



Advancing School-based Healthcare: Centering Data and Chronic Condition Management

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Rales
Center
for the Integration
of Health
and Education



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Learning Objectives

Following this presentation, participants will be able to:

1. Discuss the importance of centering data and chronic condition management in school-based health care to improve health and educational outcomes.
2. Describe approaches to school-based chronic condition management and their impacts on student academic outcomes.
3. Describe lessons learned from measuring the impact of a school-based health center on school attendance.

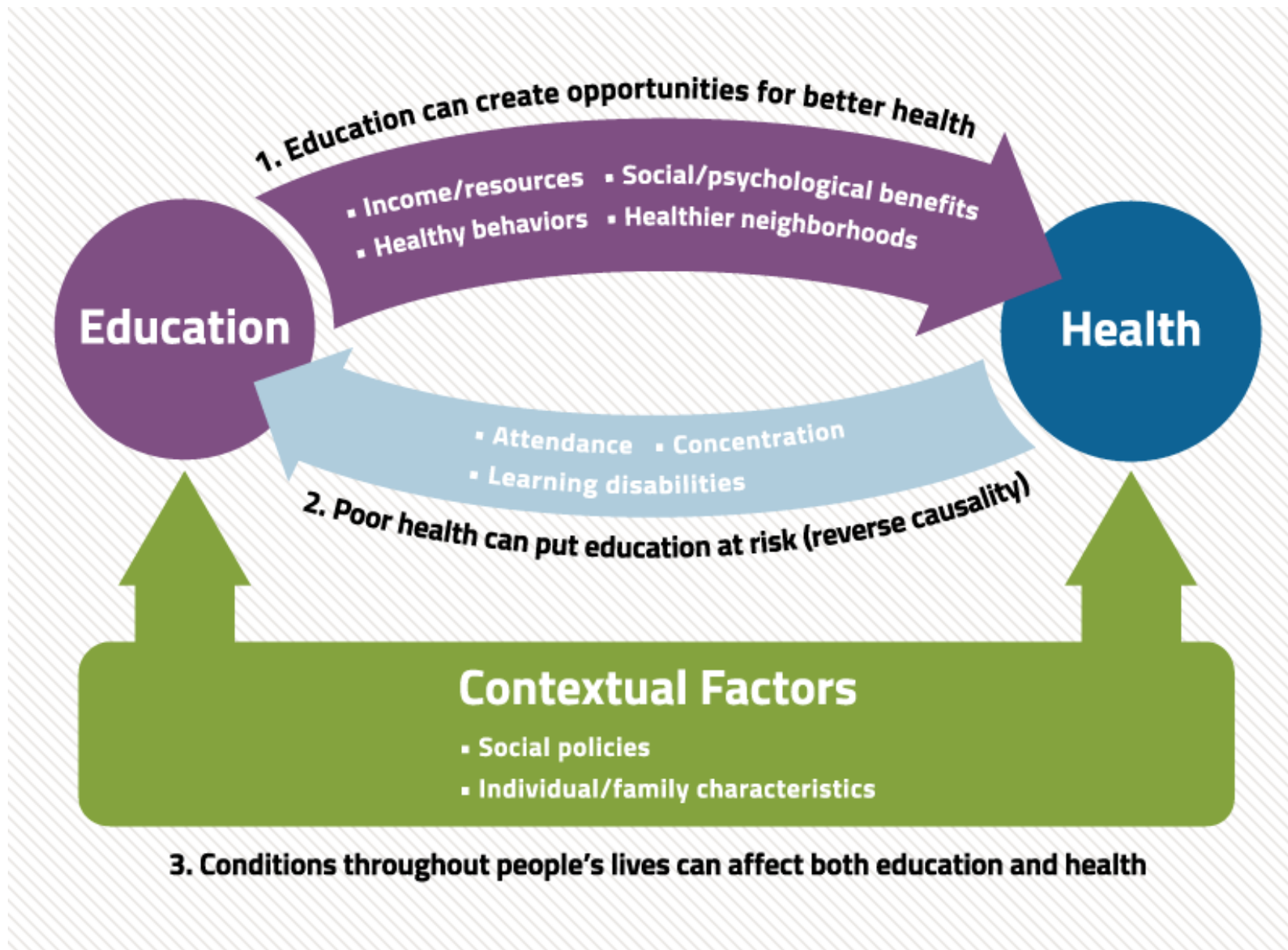
Disclosures

I do not have any conflicts of interest to disclose.

RESEARCH ARTICLE

Healthier Students Are Better Learners: A Missing Link in School Reforms to Close the Achievement Gap

CHARLES E. BASCH, PhD



School Nursing Benefits and Gaps

↑ Health outcomes

↑ Attendance

↑ Benefit-cost ratio: \$2.40

↓ Early dismissals

↓ Teacher time on illness/injury

- Only **65.7%** of U.S. schools have a full time nurse (RN/LPN/LVN).
- **6.5%** of U.S. schools do not have access to a nurse at all.
- **41.8%** of school RNs cover more than one school.
- Only **34.2%** of RNs working in schools make > \$60,000/year

School-Based Health Centers to Advance Health Equity



A Community Guide Systematic Review

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Charles Muntaner, MD, PhD,⁷ Pete C. Hunt, MPH,³ Camara Phyllis Jones, MD, PhD, MPH,⁸
Mindy T. Fullilove, MD, MS,⁹ and the Community Preventive Services Task Force

Educational Outcomes	Health Outcomes
• Higher GPA • More grade promotion • Less suspension • Less school non-completion	• More vaccination/preventive services • Less asthma morbidity • Less ED use • Fewer hospitalizations • More contraceptive use • Less substance use

