Clinical Laboratory COVID-19 Response Call
Monday, October 4, 2021, at 3:00 PM EDT

• Welcome
  – Jasmine Chaitram, CDC Division of Laboratory Systems (DLS)

• Daily Testing vs. Self-Isolation for School-Based COVID-19 Contacts
  – Bernadette Young, University of Oxford

• “Test To Stay” Studies
  – Ebony Thomas, CDC State, Tribal, Local, and Territorial Support Task Force

• CMS Update
  – Felicidad Valcarcel, Centers for Medicare and Medicaid Services (CMS)

• FDA Update
  – Toby Lowe, U.S. Food and Drug Administration (FDA)
Vision
Exemplary laboratory science and practice advance clinical care, public health, and health equity.

Mission
Improve public health, patient outcomes, and health equity by advancing clinical and public health laboratory quality and safety, data and biorepository science, and workforce competency.
Four Goal Areas

Quality Laboratory Science
- Improve the quality and value of laboratory medicine and biorepository science for better health outcomes and public health surveillance

Highly Competent Laboratory Workforce
- Strengthen the laboratory workforce to support clinical and public health laboratory practice

Safe and Prepared Laboratories
- Enhance the safety and response capabilities of clinical and public health laboratories

Accessible and Usable Laboratory Data
- Increase access and use of laboratory data to support response, surveillance, and patient care
New COVID-19 Self-Testing Videos

- **CDC Self-Testing Webpage**

- **CDC Testing Webpage**

- **YouTube**
  https://www.youtube.com/watch?v=L8F1BnLtyio
  https://www.youtube.com/watch?v=Xli2t4skfx0
Find CLCR call information, transcripts, and audio recordings on the CDC Preparedness Portal

The next call will be on **Monday, October 18**
from **3:00 PM to 4:00 PM EDT**
Training and Workforce Development

Questions about education and training?
Contact LabTrainingNeeds@cdc.gov
How to Ask a Question

- **Using the Zoom Webinar System**
  - Click the **Q&A** button in the Zoom webinar system
  - Type your question in the **Q&A** box and submit it
  - Please do not submit a question using the chat button

- For media questions, please contact CDC Media Relations at [media@cdc.gov](mailto:media@cdc.gov)
- If you are a patient, please direct any questions to your healthcare provider
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Daily contact testing vs. self-isolation for school-based COVID-19 contacts

Summary findings from a cluster-randomized controlled trial
4th October 2021
Dr Bernadette Young (MBBS, DPhil, MRCP, FRCPath)
(on behalf of the Investigators)
Why compare daily testing to isolation?

• Serial testing of contacts may be offer better control of transmission
  • Modelling studies
• If combined with twice weekly testing, may be more effective in reducing transmission (depending on uptake)
• Pilot testing suggested daily testing with LFDs for contacts was feasible and acceptable

Figure from: Scientific Influenza Pandemic Group on Modelling (SPI-M)
What is the risk in schools?

How many school based contacts need to isolate to prevent one transmission?

“How Number needed to quarantine”

Cases and contacts in England 1/9/20 – 28/2/21

Figure from: Lee et al Clin Infect Dis, ciab421, https://doi.org/10.1093/cid/ciab421
Study design and methods

• Cluster-randomised, controlled trial
  • Randomisation by school or college to a group, which followed either policy of isolation of contacts OR offering daily testing
  • Representative gave consent for school or college to join
  • Individuals gave consent to participate

• Trial protocol was reviewed and approved by Public Health England Research Ethics Governance Group

• Local DsPH and public health officials retained oversight

• An Independent Data Monitoring Committee had open weekly oversight of the data to review for evidence of safety concerns
  • Investigators were blind to data during the study
Trial procedures

Control Group (self-isolation)

• Individuals (close contacts) self-isolate at home for 10 days.
• Invited to do 2 x Research PCR tests (one on day 2 and one on day 7) posted to and from the individual's house and the lab.
• PCR tests run retrospectively, results available on request 2 weeks later.

