ABC Science Collaborative: COVID-19 and Schools

Uniting science and schools for a data-driven solution to decision making and implementation

Chapel Hill-Carrboro City Schools

Durham Public Schools

Orange County Public Schools

Duke University School of Medicine

Duke Clinical Research Institute

COVID-19 and impact on schools

A deep understanding of the risk factors associated with COVID-19 juxtaposed against the background of the need for school attendance is an urgent, unmet public health need.

- Lack of knowledge regarding risks of COVID-19 in children has caused substantial fear regarding resuming one of the most basic and necessary activities — school.
- There is deep concern about asymptomatic spreading among school-age children and what that means for a-risk children, teachers, parents, and the community.
- However, there is evidence of a significant social-emotional and educational burden, particularly for underrepresented students, from delaying return to in-person school.
- Each school must consider its unique challenges and weigh risks and benefits of specific plans.

Proposed solution: A data-driven approach to support decision making

- Initiate a direct-to-family and community-engaged approach to promote existing guidance from state and local health departments, provide data, and interpret emerging scientific evidence to keep children, teachers, and the community healthy and safe during the COVID-19 pandemic.

- Deploy a three-tier approach
  - Educational outreach
  - Data to support decisions
  - Targeted research opportunities

Aim 1: Educational outreach

- Provide school administrators, teachers, staff, and parents access to real-time, data-driven information about COVID-19 based on available data from trusted sources.
- Collect, synthesize, and interpret available data in collaboration with educational leaders.
- Cultivate trust and facilitate the delivery of culturally appropriate information and support to educational leaders and the school communities.
- Communicate in layperson terms to help build trust.
- Lead with empathy and commitment to children's health.

DELIVERABLES

- **Webinars** for parents and school staff
- **Newsletter content** for district staff
- **Stakeholder meetings**
  - **School Boards**
  - **Superintendents**
  - **Principals**
  - **Teachers**
  - **Parents**
- **Information included on public-facing website**,

1. COVID-19 in an Overnight Camp, Georgia

- June 17 – 20
  - Orientation for 138 trainees & 120 staff members (median age 17; range 14 – 59 years)
  - Limited cloth mask compliance
  - Negative test before arriving
- June 21 – 27
  - 363 campers joined (6-19 years)
  - Indoor, outdoor, vigorous singing and cheering
  - No mask for kids
  - June 23: Teenage staff member has symptoms and positive

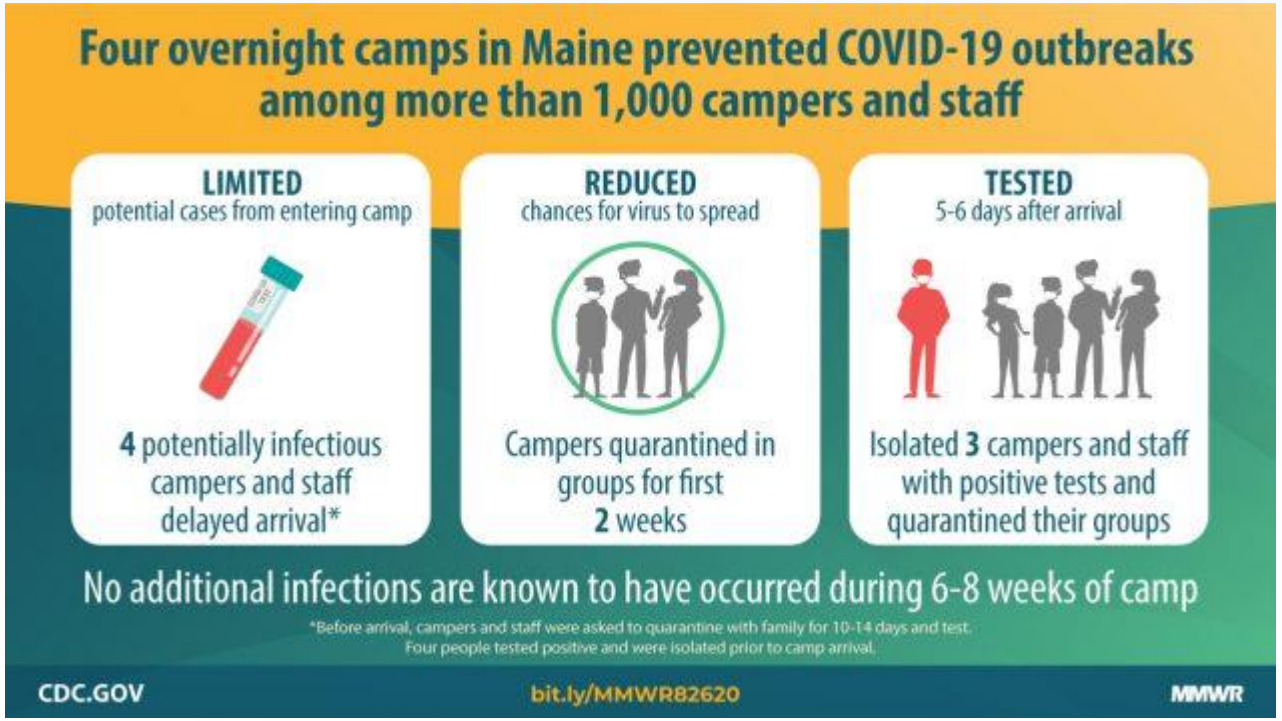
Characteristic	Number	No. positive	Attack rate %
Total	597	260	44
Sex			
Male	267	123	46
Female	330	137	42
Age			
6-10	100	51	51
11-17	409	180	44
18-21	81	27	33
22-59	7	2	29
Attendees			
Trainee	134	26	19
Staff	117	66	56
Camper	346	168	49
Cabin size			
Small (<4)	13	5	38
Medium	75	29	39
Large (>13)	375	200	53