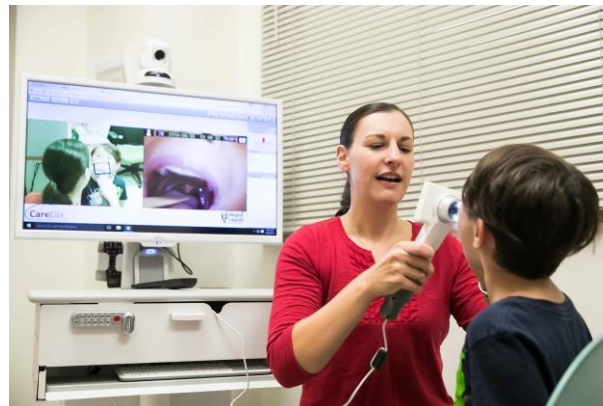
Other school-based and school-linked models

- Expanded School Behavioral Health Program

- Mobile clinics
 - Breathmobile
 - Vision Programs
 - Vaccination Clinics

<https://www.hopkinsmedicine.org/wilmer/research/dana-center/research/breds/vision-for-baltimore>

- Telehealth



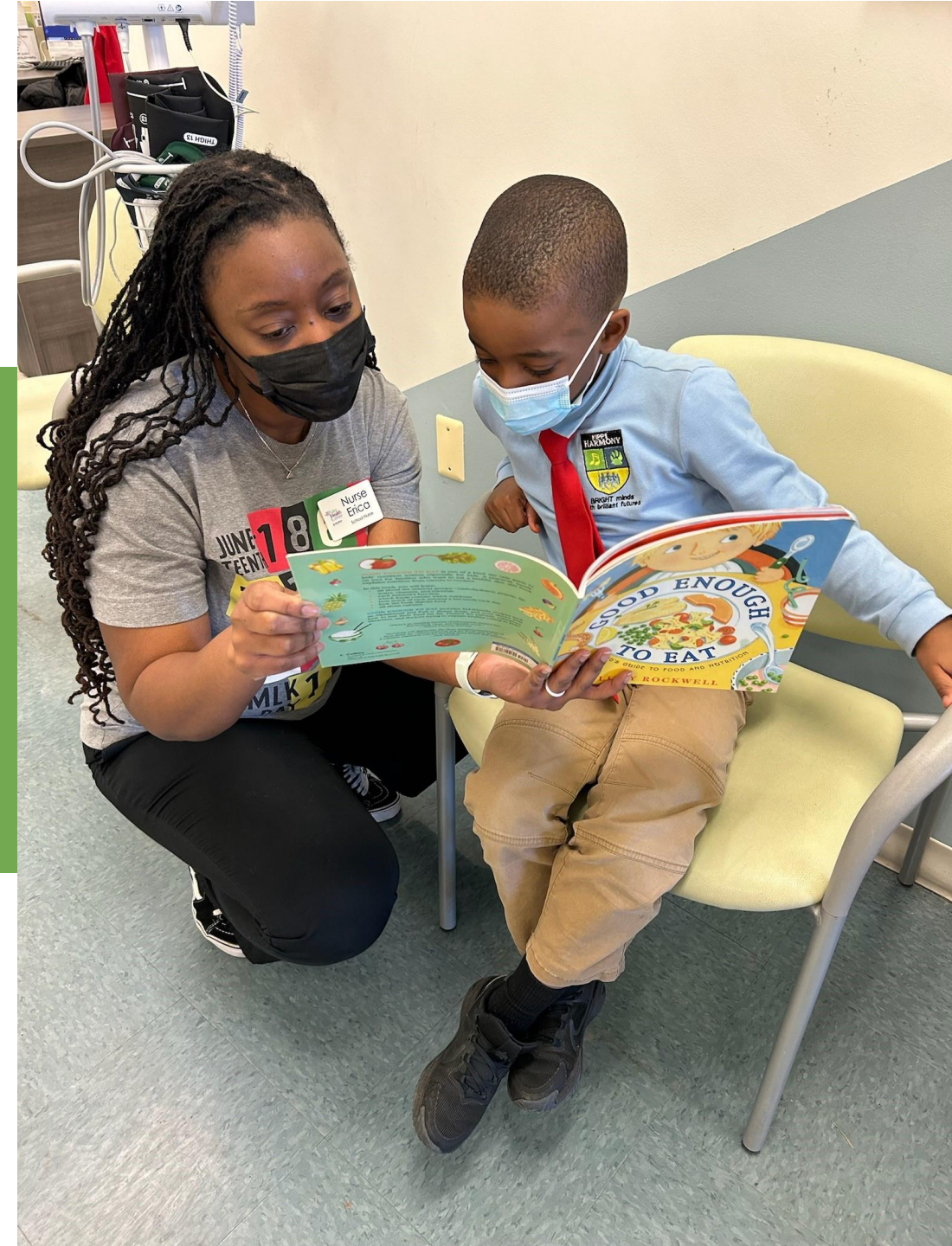
<https://www.schoolmentalhealth.org/>



<https://www.umms.org/childrens/health-services/pediatric-pulmonology-allergy-sleep/breathmobile>

<https://www.baltimoresun.com/2022/11/16/a-true-medical-home-howard-county-expands-school-based-wellness-centers-to-reach-underserved-and-uninsured-students/>

The Rales Model of Coordinated School Health



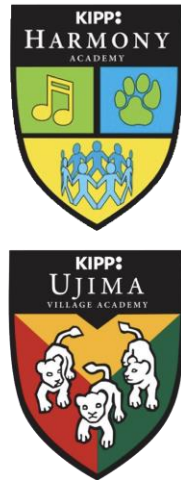
Whole School, Whole Community, Whole Child (WSCC)



