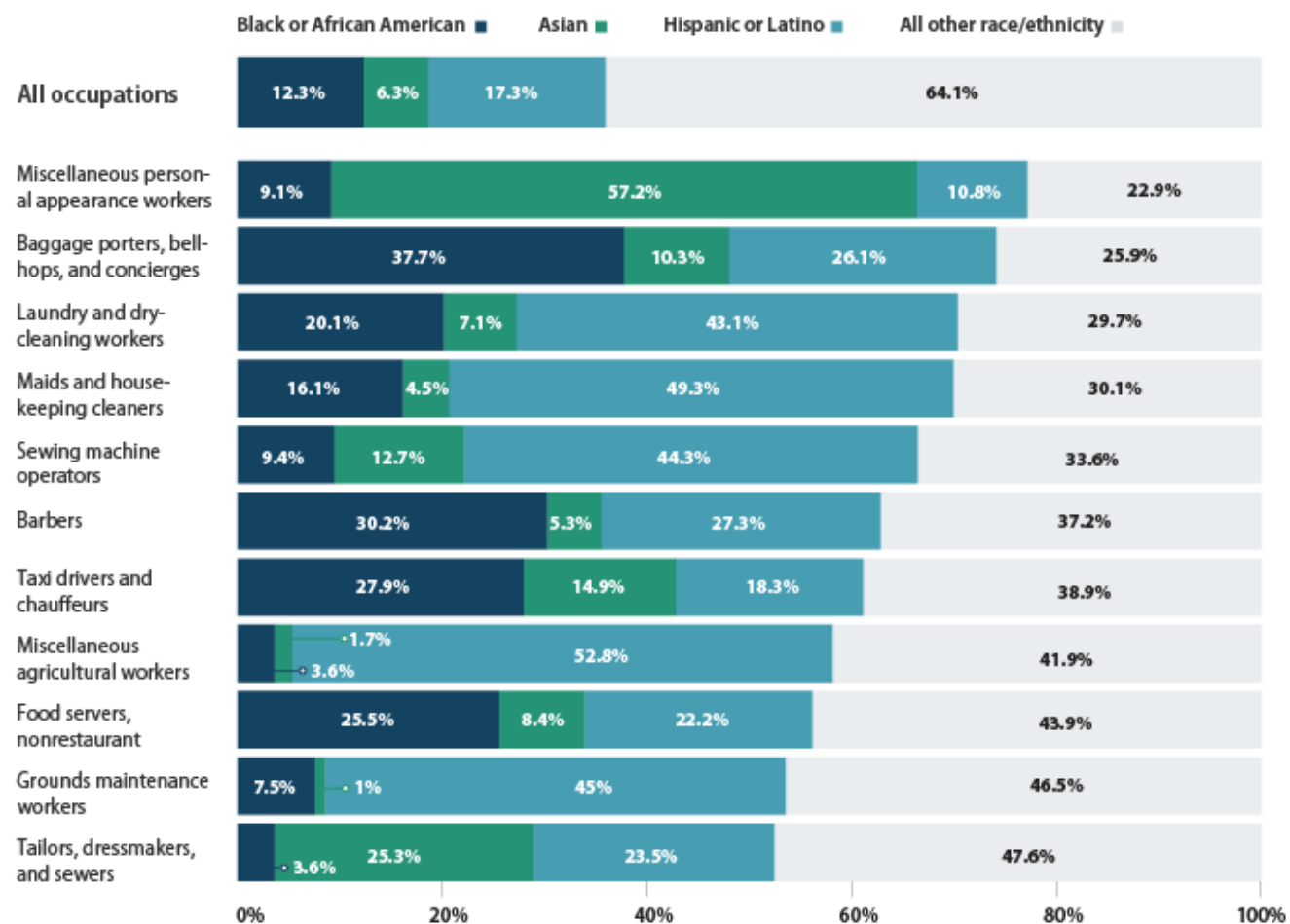
- Redlining – denied access to home ownership/loans
- Gentrification
- Subprime mortgage
- School Funding tied to property taxes
- Historical policies allowing exclusion and/or discrimination of racialized minorities by unions
- Healthcare access based on ability to pay, rather than need
- The history of policing in racialized minority communities compared to white communities
- Pay inequity
- Exposures to harmful environmental toxins



