





# Changes in COVID Testing Protocols for Higher Ed

## *What They Mean for Your Boarding Program*

*Matt Morrissey, COO*  
*Mike Klingshirn, Director of Consulting*



# Agenda



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- **Fusion Cell Background**
- **Interpretation of Changes**
  - COVID-19 Higher Education Control Plan – Revision November 3rd
  - Report “Testing Strategies in Higher Education”
- **Integrated Testing Strategies**
- **Boarding School vs. Residential College**
- **Examples of existing and developing testing programs**
- **Q&A**



# Fusion Cell Brings Elite Talent from US Military to Corporations



## Permanent Placement

## Temporary Staffing

### Skill Areas

- Cybersecurity/Intelligence/IT Analysts
- Engineers
- Technicians
- Operations & Logistics Analysts
- Professional Services Talent
- Healthcare Talent
- Public Safety Talent
- Business Leaders

## Specialty Services

### Emergency Management



Virus/Pandemic Risk Mitigation (e.g., COVID-19)



Cybersecurity



Physical Security

### Veteran Relations



Organizational Veteran Readiness



Internship Programs with the DoD



# The Fusion Cell Advantage for COVID Health and Safety Planning



## Expertise

- Human Resources
- Board-certified Public Health Experts
- Epidemiology
- Industrial Hygiene

## Experience

- Infectious Disease Control
- Pandemic Operations
- US Military, FEMA, HHS, FDA, OSHA

## Solutions

- COVID-19 Readiness Assessment
- Create, Implement, and Maintain Plans
- On-call Advice



# Schools and Businesses Using Our Virus Risk Mitigation Services



Brewster



Austin Prep



HOLDERNESS



ST. PAUL'S SCHOOL



NEW HAMPTON SCHOOL

PROCTOR



KIMBALL UNION

# Michael Klingshirn

## *Fusion Cell, Director of Consulting Services*

- Background

- Pharmacology (BS) Epidemiology (MPH) Biostatistics (GC)
  - Board-certified in Public Health (NBPHE)
  - Air Force education in Leadership, Contingency Planning,
    - Public Health Emergencies, Entomology, Hospital Infection Control
- Veteran of the US Air Force, with 10 years Active Duty

- Experience

- Oversaw 12 schools and business COVID health and safety plans since May
- Directed the equivalent of a local health dept. in 2 states and 3 countries
- Stood up Task Force COVID in March 2020
- COVID manager for all Air Force Bases in the Middle East
- Created the Air Force standard for Disease Containment Planning in 2010



# Navigating the Recommendations



World Health Organization



The NEW ENGLAND JOURNAL of MEDICINE







**DETECTION & RESPONSE** | check the applicable boxes (or indicate "N/A" if not applicable) to certify that you have:

- ☐ In order to demonstrate acceptance of the Higher Education Testing Group's report and recommendations ("Developing an Integrated COVID-19 Testing Strategy: Considerations for Institutions of Higher Education in Massachusetts"), an institution with students residing on campus should adopt and post online comprehensive protocols for arrival and surveillance testing that align with the report. Concerning surveillance testing, while experience has shown that there is no single protocol for testing frequency that works in every environment, the report indicates that populations most at risk shall be tested every 2 to 7 days, with the outer limit being 12 days under the most favorable circumstances. Testing protocols and plans should be established in coordination with local public health officials and should be regularly updated to ensure compliance with current CDC and DPH requirements and guidelines and to reflect evolving testing technologies and methods.



## Report of the Massachusetts Higher Education Testing Group<sup>1</sup>

### Developing an Integrated COVID-19 Testing Strategy: Considerations for Institutions of Higher Education in Massachusetts<sup>2</sup>

#### Executive Summary

The purpose of this report is to help colleges and universities better understand the current state of COVID-19 testing and to suggest a framework for institutions to consider as they develop plans to repopulate their campuses. This report also provides information about The Broad Institute's proposal for a comprehensive surveillance testing program in partnership with Massachusetts higher education institutions. A copy of the Broad's "Safe for School" proposal is attached as Exhibit A to this report.