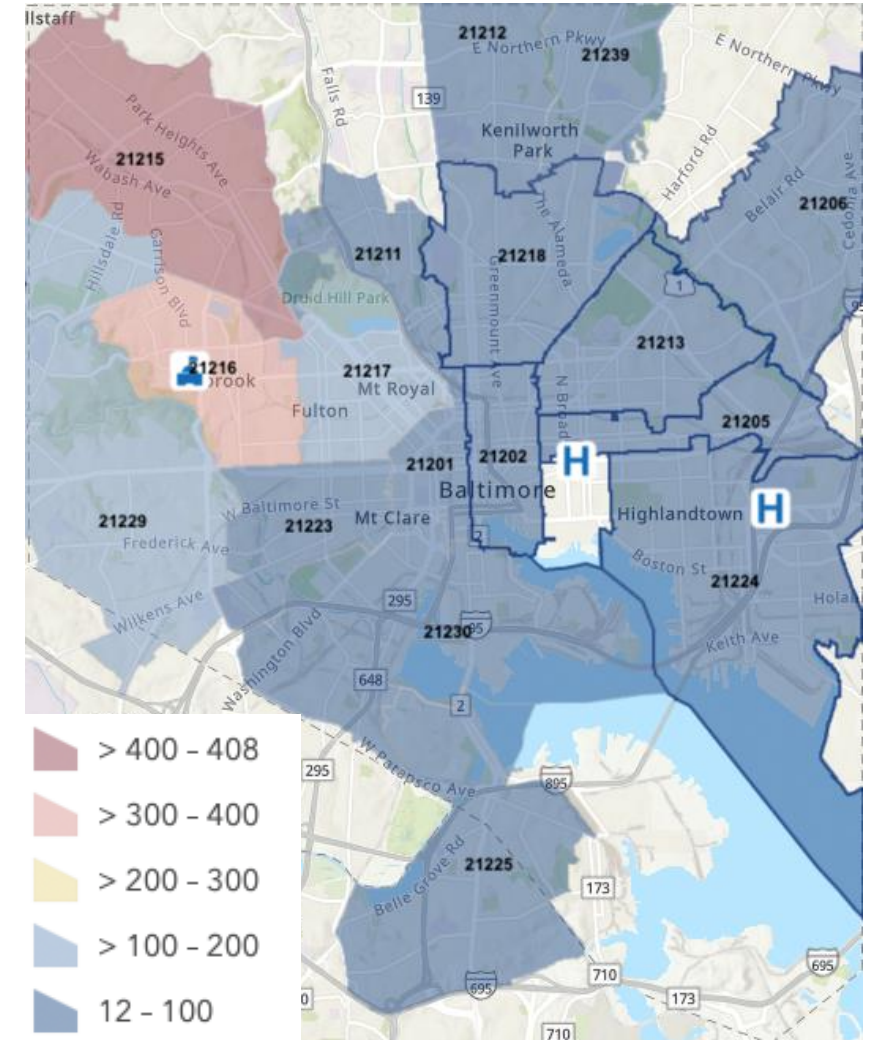
Source: <https://www.cdc.gov/healthyschools/wsccl/>

KIPP® Baltimore

- 2 public charter schools
- Elementary/middle (PK-8)
- 1,420 students
- Enrolled by lottery from around the city



Geographic distribution of KIPP families



Mission

The mission of the Rales Health Center is to support health and educational success for students at KIPP Baltimore, in partnership with the school and community, through the design and delivery of integrated, compassionate, evidence-informed school health services, school-based healthcare, and school wellness programs. Through our work we strive to empower students, staff, and families to lead their healthiest, most joy-filled lives, and to remove health issues as barriers to learning. We share best practices and advocate for innovative approaches like ours to promote health and educational equity at KIPP Baltimore, throughout Baltimore City, and nationwide.

Rales Model Evaluation Goals

1. Characterize student health status at KIPP
2. Document the process of implementing fully-integrated school health, including lessons learned
3. Evaluate impacts on health and educational outcomes



Student Health and Wellbeing



Chronic Conditions

65% had a chronic condition compared to 51% of children nationwide.



Asthma

36% had asthma compared to 14% nationwide.



Overweight/Obesity

39% had overweight or obesity compared to 35% nationwide.



Vision

47% did not pass screening.