FIGURE 1

People of color remain overrepresented in some of the lowest-paying agricultural, domestic, and service vocations

Shares of total employed people by occupation, race, and ethnicity, 2018



Source: U.S. Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey: Employed persons by detailed occupation, sex, race, and Hispanic or Latino ethnicity," available at <https://www.bls.gov/cps/cpsaat11.htm> (last accessed June 2019).





SDOH in Pediatric Populations

- Black pediatric patients less likely to have adequate post-op pain control
- Increased odds of post-operative mortality
- Increased infant mortality for Black, Native Hawaiian/Other Pacific Islander (NHOPI), and American Indian/Alaska Native (AI/AN) infants die 2 times the rate of Caucasian infants

Vaccine Disparities:



SUPPLEMENTARY TABLE 1. Estimated vaccination coverage by age 24 months* among children born 2017-2018,† by selected vaccines and doses and race/ethnicity,‡ National Immunization Survey-Child, United States, 2018-2020

Vaccine/Dose	White (referent) (n = 17,236)	Black (n = 2,126)	Hispanic (n = 5,731)	% (95% CI) AI/AN (n = 338)	Asian (n = 1,275)	NHPI (n = 111)	Multiple Race (n = 2,297)
DTaP[¶]							
≥3 doses	95.0 (94.4–95.6)	91.3 (89.2–93.1)**	92.8 (91.3–94.1)**	87.0 (79.1–92.9)**	96.3 (94.3–97.7)	85.8 (74.9–93.6)	92.2 (89.3–94.5)**
≥4 doses	84.4 (83.3–85.5)	76.1 (72.9–79.1)**	79.1 (76.7–81.3)**	77.1 (68.3–84.8)	86.0 (82.1–89.4)	— ^{††}	80.1 (76.6–83.5)**
Poliovirus (≥3 doses)	93.8 (93.1–94.5)	90.4 (88.2–92.3)**	91.9 (90.4–93.3)**	87.0 (79.0–93.0)	96.1 (94.1–97.6)**	85.8 (74.9–93.6)	91.3 (88.4–93.7)
MMR (≥1 dose)^{§§}	93.2 (92.5–93.9)	89.1 (86.8–91.1)**	89.5 (87.5–91.2)**	87.4 (80.2–92.9)	94.6 (92.5–96.3)	88.0 (79.8–94.0)	91.3 (88.6–93.7)
Hib^{¶¶}							
Primary series	94.0 (93.2–94.7)	91.0 (88.9–92.9)**	92.0 (90.5–93.4)**	86.0 (78.1–92.2)**	96.2 (94.3–97.6)**	87.2 (76.6–94.6)	91.9 (89.0–94.2)
Full series	83.7 (82.5–84.8)	75.4 (72.3–78.4)**	76.3 (73.9–78.7)**	77.7 (68.5–85.8)	85.6 (81.3–89.3)	— ^{††}	77.9 (74.0–81.6)**
HepB							
Birth dose ^{***}	77.2 (75.9–78.5)	75.8 (72.6–78.8)	81.1 (78.9–83.1)**	— ^{††}	82.9 (78.2–86.8)**	— ^{††}	78.1 (74.3–81.5)
≥3 doses	92.8 (92.0–93.5)	91.3 (89.3–93.0)	90.6 (88.9–92.2)**	84.2 (75.5–91.1)**	94.3 (92.0–96.1)	89.1 (78.9–95.8)	91.5 (88.8–93.8)
VAR (≥1 dose)^{§§}	92.2 (91.3–92.9)	89.3 (87.1–91.3)**	89.2 (87.3–90.9)**	86.8 (79.2–92.7)	94.2 (91.5–96.3)	89.0 (81.1–94.6)	90.2 (87.3–92.7)
PCV							
≥3 doses	93.6 (92.8–94.3)	89.9 (87.8–91.9)**	91.6 (90.1–92.9)**	86.5 (78.7–92.5)	95.4 (93.4–97.0)	85.8 (74.9–93.6)	91.6 (88.7–94.0)
≥4 doses	85.5 (84.4–86.5)	76.4 (73.3–79.3)**	79.6 (77.3–81.8)**	77.8 (69.1–85.4)	85.1 (80.7–88.9)	— ^{††}	81.5 (78.0–84.7)**
HepA							
≥1 dose	87.3 (86.2–88.4)	84.9 (82.1–87.4)	87.3 (85.5–89.0)	— ^{††}	91.0 (87.9–93.6)**	— ^{††}	86.6 (83.3–89.5)
≥2 doses (by 35 months)	77.6 (75.7–79.4)	75.7 (71.2–80.0)	78.5 (74.9–81.8)	— ^{††}	84.9 (79.3–89.6)**	— ^{††}	74.3 (69.4–79.0)
Rotavirus (by 8 months)^{†††}	79.4 (78.1–80.7)	66.6 (63.1–69.8)**	72.9 (70.4–75.2)**	— ^{††}	80.7 (76.2–84.4)	— ^{††}	76.5 (72.7–80.0)
Influenza ≥2 doses^{§§§}	66.1 (64.6–67.5)	45.5 (41.9–49.1)**	56.9 (54.2–59.7)**	— ^{††}	74.7 (70.2–79.0)**	— ^{††}	57.3 (53.0–61.6)**
Combined 7-vaccine series^{¶¶¶}	74.7 (73.3–76.0)	64.7 (61.3–68.1)**	66.3 (63.6–68.9)**	— ^{††}	74.2 (69.5–78.7)	— ^{††}	68.8 (64.8–72.7)**
No vaccinations	1.0 (0.8–1.3)	1.2 (0.7–1.9)	0.7 (0.4–1.0)**	— ^{††}	— ^{††}	— ^{††}	— ^{††}