Intervention Group (DCT)

• Individuals may return to school/college and have a rapid test every morning in school/college over 7 consecutive days. They can engage in all school/college activities only after a negative result is returned but (self-isolate in the evenings and weekends).
• The Orient Gene LFD (Lateral Flow Device) used
• Invited to do 2 x Research PCR tests (one on day 2 and one on day 7) at school
• PCR tests run retrospectively, results available on request 2 weeks later.
Participating schools

• 201 schools were randomized to...
  • 99 control schools
  • 102 intervention schools

1. Is it safe?
  • Compare in-school COVID-19 transmission
    • Estimated by rates of symptomatic PCR-Positive infections recorded in NHS Test and Trace

2. Does it improve attendance?
  • Number COVID-19-related school absences amongst those eligible to attend

Secondary outcomes – proportion close contacts testing positive, participation in DCT, performance characteristics LFD testing
Baseline characteristics

201 schools randomised, representative of secondary schools and further education colleges across England

Schools randomly assigned to the control or intervention, stratified by school characteristics

>200,000 students

>20,000 staff

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Control n = 99</th>
<th>Intervention n = 102</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strata</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government-funded, 11-18y, free school meals ≤17%</td>
<td>32 (32%)</td>
<td>34 (33%)</td>
</tr>
<tr>
<td>Government-funded, 11-16y, free school meals ≤17%</td>
<td>8 (8.1%)</td>
<td>8 (7.8%)</td>
</tr>
<tr>
<td>Government-funded, 11-18y, free school meals &gt;17%</td>
<td>22 (22%)</td>
<td>24 (24%)</td>
</tr>
<tr>
<td>Government-funded, 11-16y, free school meals &gt;17%</td>
<td>19 (19%)</td>
<td>18 (18%)</td>
</tr>
<tr>
<td>Any residential school</td>
<td>5 (5.1%)</td>
<td>6 (5.9%)</td>
</tr>
<tr>
<td>Special needs or alternate provision</td>
<td>5 (5.1%)</td>
<td>4 (4.9%)</td>
</tr>
<tr>
<td>Further education college, 16-18y</td>
<td>3 (3.0%)</td>
<td>2 (2.0%)</td>
</tr>
<tr>
<td>Independent day school ≥500 pupils</td>
<td>3 (3.0%)</td>
<td>3 (2.9%)</td>
</tr>
<tr>
<td>Independent day school &lt;500 pupils</td>
<td>2 (2.0%)</td>
<td>2 (2.0%)</td>
</tr>
<tr>
<td>Students attending school</td>
<td>1,014 (529, 1,376)</td>
<td>1,025 (682, 1,359)</td>
</tr>
<tr>
<td>Missing data</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>School staff</td>
<td>142 (91, 189)</td>
<td>125 (91, 173)</td>
</tr>
<tr>
<td>Missing data</td>
<td>23</td>
<td>17</td>
</tr>
</tbody>
</table>
Index cases and contacts

• 76 and 84 actively participating control and intervention schools reported index cases and their contacts

Control arm
n=99

School participating
Student and staff data,
n=76 (77%)

Schools reporting ≥1 index case
n=52 (48 reporting ≥1 contact)

No reported index cases
n=24

247 index cases
4463 contacts with ≥1 school day affected
→ self-isolate for 10 days

Intervention arm
n=102

School participating
Student and staff data,
n=86 (84%)

Schools reporting ≥1 index case
n=63 (59 reporting ≥1 contact)

No reported index case
n=23

343 index cases
5763 contacts with ≥1 school day affected
→ offered daily contact testing
Participation rates: intervention arm

5763 contacts: ~28,000 of 4.1 million school days (0.7%) in intervention arm contacts where DCT could potentially prevent COVID-related absences

Participation ~ 50% on per day basis
Symptomatic infection
Details of staff and students at school linked to testing data from NHS Test & Trace

Student data from 96/99 (97%) control and 101/102 (99%) intervention arm schools
Staff data from 76/99 (77%) control and 85/102 (83%) intervention arm schools