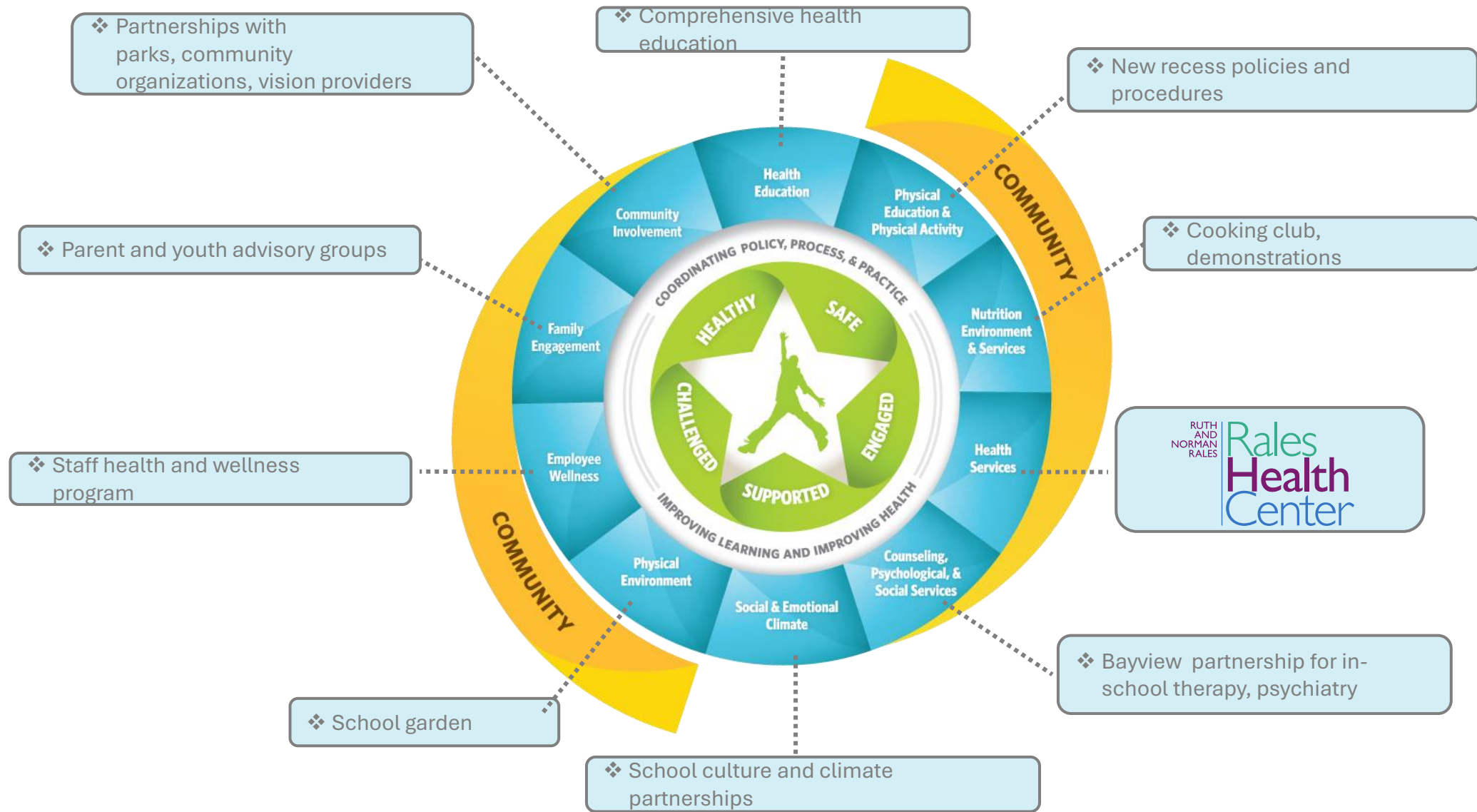
ADHD

7% of KIPP students had documented ADHD.



Depressive Symptoms

21% of 7th graders screened positive for depressive symptoms.



Wellness Priorities

- CDC's School Health Index and school priorities determined areas of wellness focus in WSCC model:
 1. Social-Emotional Environment
 2. Physical Activity
 3. Health Education



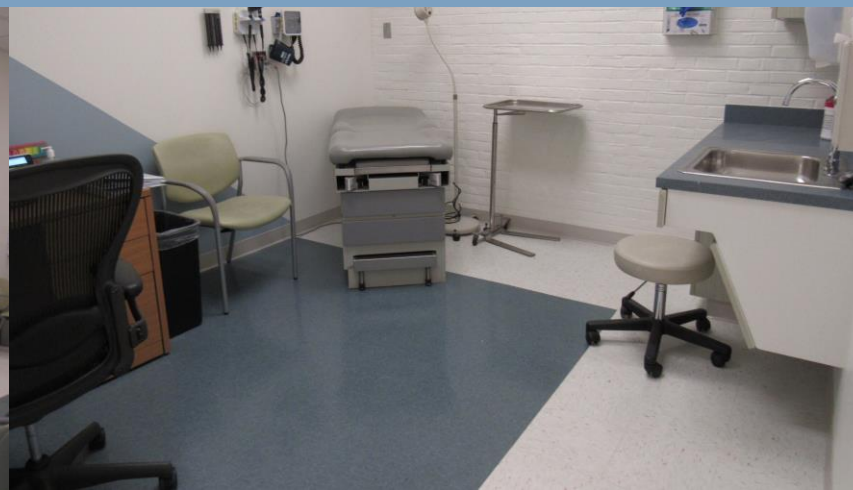


The Rales Health Center

School Health Services + School Based Health Center

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Rales Health Center

- Robust, expanded school health services
- Full-service SBHC
 - Acute, preventive, chronic disease management
 - Onsite lab, prescription delivery
- Case management and resource linkage



Data Sources

- **School health services data:**
 - Student health background forms (self-report)
 - School health services records
- **School-based health center records**
- **MOU with LEA:**
 - Demographic data
 - Attendance
 - Standardized assessment scores
 - IEP and 504 status

Asthma Program

- Identified as a critical need by school and families.
- **Asthma accounted for up to 18% of absenteeism.**
Johnson SB, Spin P, Connolly F, Stein M, Cheng TL, Connor K. Prev Chronic Dis. 2019 Oct 31;16:E148.
- **Students with asthma had poorer performance on standardized tests over three years.**

Senter JP, Smith BM, Prichett LM, Connor KA, Johnson SB. Acad Pediatr. 2021 Aug;21(6):1009-1017.



Asthma Program

- **Universal asthma education:** teachers, students, families
- **Education groups for students with asthma:** Open Airways for Schools
- **Early identification** of students with asthma risk (previously unidentified, uncontrolled)
- **Nurse case management and care coordination**
- **Guidelines-based** asthma care

Public health professionals can use EXHALE to help people with asthma achieve better health

What are the
EXHALE strategies?