Abbreviations: AI/AN = American Indian/Alaska Native; NHPI = Native Hawaiian or other Pacific Islander; CI = confidence interval; DTaP = diphtheria, tetanus toxoids, and acellular pertussis vaccine; HepA = hepatitis A vaccine; HepB = hepatitis B vaccine; Hib = *Haemophilus influenzae* type b conjugate vaccine; MMR = measles, mumps, and rubella vaccine; PCV = pneumococcal conjugate vaccine; VAR = varicella vaccine.

* Includes vaccinations received by age 24 months (before the day the child turns 24 months), except for the HepB birth dose, rotavirus vaccination, and ≥2 HepA doses by 35 months. For all vaccines except the HepB birth dose and rotavirus vaccination, the Kaplan-Meier method was used to estimate vaccination coverage to account for children whose vaccination history was ascertained before age 24 months (35 months for ≥2 HepA doses).

† Data for the 2017 birth year are from survey years 2018, 2019, and 2020; data for the 2018 birth year are considered preliminary and come from survey years 2019 and 2020 (data from survey year 2021 are not yet available).

‡ Children's race/ethnicity was reported by the parent or guardian. Children identified in this report as White, Black, Asian, AI/AN, NHPI, or multiple races were reported by the parent or guardian as non-Hispanic. Children identified as being of multiple races had more than one race category selected. Children identified as Hispanic might be of any race.

¶ Includes children who might have received diphtheria and tetanus toxoids vaccine or diphtheria, tetanus toxoids, and pertussis vaccine.