As colleges and universities prepare for resumption of in-person classes and residential life, institutions should consider multilayered strategies for minimizing the risk of infection of students, faculty and staff and the surrounding communities. These layers include education, wearing masks, social distancing, hand hygiene, self-reported diagnosis, active health screening, improved ventilation, cleaning, preemptive surveillance testing, contact tracing, quarantine and isolation.<sup>3</sup> Recognizing the diversity of the state's colleges and universities – public and private; small and large; commuter and residential; rural and urban -- institutions should consider where

<sup>1</sup> The Massachusetts Higher Education Testing Group was initiated by the Massachusetts Higher Education Working Group, chaired by Worcester Polytechnic Institute President Laurie Leshin, to provide additional guidance on testing as part of the [Framework for Reopening Higher Education in Massachusetts](#). The MA Higher Education Testing Group is chaired by Paula A. Johnson, MD, MPH, President, Wellesley College. The members of the Higher Education Testing Group are (in alphabetical order): Robert A. Brown, PhD, President, Boston University; David A. Bunis, JD, Senior Vice President and General Counsel, Worcester Polytechnic Institute; Michael F. Collins, MD, Chancellor, University of Massachusetts; Richard J. Doherty, President, AICUM; Moon Duchin, PhD, Associate Professor of Mathematics, Tufts University; Sandro Galea, MD, MPH, DPH, Dean, Boston University School of Public Health; Alan M. Garber, MD, PhD, Provost, Harvard University; David H. Hamer, MD, Professor of Global Health and Medicine, Boston University Schools of Public Health and Medicine; Deborah C. Jackson, President, Cambridge College; Michael Klompas, MD, MPH, Associate Hospital Epidemiologist, Brigham and Women's Hospital Professor of Population Medicine, Harvard Medical School and Hospital Epidemiologist, Brigham and Women's Hospital; Laurie A. Leshin, PhD, President, Worcester Polytechnic Institute; Rob McCarron, JD, General Counsel, AICUM; Anthony P. Monaco, MD, PhD, President, Tufts University; Ravi I. Thadhani, MD, PhD, MPH, Chief Academic Officer, Partners HealthCare; Rochelle Walensky, MD, MPH, Chief, Division of Infectious Diseases, Massachusetts General Hospital.

<sup>2</sup> This report is not intended to set standards for all institutions. Rather, we offer considerations to help institutions develop campus-specific strategies to minimize the risk of infection. We recognize that the state of knowledge about testing and COVID-19 is rapidly evolving and that there will be new discoveries and more refined understandings in the coming weeks and months.

<sup>3</sup> The scope of this report is limited to testing. Click [HERE](#) for the CDC's "Health Considerations and Tools for Colleges, Universities and Higher Learning." Click [HERE](#) for the CDC's general Covid-19 health guidance, titled "How to Protect Yourself and Others." Click [HERE](#) for the Massachusetts Department of Higher Education's COVID-19 Information and Resources. Click [HERE](#) for information regarding Governor Baker's Plan for Reopening Higher Education.



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# Report “Testing Strategies in Higher Education”



- **What the report does**
  - Provides an overview and information
  - Discusses considerations for COVID mitigation
  - Explanation of the models of testing
- **What the report does not do**
  - Implement mandatory testing
  - Prioritize testing for mitigation
  - Create a one-size-fits-all standard





# **Report “Testing Strategies in Higher Education”**

**Non-Test Based Interventions for COVID Mitigation**





# Non-Test Based Interventions for COVID Mitigation



- **Increase fresh air intake and/or filter air:** (ASHRAE)
- **Sanitation/disinfection:** (EPA List N)
- **Health screenings:** (hard copy vs electronic)
- **Distance:** (CDC/State/Local guidance)
- **Masks and mask mandates:** (State/local guidance)
- **Hand hygiene:** (CDC/State/Local guidance)