201 schools randomised

Control arm
n=99

No Data
Students, n = 3 (3%)
Staff, n = 23 (23%)

School participating
Student and staff data, n=76 (77%)

Data from DfE only
Student data, n =20 (20%)
Staff data, n = 0 (0%)

Intervention arm
n=102

No Data
Students, n = 1 (1%)
Staff, n = 17 (17%)

School participating
Student data, n=86 (84%)
Staff data, n=85 (83%)

Data from DfE only
Student data, n =15 (15%)
Staff data, n = 0 (0%)

DfE, Department for Education
Symptomatic PCR positive results in students and staff

Control arm: 657 infections during 7.8m days-at-risk (59.1 per 100,000 per week)
Intervention arm: 740 infections during 8.4m days-at-risk (61.8 per 100,000 per week)

No evidence on any difference in symptomatic infections between intervention and control schools

Rates of infection were lower in staff than students
Symptomatic PCR positive results in students and staff

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Descriptive</th>
<th>ITT, Univariable</th>
<th>ITT, Multivariable</th>
<th>CACE, Multivariable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>Symptomatic PCR positives</td>
<td>Days at risk</td>
<td>Rate per 100,000 per week</td>
<td>IRR</td>
</tr>
<tr>
<td>Study arm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>657</td>
<td>7,782,537</td>
<td>59.1</td>
<td>—</td>
</tr>
<tr>
<td>Intervention</td>
<td>740</td>
<td>8,379,749</td>
<td>61.8</td>
<td>1.05</td>
</tr>
<tr>
<td>Participant type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>1,297</td>
<td>14,547,064</td>
<td>62.4</td>
<td>—</td>
</tr>
<tr>
<td>Staff</td>
<td>100</td>
<td>1,615,222</td>
<td>43.3</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Range of uncertainty in CACE equates to 1.2 less to 0.9 more infection per month per 1000 student school at average infection rates in the study
Participation – attendance data
Details from trial and DfE

201 schools randomised

Control arm
n=99

- School participating
  Student and staff data, n=76 (77%)

- Data from DfE only
  Student data, n=15 (15%)
  Staff data, n=18 (18%)

Intervention arm
n=102

- School participating
  Student and staff data, n=86 (84%)

- Data from DfE only
  Student data, n=13 (13%)
  Staff data, n=14 (14%)

No Data
Students, n=8 (8%)
Staff, n=3 (3%)
COVID-related absences

Control: 55,718 COVID-related absences during 3.1 million person-school-days (1.8%)
Intervention: 48,609 COVID-related absences during 3.3 million person-school-days (1.5%)

Student absences

![Graph showing confirmed/suspected COVID and isolating contact over study days]
COVID-related absences

Control: 55,718 COVID-related absences during 3.1 million person-school-days (1.8%)
Intervention: 48,609 COVID-related absences during 3.3 million person-school-days (1.5%)

Staff absences
### Student COVID-related absences

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Descriptive</th>
<th>ITT, Univariable</th>
<th>ITT, Multivariable Inc adjusted for strata</th>
<th>CACE, Multivariable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td>Study arm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>59,422</td>
<td>3,659,017</td>
<td>16.2</td>
<td>—</td>
</tr>
<tr>
<td>Intervention</td>
<td>51,541</td>
<td>3,845,208</td>
<td>13.4</td>
<td>0.83</td>
</tr>
<tr>
<td>Participant type</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>104,327</td>
<td>6,397,918</td>
<td>16.3</td>
<td>—</td>
</tr>
<tr>
<td>Staff</td>
<td>6,636</td>
<td>1,106,307</td>
<td>6.0</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Days at risk, Rate per 1000, IRR, 95% CI, p-value