Managed well

- MMWR about safe overnight camps in Maine: https://www.cdc.gov/mmwr/volumes/69/wr/mm6935e1.htm?s_cid=mm6935e1_w
- Similarities and contrasts
  - Tested at the start
  - Masks
  - Cohorts
  - Distancing
  - No additional infections

Summary

Four Maine overnight camps with 1,022 attendees from 41 states implemented a multilayered prevention strategy that was successful in identifying and isolating asymptomatic COVID-19 cases and preventing secondary transmission.



COVID-19 in Overnight Camps, Child Care, and Schools: Lessons Learned

- Key points
  - Masks are important. Kids should wear masks
  - Testing, in and of itself, should not give reassurance
    - Dorms vs K-12
  - Success is possible, but so too is failure
    - Rural NC K-12 vs Rural Utah K-12
    - Universities
  - Other lessons
    - Have a detailed plan
    - Elementary schools vs middle schools vs high schools
    - On-call for clusters
    - Lessons learned (quality improvement; learning life cycle)

Major Stakeholders

- **School boards**—A political body that responds to political pressures from groups 4 and 5.
- **Superintendents**—they need to lead, devise policies, etc. and their direct reports are principals. Without this group, high-quality research with reproducibility is extremely difficult (you are limited to small studies at a few schools, or voluntary reporting websites).
- **School principals**—they need to be fully convinced of the importance of the research and public health measures. Without this team, uptake does not happen. They also need to ensure adherence to masking, or schools risk becoming a COVID hotbed.
- **Staff** (more than just teachers; children ride the bus to get to school)—they are worried that families won't comply with masking and that staff won't have the support of leadership. Establish trust or schools will stay remote.
- **Families**—they need to wear masks. This group needs education on COVID and that a middle path (safe opening) is viable.

Aim 2: Data to support school-specific decisions

- Provide weekly, customized, data-driven information to school administrators in pre-identified districts.
  - Person-level data derived from members of the school district, as well as data about rates of disease in the local, state, and national communities
- Provide detailed information about potential consequences of actions and recommended approaches.
- Support for implementation of local public health guidance
- ***Consent to approach for future research***

DELIVERABLES

- Deliver prepared customized scorecards
- **Data "dashboards"** at the individual school district level
- Collection and summary of **up-to-date district-level data** if available, including de-identified comparison to other districts and characteristics of those districts
- **Customized risk assessments** with scenario modeling using district-specific data
- **Assessment of local impact** from best practices related to public health practice

Aim 2: Data to support school-specific decisions

- **ABC Science Collaborative Health Tracker**
  - Provide support for implementation of local public health guidance
  - Daily symptoms collected via the mobile app
    - Parents can complete prior to arrival at school or
    - Proxy completion for registered students by school staff
    - Parents can register and complete symptom surveys for multiple children
    - The app can be used in English and Spanish on IOS and Android devices (phones, laptops, tablets)
    - Future releases will provide additional educational information and resources