CDC, 2020

EXHALE

Education

on asthma self-management

X-tinguishing

smoking and exposure to secondhand smoke

Home

visits for trigger reduction and asthma self-management education

Achievement

of guidelines-based medical management

Linkages

and coordination of care across settings

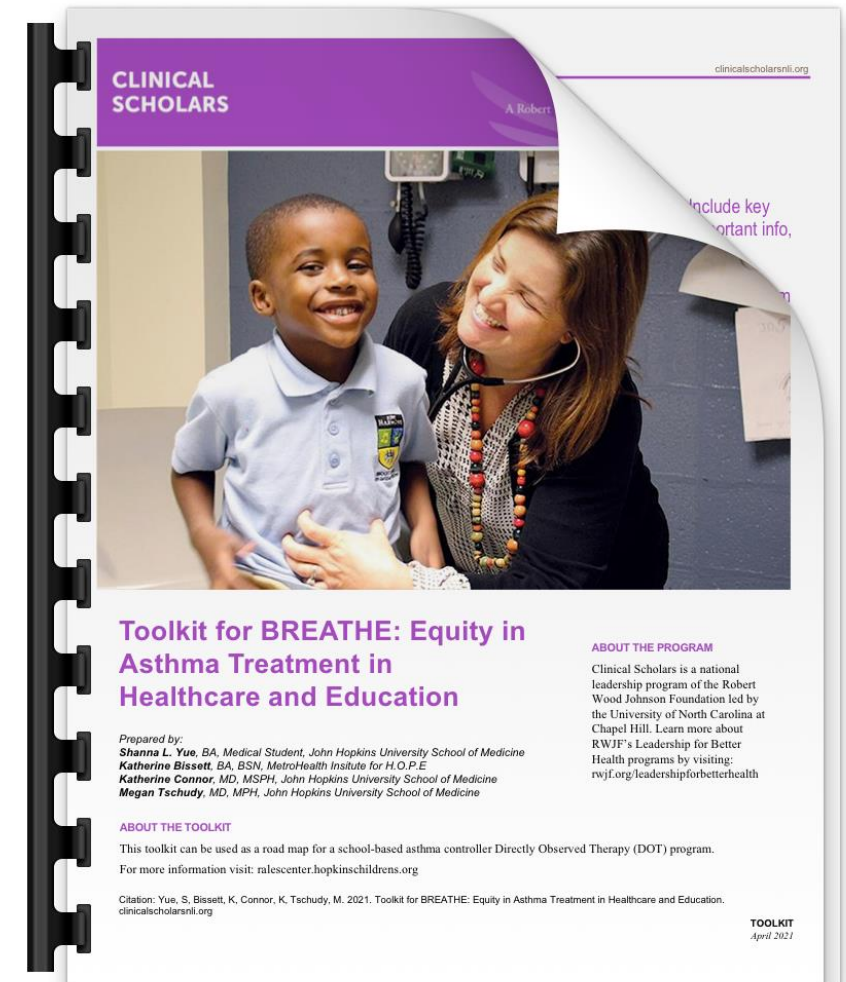
Environmental

policies or best practices to reduce asthma triggers from indoor, outdoor, or occupational sources

<https://www.cdc.gov/asthma/exhale/documents/EXHALE-Guide-for-Public-Health-Professionals-508.pdf>

Asthma Program

- Rales Asthma Prioritization System (RAPS)
Rabner M, Bissett K, Johnson SB, Connor KA. J Sch Health. 2020 Jul;90(7):538-544.
 - School-wide asthma screening
 - 49% some asthma-like symptoms
 - 21% high risk of uncontrolled asthma
 - Stratified into follow-up priority groups: rescue med, absenteeism
- SBHC medication management, Rx delivery
- Directly observed controller therapy



Asthma Program Impacts

In year 4, SBHC utilization declined 23% from year 3 due to fewer acute asthma visits.

Unscheduled albuterol use decreased by 70% for students in the DOT program.

Chronic absenteeism among students with asthma declined by 49% between years 1 and 3

\$4.20 net social benefit for every \$1 invested in RHC asthma programs.

RHC Health Impact

- Improved asthma control
 - 70% decrease in unscheduled albuterol use for students in DOT
 - Decline in acute asthma SBHC visits
- Increased physical activity: 250,000 minutes of classroom physical activity added in year 1
- Decreased emergency department utilization
 - Analysis of Maryland Medicaid data: fewer ED visits for students enrolled in the RHC SBHC compared to propensity matched controls
- Decreased healthcare cost: \$420,800 in cost savings in the first four years due to averted ED visits



RHC Educational Impact

- **School Attendance**

- 2,600 fewer absences per year related to the RHC
- 49% decrease in chronic absenteeism among students with asthma
- 50% decrease in chronic absenteeism among students with ADHD

- **Classroom behavior:** vision program and glasses adherence intervention associated with improved behavior

Haag TM, Velazquez GC, Wiggins T, Spin P, Johnson SB, Connor KA. J Sch Nurs. 2020 Oct 13.

- **Performance on standardized assessments**

Connor KA, et al.. Acad Pediatr. 2024 Apr 6:S1876-2859(24)00116-5.

- Greater growth in math and reading for SBHC enrolled students



Community Impact

“I can’t even put into words how much [the RHC] is appreciated and loved. As a single mom, having a child with multiple diagnoses can be very trying. Prior to enrolling J at KIPP, I had to leave multiple jobs that had set hours and miss a lot of time from my employer I applied to the lottery at KIPP so he could be closer to my job so I could care for him. I literally smiled and cried tears of joy when I heard about the clinic being inside of the school”

Parent of J, a student with diabetes

Reasons for absence

Barriers

- Chronic and acute illness
- Family responsibilities or home situation
- Trauma
- Poor transportation
- Housing and food insecurity
- Inequitable access to needed services
- System involvement
- Lack of predictable schedules for learning
- Lack of access to tech
- Community violence

Aversion

- Struggling academically and/or behaviorally
- Unwelcoming school climate
- Social and peer challenges
- Anxiety
- Biased disciplinary and suspension practices
- Undiagnosed disability and/or disability accommodations
- Caregivers had negative educational experiences