# Non-Testing Interventions for COVID Mitigation



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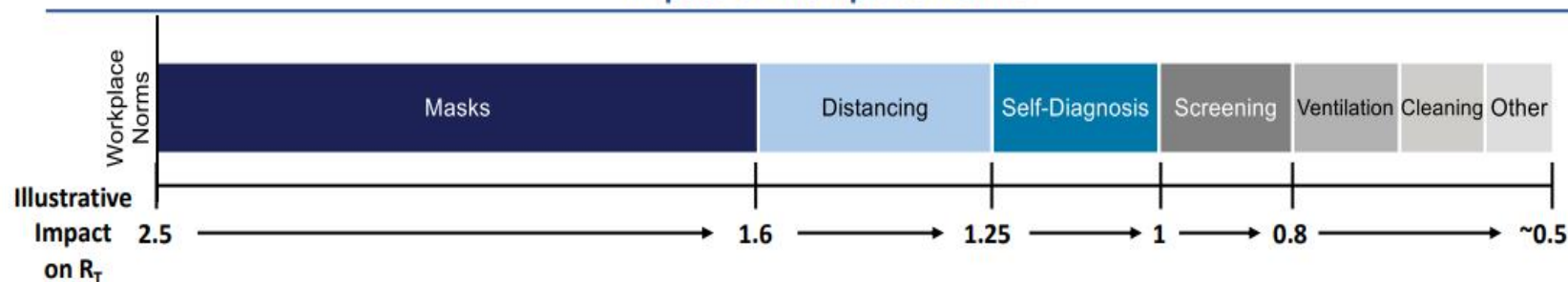
- **Understanding rate of transmission ( $R_t$ )**
  - $R_t$  2.5 indicates one COVID positive person will transmit disease to 2.5 other susceptible people
- **Layered approach and  $R_t$** 
  - All layers together reduce  $R_t$  to 0.5 (reference next slide)
    - 1 infectious person may infect 0.5 other people
    - It takes ~2 concurrently infectious people to transmit disease to 1 other person
- **Each layer comes at a cost!**
- **Masks and distance may be rolled back after COVID**
- **HVAC and cleaning practices will likely be long-term solutions**
  - Significant increase in indoor air quality!
  - Significant increase in cleanliness!



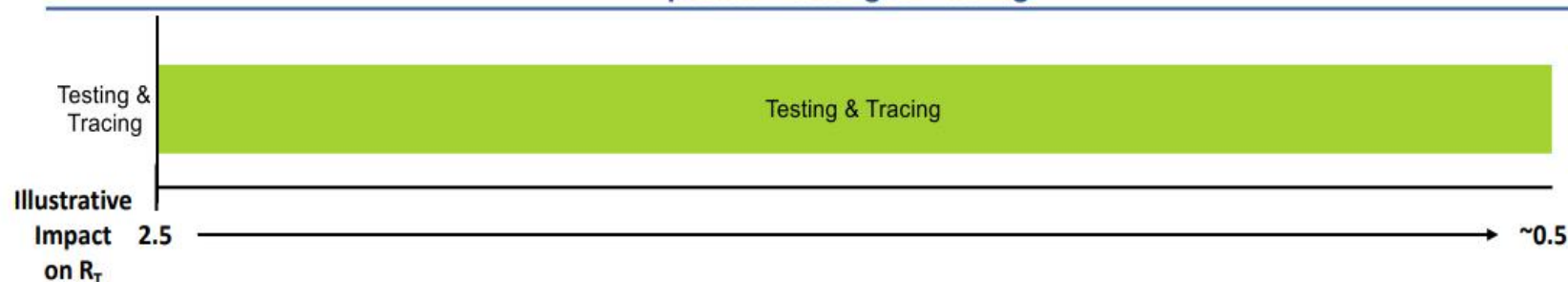
# Reducing $R_T$ Summary Thought Model

CONCEPTUAL

## Impact of Workplace Norms



## Impact of Testing & Tracing



Workplace norms and a robust testing & tracing strategy can each independently significantly reduce  $R_T$

# Residential College vs. Boarding Schools





# Boarding School vs. Residential College



- **Control vs. Autonomy!**
  - Boarding schools have more responsibility – more structure
- **Class Selection**
  - Boarding schools may have fewer class options – higher probability of student overlap
  - Most boarding schedules are M-F – same classes most days, all week
- **Age and Liberties**
  - Most boarding students will have less pressures of parties



# Report “Testing Strategies in Higher Education” Risk Groups



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## Four Risks of Transmission Within Student Population

- **Highest** – Residential students and individuals with high contact hours with residential students
- **Medium** – Nonresidential individuals who transit to campus, have limited contact hours with residential students, and work in environments with appropriate protocols to limit the spread of infection
- **Low** – Staff who transit to campus who have little or no contact with students and others working in environments with appropriate protocols to limit the spread of infection
- **Lowest** – Students, faculty and staff who engage only in virtual learning



# Test Ordering Requirements



- **Students:**

On their scheduled testing days, swab the front of their nostril (following simple written instructions, with a supplementary video), place the swab into a tube, close the tube, and submit.