- **ABC Science Collaborative Health Dashboard**
  - Provide weekly, customized, data-driven information to school administrators in pre-identified districts.
  - The information will be de-identified, no link to individual student, parent or staff
  - Future releases will include local, state and national visualizations

Tracker Registration Flow/Use Overview

Parent/Guardian Accounts

Parent/Guardian sets up their own account, completes activation steps

Parent/Guardian then completes student registration

Parent/Guardian agrees to symptom surveys being captured

Parent/Guardian consent to student completing survey

No

Parents/Staff only ones that can complete Daily Surveys on student behalf

Yes

Student *if age of assent*, can also complete Daily Survey

Link Ability:
Additional Parent/Guardians able to link to student using student unique program key.

Constraints:
-Staff will not be able to complete daily monitoring on site until student is registered by a parent.
-User identities will not be verified
-Duplicate accounts may be created by user
-Affiliation to school will have to be monitored through use as there are no controls around selects made.

****Student complete survey - only if Parent consents to student completing daily symptom monitoring and student is at age of assent.

Student Accounts

Logs in using activation link from parent
Gives Assent

Student downloads app and logs in

Student completes Daily Surveys **
Can view daily pass and other content.

Aim 3: Targeted COVID-19 pediatric research

- Advance the study of COVID-19 in children by identifying opportunities to study and estimate the incidence and risk factors for severe COVID-19 disease.
- Provide students and families in participating districts with the opportunity to participate in clinical research using de-identified data to further understand the mechanisms that support the treatment and eradication of COVID-19 in the pediatric population.
  - Families will have the ability to opt-in to future contact for participation in future clinical trials.

DELIVERABLES

- **De-identified datasets derived from weekly electronic questionnaires**
- **Study and results** from sub-cohort of presumed or confirmed COVID-19 positive students (as reported on questionnaire)
- **Self-reported outcomes on COVID-19 severity** (e.g., hospitalization rate, persistence of ongoing symptoms, MIS-C, etc.)

Benefits to child health and school districts

- Helps to solve a problem that is the most immediate risk to child (and family) health
- Engages communities, including families, teachers, and staff most affected by COVID-19

Value for school districts

1. Educational series for teachers
2. Up-to-date interpretation of extant data
3. Local (county-level) and school-district data collection (MOU required) will result in return of results (local and national) to school systems to inform local school decisions
4. Develop an at-risk for MIS-C cohort

   Data collection:

   – PCR and serology, other tests

   – Household composition, education delivery model (remote, in person, hybrid), Zip+4, school, teacher/class

   – COVID signs/symptoms; child well-being

   – Clinical consequences of COVID-19

Program leadership team

COVID-related research experience, sponsored by NIH, and led by the team
For each project, a team member is the National Principal Investigator (PI)

- National Study of Neonates exposed to COVID: 100,000 infant population-based
- PK-PD modeling of therapeutics used in children and adults for COVID (HCQ among others)
- Multi-center study of the use of 10 antivirals and immune modulating agents in children with COVID
- Data Safety Monitoring Board Chair for COVID
  2 RCTs ACTIV-1
  Coordinating center and clinical pharmacology lead
- Consultative services for clinical trial design
- MIS-C in children, a multi-center epidemiologic study

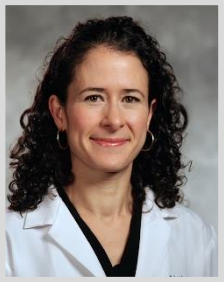
Additional expertise

- Holistic approach to staff and children: e.g., adult and pediatric mental health; adult infectious disease
- Other: environment, engineering, etc.