** Statistically significant (p<0.05) difference compared with the referent group.

Vaccine Disparities:

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Vaccine/Dose	White (referent) (n = 17,236)	Black (n = 2,126)	Hispanic (n = 5,731)
DTaP¹			
≥3 doses	95.0 (94.4–95.6)	91.3 (89.2–93.1)**	92.8 (91.3–94.1)**
≥4 doses	84.4 (83.3–85.5)	76.1 (72.9–79.1)**	79.1 (76.7–81.3)**
Poliovirus (≥3 doses)	93.8 (93.1–94.5)	90.4 (88.2–92.3)**	91.9 (90.4–93.3)**
MMR (≥1 dose)⁵⁵	93.2 (92.5–93.9)	89.1 (86.8–91.1)**	89.5 (87.5–91.2)**
Hib¹¹			
Primary series	94.0 (93.2–94.7)	91.0 (88.9–92.9)**	92.0 (90.5–93.4)**
Full series	83.7 (82.5–84.8)	75.4 (72.3–78.4)**	76.3 (73.9–78.7)**
HepB			
Birth dose ^{***}	77.2 (75.9–78.5)	75.8 (72.6–78.8)	81.1 (78.9–83.1)**
≥3 doses	92.8 (92.0–93.5)	91.3 (89.3–93.0)	90.6 (88.9–92.2)**
VAR (≥1 dose)⁵⁵	92.2 (91.3–92.9)	89.3 (87.1–91.3)**	89.2 (87.3–90.9)**
PCV			
≥3 doses	93.6 (92.8–94.3)	89.9 (87.8–91.9)**	91.6 (90.1–92.9)**
≥4 doses	85.5 (84.4–86.5)	76.4 (73.3–79.3)**	79.6 (77.3–81.8)**
HepA			
≥1 dose	87.3 (86.2–88.4)	84.9 (82.1–87.4)	87.3 (85.5–89.0)
≥2 doses (by 35 months)	77.6 (75.7–79.4)	75.7 (71.2–80.0)	78.5 (74.9–81.8)
Rotavirus (by 8 months)^{†††}	79.4 (78.1–80.7)	66.6 (63.1–69.8)**	72.9 (70.4–75.2)**
Influenza ≥2 doses⁵⁵⁵	66.1 (64.6–67.5)	45.5 (41.9–49.1)**	56.9 (54.2–59.7)**
Combined 7-vaccine series^{†††}	74.7 (73.3–76.0)	64.7 (61.3–68.1)**	66.3 (63.6–68.9)**
No vaccinations	1.0 (0.8–1.3)	1.2 (0.7–1.9)	0.7 (0.4–1.0)**

Vaccine Disparities:



SUPPLEMENTARY TABLE 2. Estimated vaccination coverage by age 24 months* among children born 2017-2018,† by selected vaccines and doses, poverty level,‡ and Metropolitan Statistical Area (MSA) status§ -- National Immunization Survey-Child, United States 2018-2020