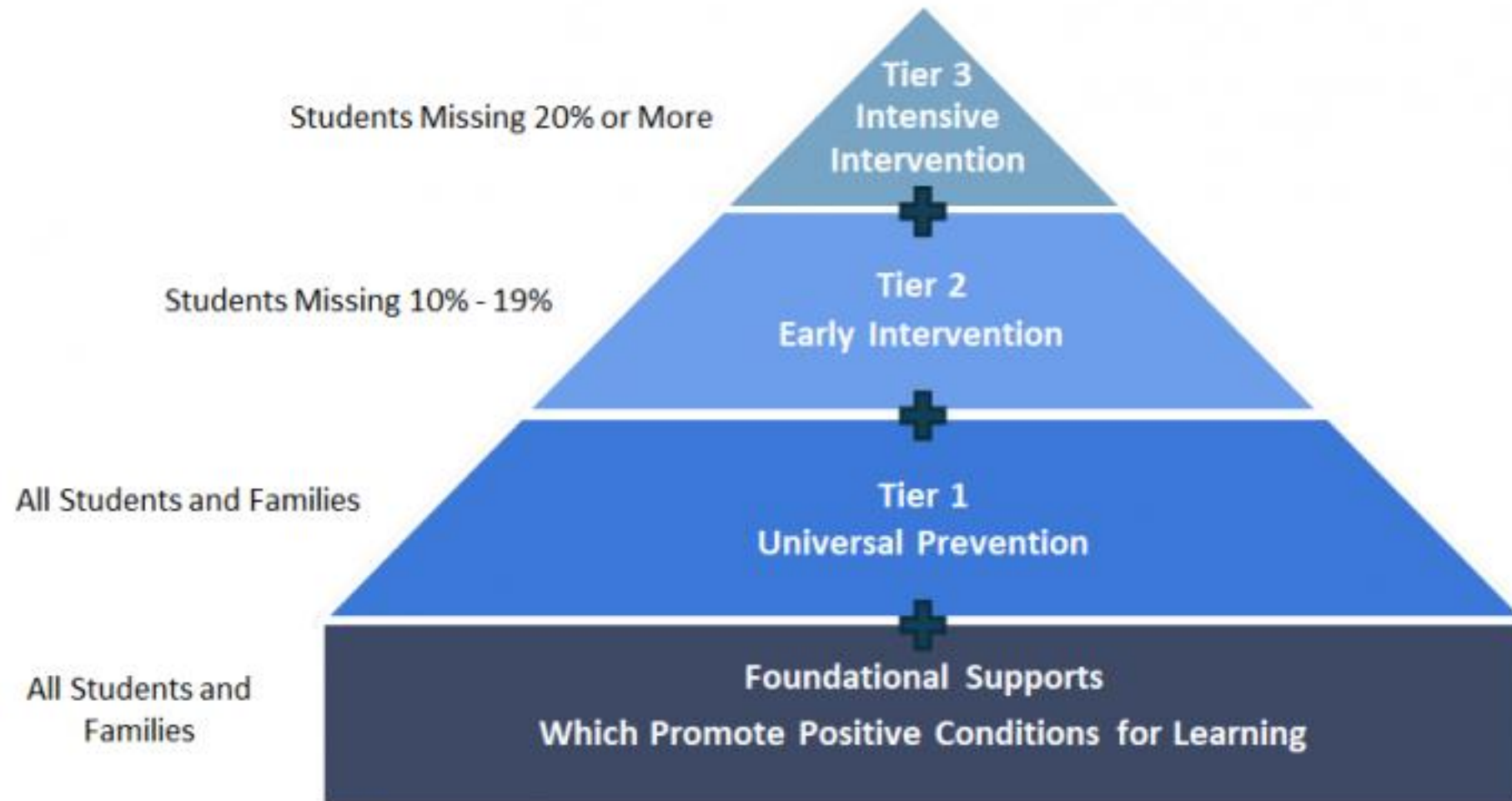
Disengagement

- Lack of challenging, culturally responsive instruction
- Bored
- No meaningful relationships to adults in the school (especially given staff shortages)
- Lack of enrichment opportunities
- Lack of academic and behavioral support
- Failure to earn credits
- Need to work conflicts with being in high school

Misconceptions

- Absences are only a problem if they are unexcused
- Missing 2 days per month doesn't affect learning
- Lose track and underestimate TOTAL absences
- Assume students must stay home for any symptom of illness
- Attendance only matters in the older grades
- Suspensions don't count as absence

Addressing Chronic Absenteeism



Attendance: what works?

- **Infection prevention** – hand hygiene, immunizations
- **School nurses**
 - Students seen by RNs more likely to return to class
 - Full-time RNs → decreased chronic absenteeism for students with asthma
 - Lower nurse:student ratios improved attendance rates
- **School-based health centers**
 - Increased attendance for student users of medical and mental health services
- **Mental health care**
- **Promoting positive school climate**
- **Strong parent communication**
- **Coordinated school health**

POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy
of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™



The Link Between School Attendance and Good Health

Mandy A. Allison, MD, MSPH, FAAP,* Elliott Attisha, DO, FAAP,† COUNCIL ON SCHOOL HEALTH