Kanecia Zimmerman, MD
Co-chair
Associate Professor, Critical Care
2 children, Durham

Danny Benjamin, MD, PhD
Co-chair
Distinguished Professor, Epidemiology Therapeutics
4 children in public education

Ibukun Akinboyo, MD
Assistant Professor, Infectious Disease
No school-aged children



Gabriela Maradiaga Panayotti, MD
Assistant Professor, Primary Care, Latinx advocacy
2 children, Durham

Micky Cohen-Wolkoweiz, MD, PhD
Distinguished Professor, Infectious Disease
2 children, Durham

David Weber, MD, MPH
Assistant Chief Medical Officer
UNC Health Care

Leaving an Imprint on NC…and Beyond

Piedmont-Triad / District 5

Alamance-Burlington School System
Caswell County Schools
Davie County Schools
Davidson County Schools
Guilford County Schools
Lexington City Schools
Mt. Airy City Schools
Stokes County Schools
Surry County Schools
Thomasville City Schools
Winston-Salem Forsyth Schools
Yadkin County Schools

North Central Region / District 3

Chapel Hill-Carrboro City Schools
Chatham County Schools
Durham County Schools
Edgecombe County Schools
Granville County Schools
Johnston County Schools
Lee County Schools
Nash County Public Schools
Orange County Schools
Vance County Schools
Wake County School
Warren County Schools

Northeast Region / District 1

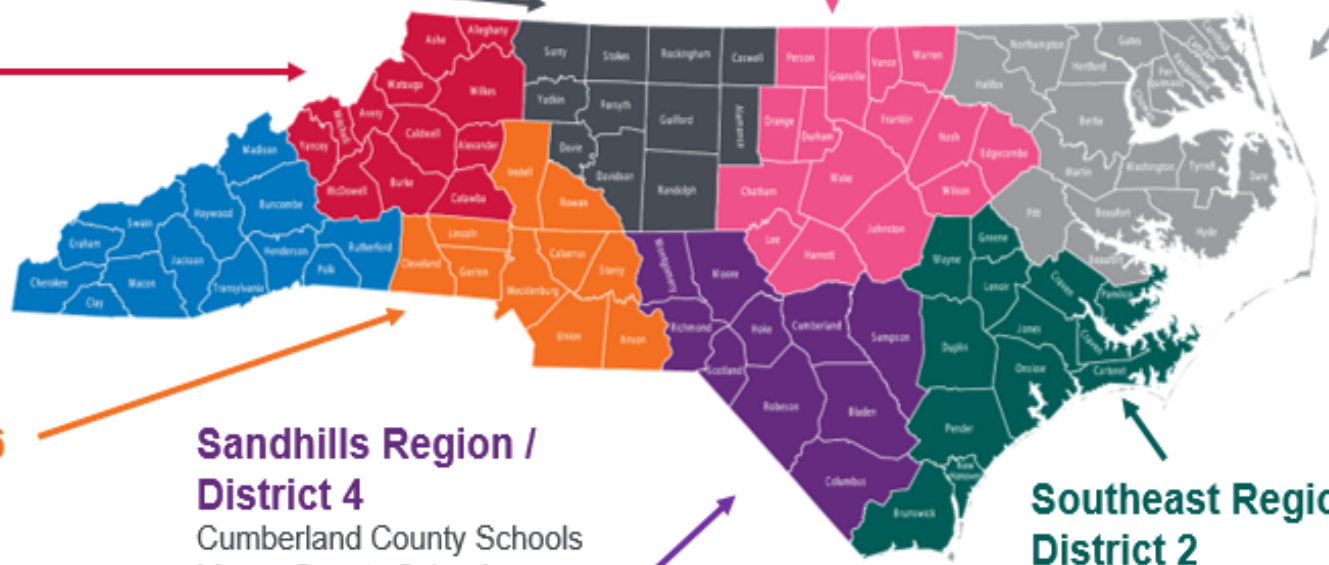
Beaufort County Schools
Bertie County Schools
Elizabeth City-Pasquotank Schools
Gates County Schools
Hertford County Schools
Pitt County Schools
Roanoke Rapids Graded School District

Northwest Region / District 7

Alexander County Schools
Ashe County Schools
Caldwell County Schools
Hickory City Schools

Western Region / District 8

Asheville City Schools
Yancey County Schools



Southwest Region / District 6

Cabarrus County Schools
Cleveland County Schools
Gaston County Schools
Iredell Statesville Schools
Kannapolis City Schools
Mooresville Graded School District
Rowan-Salisbury Schools
Stanly County Schools

Sandhills Region / District 4

Cumberland County Schools
Moore County Schools
Sampson County Schools
Scotland County Schools
Whiteville City Schools

Southeast Region / District 2

Greene County Schools
Jones County Schools

THE ABC SCIENCE COLLABORATIVE