Vaccine/Dose	% (95% CI)				
	Poverty Level		MSA status		
	At or above poverty (referent) (n = 22,581)	Below poverty (n = 5,494)	MSA, principal city (referent) (n = 12,579)	MSA, non-principal city (n = 11,326)	Non-MSA (n = 5,209)
DTaP**					
≥3 doses	95.2 (94.5–95.7)	90.5 (88.9–91.9)**	93.9 (93.1–94.7)	93.5 (92.4–94.4)	93.8 (92.5–95.0)
≥4 doses	84.5 (83.4–85.5)	74.6 (72.3–76.8)**	82.4 (81.1–83.7)	81.7 (80.2–83.2)	77.7 (74.9–80.3)**
Poliovirus (≥3 doses)	94.1 (93.5–94.8)	89.5 (87.9–90.9)**	92.8 (91.9–93.7)	92.6 (91.6–93.6)	92.6 (91.1–93.9)
MMR (≥1 dose)§§	92.9 (92.1–93.6)	88.0 (86.3–89.7)**	92.1 (91.1–93.0)	91.2 (90.0–92.4)	90.8 (88.9–92.5)
Hib¶¶					
Primary series	94.7 (94.0–95.3)	89.4 (87.8–90.8)**	93.0 (92.1–93.9)	92.8 (91.7–93.8)	93.0 (91.7–94.2)
Full series	84.1 (83.0–85.1)	72.6 (70.2–74.8)**	80.9 (79.5–82.3)	79.6 (78.0–81.3)	79.8 (77.3–82.2)
HepB					
Birth dose***	78.4 (77.3–79.6)	78.9 (76.7–81.0)	77.2 (75.6–78.7)	79.6 (78.1–81.1)**	78.3 (75.4–80.8)
≥3 doses	93.2 (92.4–93.9)	89.4 (87.9–90.8)**	91.1 (90.0–92.2)	92.3 (91.3–93.2)	93.3 (92.1–94.4)**
VAR (≥1 dose)§§	92.1 (91.3–92.9)	88.0 (86.3–89.6)**	91.3 (90.3–92.2)	90.7 (89.5–91.8)	90.0 (88.1–91.7)
PCV					
≥3 doses	94.1 (93.4–94.7)	88.9 (87.4–90.3)**	92.5 (91.6–93.4)	92.4 (91.3–93.4)	92.5 (91.0–93.7)
≥4 doses	85.6 (84.6–86.6)	75.3 (73.1–77.4)**	82.4 (81.1–83.7)	82.7 (81.1–84.2)	80.2 (77.7–82.6)
HepA					
≥1 dose	88.4 (87.4–89.3)	84.1 (82.2–85.9)**	87.3 (86.0–88.5)	87.3 (86.0–88.6)	85.1 (82.8–87.2)
≥2 doses (by 35 months)	80.0 (78.3–81.7)	71.9 (68.6–75.2)**	78.5 (76.3–80.7)	78.4 (76.2–80.6)	70.5 (66.3–74.7)**
Rotavirus (by 8 months)***	79.6 (78.4–80.7)	66.9 (64.6–69.2)**	76.4 (74.9–77.9)	75.9 (74.1–77.5)	71.3 (68.4–74.1)**
Influenza (≥2 doses)§§§	66.7 (65.4–68.0)	46.7 (44.2–49.2)**	62.1 (60.3–63.8)	62.1 (60.2–64.0)	48.4 (45.4–51.4)**
Combined 7-vaccine series¶¶¶	74.7 (73.4–75.9)	62.5 (60.0–64.9)**	71.2 (69.5–72.8)	70.5 (68.7–72.3)	68.0 (65.1–70.9)
No vaccinations	0.9 (0.7–1.1)	0.9 (0.7–1.3)	0.8 (0.6–1.1)	1.0 (0.8–1.3)	1.4 (1.1–1.8)**

Abbreviations: CI = confidence interval; DTaP = diphtheria, tetanus toxoids, and acellular pertussis vaccine; HepA = hepatitis A vaccine; HepB = hepatitis B vaccine; Hib = *Haemophilus influenzae* type b conjugate vaccine; MMR = measles, mumps, and rubella vaccine; PCV = pneumococcal conjugate vaccine; VAR = varicella vaccine.

* Includes vaccinations received by age 24 months (before the day the child turns 24 months), except for the HepB birth dose, rotavirus vaccination, and ≥2 HepA doses by 35 months. For all vaccines except the HepB birth dose and rotavirus vaccination, the Kaplan-Meier method was used to estimate vaccination coverage to account for children whose vaccination history was ascertained before age 24 months (35 months for ≥2 HepA doses).

† Data for the 2017 birth year are from survey years 2018, 2019, and 2020; data for the 2018 birth year are considered preliminary and come from survey years 2019 and 2020 (data from survey year 2021 are not yet available).

‡ Children were classified as below the federal poverty level if their total family income was less than the poverty threshold specified for the applicable family size and number of children aged <18 years. Children with total family income at or above the poverty threshold specified for the applicable family size and number of children aged < 18 years were classified as at or above the poverty level. Poverty level was based on 2017-2019 U.S. Census poverty thresholds. A total of 1,039 children with adequate provider data and missing data on income were excluded from the analysis, which could result in a small bias in the reported estimates.

§ MSA status was determined based on household-reported county and city of residence and was grouped into three categories: MSA principal city, MSA non-principal city, and non-MSA. MSA and principal city were as defined by the U.S. Census Bureau (<https://www.census.gov/programs-surveys/metro-micro.html>). Non-MSA areas include urban populations not located within an MSA as well as completely rural areas.