**Positive Conditions for Learning
Lead to Students Being Engaged and Attending Regularly**



SBHC enrollment and MAP growth

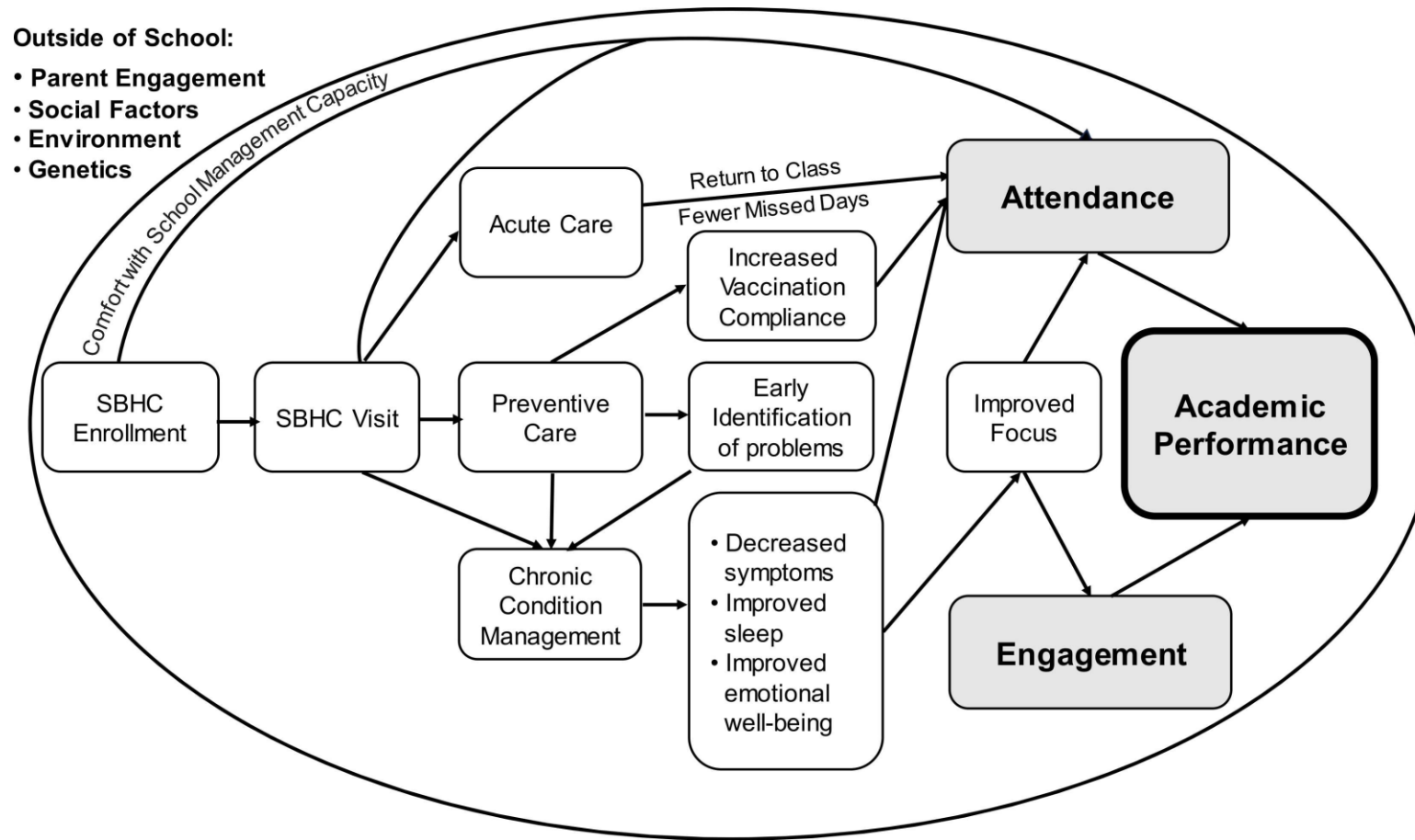


Fig. 1 **Conceptual model of the links between health and academic performance.** Adapted from: Knopf JA, Finnie RK, Peng Y, et al. School-based health centers to advance health equity: A community guide systematic review. American Journal of Preventive Medicine. 2016;51(1):114-126.

SBHC enrollment and MAP growth

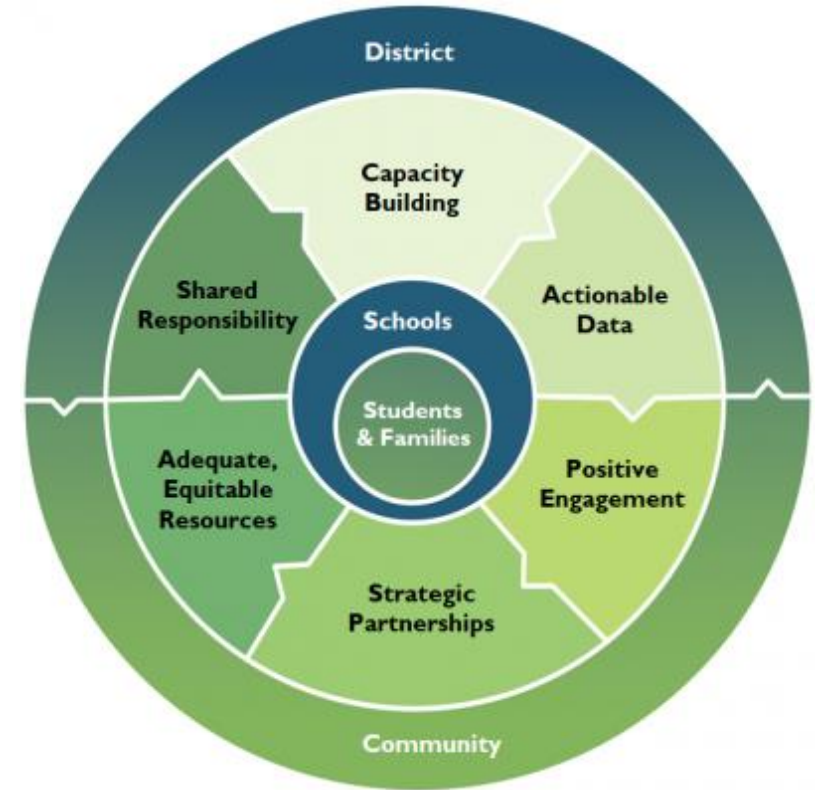
- SBHC enrollees more likely to have asthma, ADHD, overweight or obesity
- Baseline math and reading scores lower for enrollees than non-enrollees
- **Greater growth in math scores for enrollees compared to non-enrollees**
- **Greater growth in reading scores for enrollees compared to non-enrollees**

Attendance

- Baseline absenteeism rate was significantly lower for SBHC enrollees than for non-enrollees.
- Rate of decrease of absenteeism was greater for enrollees than non-enrollees (trend, not statistically significant).
- It's complicated!
 - Changing measures and definitions
 - No pure comparison group
 - MANY other (social) factors influencing absenteeism that are difficult to account for
 - How long does it take to impact absenteeism? Differs by reason.