<table>
<thead>
<tr>
<th>Descriptive</th>
<th>Rate per 1000</th>
<th>IRR</th>
<th>95% CI</th>
<th>p-value</th>
<th>IRR</th>
<th>95% CI</th>
<th>p-value</th>
<th>IRR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>COVID-related absences</td>
<td>16.2</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
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<td>Study arm</td>
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<tr>
<td>Control</td>
<td>16.2</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Intervention</td>
<td>13.4</td>
<td>0.83</td>
<td>0.54, 1.26</td>
<td>0.38</td>
<td>0.80</td>
<td>0.54, 1.19</td>
<td>0.27</td>
<td>0.61</td>
<td>0.30, 1.23</td>
</tr>
<tr>
<td>Participant type</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>16.3</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Staff</td>
<td>6.0</td>
<td>0.37</td>
<td>0.29, 0.47</td>
<td>&lt;0.001</td>
<td>0.39</td>
<td>0.31, 0.48</td>
<td>&lt;0.001</td>
<td>0.40</td>
<td>0.33, 0.51</td>
</tr>
</tbody>
</table>
How common is infection in contacts?

~98% of school-based contacts did not become infected
No evidence of different rates of PCR-positive infection in the intervention or control group

Asymptomatic infection (a third, ~0.5%, went on to develop symptoms and have test in T&T)
• Control: 14/886 (1.6%)
• Intervention: 44/2980 (1.5%)
  • aOR = 0.73 (0.33 – 1.61, p = 0.44)

Symptomatic infection
• Control: 44/4665 (0.9%)
• Intervention: 79/5955 (1.3%)
  • aOR = 1.21 (95% CI 0.82-1.79, p = 0.34)
Summary

• In secondary school and college students and staff infection of following contact with a COVID-19 case at school occurs in less than 2%

• There was no evidence that switching from isolation at home to daily contact testing increased rates of symptomatic COVID in students and staff

• Daily contact testing is a safe alternative to home isolation following school-based exposures
Detection of infective cases by LFD testing

- Readily available in 2021
- Rapid result
- Minimal infrastructure required to operate

Figure from: Lee et al Clin Infect Dis, ciab421, https://doi.org/10.1093/cid/ciab421
### Performance of LFDs

<table>
<thead>
<tr>
<th></th>
<th>PCR detected SARS-CoV-2</th>
<th>PCR negative for SARS-CoV-2</th>
<th>Total</th>
<th>PPV (95% CI)</th>
<th>NPV (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LFD positive for SARS-CoV-2</td>
<td>32</td>
<td>2</td>
<td>34</td>
<td>94% (80-99)</td>
<td>99.12 (98.7-99.4)</td>
</tr>
<tr>
<td>LFD negative for SARS-CoV-2</td>
<td>28</td>
<td>3164</td>
<td>3192</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>3166</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Sensitivity**: 53% (95% CI 40-66)
- **Specificity**: 99.93% (95% CI 99.77-99.99)
“Test To Stay” Studies

Ebony Thomas

CDC State, Tribal, Local, and Territorial Support Task Force
CMS Update

Felicidad Valcarcel

Centers for Medicare and Medicaid Services (CMS)
• CLIA Laboratory Guidance During COVID-19 Memo and FAQs

• FAQs Only
FDA Update

Toby Lowe
U.S. Food and Drug Administration (FDA)
COVID-19 Emergency Use Authorization (EUA) Information for Medical Devices
https://www.fda.gov/medical-devices/emergency-situations-medical-devices/emergency-use-authorizations

COVID-19 In Vitro Diagnostic EUAs

COVID-19 Frequently Asked Questions

COVID-19 Updates

FDA Townhall Meetings

Independent Evaluations of COVID-19 Serological Tests
https://open.fda.gov/apis/device/covid19serology/
COVID-19 Diagnostic Development
CDRH-EUA-Templates@fda.hhs.gov

Spot Shortages of Testing Supplies: 24-Hour Support Available
1. Call 1-888-INFO-FDA (1-888-463-6332)
2. Then press star (*)

FDA MedWatch
Thank You For Your Time!

Photo submitted by the Microbiology Laboratory at The University of Pittsburgh Medical Center