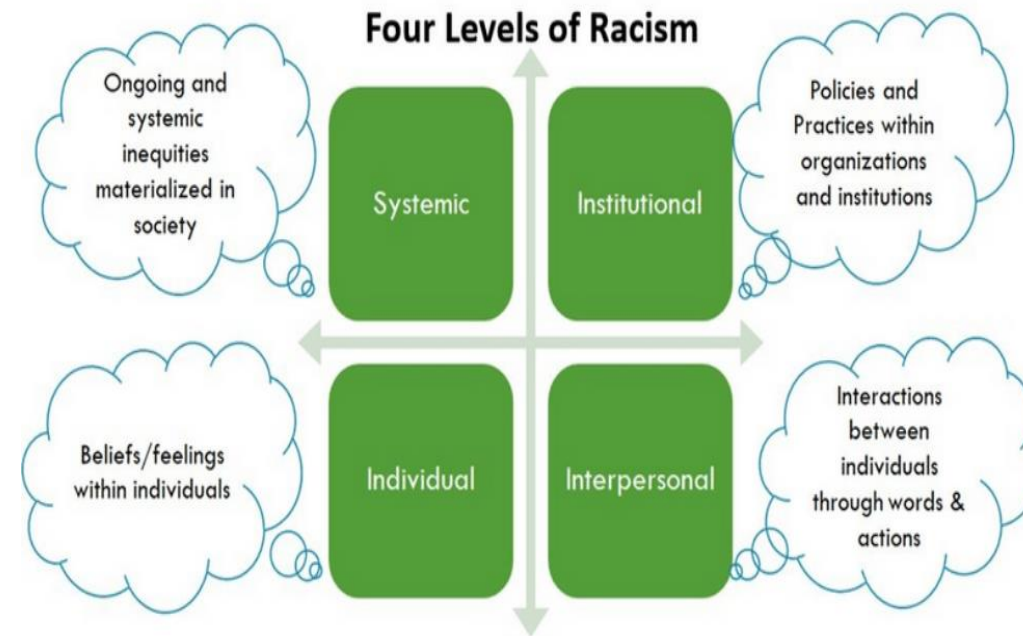
** Includes children who may have been vaccinated with diphtheria and tetanus toxoids vaccine or diphtheria, tetanus toxoids, and pertussis vaccine.

** Statistically significant (p<0.05) difference compared with the referent group.

Disrupting SDOH:



- Identify and screen
- Support immediate concern
- Address structural racism:
 - ❑ Individual biases/aversive racism
 - ❑ Interpersonal interactions with racialized minorities
 - ❑ Institutional racism
 - ❑ Systemic racism



Disrupting SDOH in Vaccinations:

- Lead with empathy
- Follow with curiosity
- Respect family's autonomy
- Consider the health literacy and use terms patients can understand
- Language is important, use collaborative and respectful words instead of words that could cause offense or harm

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Disrupting SDOH in Vaccinations:

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Instead of this...

- People who refuse [vaccination/specific behavior]
- Workers who do not use PPE
- People who do not seek healthcare

Try this...

- People who have yet to receive/do [vaccination/specific behavior]
- People with limited access to [specific service/resource]
- Workers under-resourced with [specific service/resource]



“To achieve racial health equity, government and public health officials must aggressively work to end structural racism and revise laws that create racial inequalities. Only then can we truly *begin* to work towards improving the health and wellbeing of racial and ethnic minorities, so that we can achieve racial health equity.”

-Ruqaiijah Yearby

Upcoming Webinars

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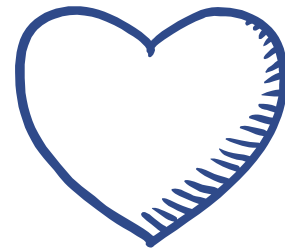
6/8/2022 12pm	Coding Updates
6/21/2022 12pm	Where We are Now with Routine Pediatric Vaccination Coverage
7/19/2022 12pm	Maximize Vaccine Uptake in Your Practice
8/16/2022 12pm	Back to School
10/18/2022 12pm	How to Have Conversations About Vaccines Without Bias

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THANK YOU!