Lessons Learned

- **Users of school-based healthcare services are different than non-users at baseline** – use caution when making rough comparisons.
 - Large samples/system-level data can help
 - Consider whole school vs. utilizer effects
- High quality data are important and can be hard to come by – **standardized definitions and measures** at the LEA and/or state level help.
- MOU with LEA can support data sharing at the individual program level – **unified systems for data sharing are needed for consistent, real-time evaluation and improvement.**



Rales Team



Wellness



*Administration &
Evaluation*



Rales Center



@raleshealthcenter



KIPP® Baltimore



BALTIMORE CITY
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Initiative 

ABELL FOUNDATION



The Leon Lowenstein
Foundation



The Richard Herman Fund

The Cupid Foundation



Questions?



SBHC enrollment and MAP growth

- **Retrospective, non-randomized comparator controlled study**
- **Sample:** 2,480 students enrolled in the schools (2015-19)
- **Exposure:** SBHC enrollment
- **Outcomes:** Measures of Academic Progress (MAP) scores; school absenteeism
- **Covariates:** grade, sex, BMI category, chronic health conditions, baseline MAP scores, baseline absenteeism, individual pre-trends

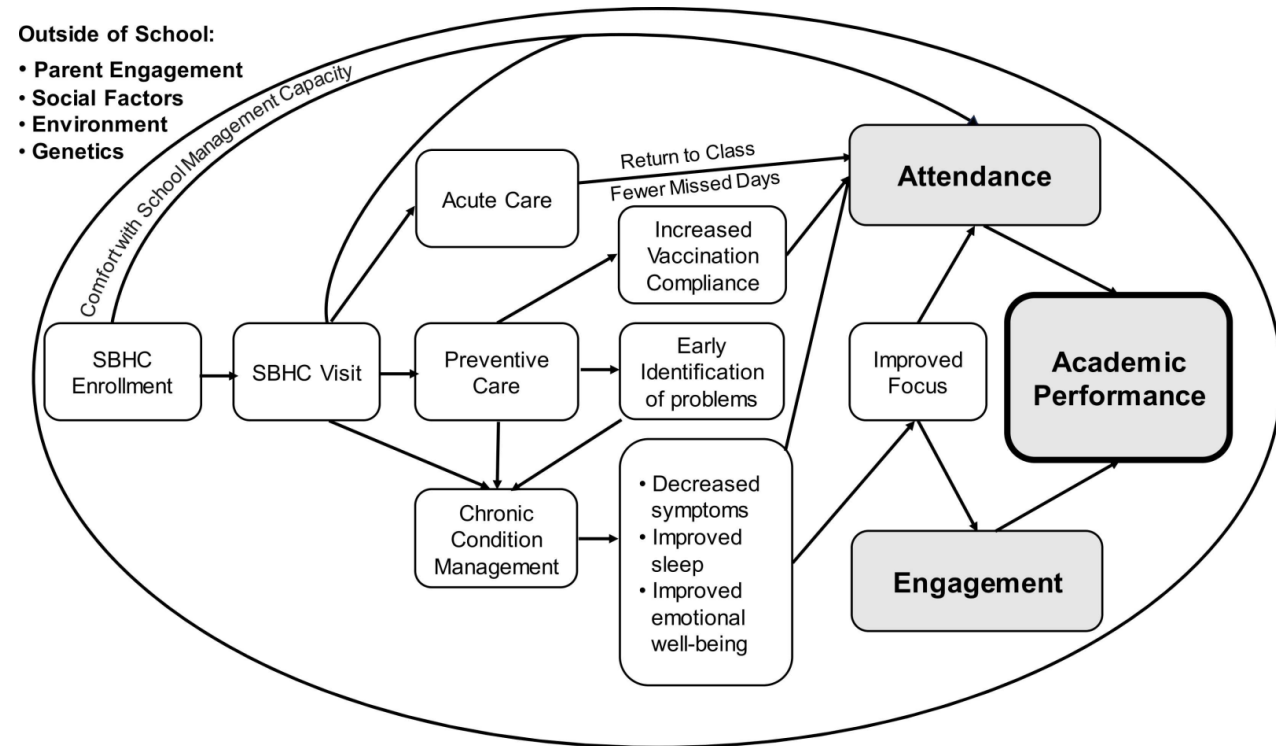


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SBHC enrollment and MAP growth

- **Analysis:**

- Descriptives compared for enrollees and controls using standardized mean differences (SMDs)
- Linear mixed models with random intercepts
- Difference in Differences (DiD) to estimate the relationship between SBHC exposure and post-exposure MAP trends

- **Results:**

- SBHC enrollees more likely to have asthma, ADHD, overweight or obesity
- Baseline math and reading scores lower for enrollees than non-enrollees
- **Mean change from baseline covariate adjusted math scores for enrollees exceeded non-enrollees by 3.5 points (2.2, 4.8)**
- **Mean change from baseline covariate adjusted reading scores for enrollees exceeded non-enrollees by 2.1 points (0.9, 3.3)**