- **School:**

- Before term, provide necessary information about the people eligible for testing (with updates possible during the term).
- Designate a single ordering physician for the college.
- Distribute and collect test kits on a regular basis.
- Receive confidential results each day on all tested individuals





# Integrated Testing Strategies





# Report “Testing Strategies in Higher Education” Topics



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## Three Categories of Testing

- **Onboarding** – (Upon arrival on campus - screening) Testing in order to identify infections and isolate any positive cases as soon as possible
- **Symptomatic** – (Diagnostic) Individuals reporting *COVID-like symptoms* via a daily screening app are tested as soon as possible
- **Surveillance** – Testing periodically in order to identify individuals who are infected but who are not exhibiting symptoms



# When testing might be performed

IHEs might test students, faculty, or staff for purposes of surveillance, diagnosis, screening, or in the context of an outbreak. Individuals should be considered for and offered testing if they:

- Show signs or [symptoms consistent with COVID-19](#) (diagnostic)
- Have a recent known or suspected exposure to a person with laboratory-confirmed COVID-19 (diagnostic)
- Have been asked or referred to get testing by their healthcare provider or health department (diagnostic)
- Are part of a cohort for whom testing is recommended (in the context of an outbreak)
- Are attending an IHE that requires entry screening (entry testing as part of screening)
- Are in a community where public health officials are recommending expanded testing on a voluntary basis including testing of a sample of asymptomatic individuals, especially in areas of moderate to high community transmission (screening)
- Volunteer to be tested in order to monitor occurrence of cases and positivity rate (surveillance)

It is **not** recommended to retest previously positive asymptomatic individuals within 3 months of a positive test. Data currently suggest that some individuals test persistently positive due to residual virus material but are unlikely to be infectious.

# Test Based Interventions



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Dedicated to Growth... Committed to Action

Testing

## ⓑ Testing Strategy: Test Types & Innovations

	PCR	Antigen	PCR Pooling	Antibody (Serology)
	<ul style="list-style-type: none"><li>• <b>Viral DNA/RNA test</b> from nasal/throat or saliva</li><li>• Samples typically <b>processed in scale clinical labs or large hospitals</b> with complex testing equipment</li></ul>	<ul style="list-style-type: none"><li>• <b>Nasal swab test to detect viral surface proteins (antigens)</b></li><li>• Samples typically <b>processed in at-home, at doctor's offices or clinics</b> with \$500 readers</li></ul>	<ul style="list-style-type: none"><li>• <b>Pooling of PCR samples</b> to run same process reducing cost for low-risk testing</li><li>• <b>Useful for large populations like colleges</b></li></ul>	<ul style="list-style-type: none"><li>• <b>Detection of the antibody response to the virus</b></li><li>• <b>Backwards looking surveillance tool</b></li><li>• Samples typically processed in large hospital or clinical <b>labs</b></li></ul>
<b>Timing</b>	<b>Early</b> (can detect ~2-3 days before symptoms present)	<b>Later than PCR</b> (often detection commences in line with onset of symptoms)	<b>Early</b> (in line with PCR testing)	<b>During or after-the-infection</b>
<b>Accuracy</b>	<b>High</b> (95% sensitivity) reported but lower (80%) in practice	<b>Medium</b> (80% PCR sensitivity) lower in practice (limited data)	<b>High</b> same as PCR, but requires additional follow up testing	<b>Medium</b> with false positives (~5%) a concern
<b>Commercial Cost</b>	<b>Medium</b> (~\$100+ fully-loaded cost, ~\$30-50 'at cost')	<b>Low</b> (~\$20-30 fully-loaded cost)	<b>Low</b> (~\$15-20 pooled / test)	<b>Medium</b> (~\$50-120 cost)

Sources: FDA, CDC, Bain & Company Analysis, Ginkgo Bioworks "How to deploy millions of COVID-19 tests per day", expert interviews

# Real Testing Examples



- **School A** – Baseline for all students after winter break; onboarding for all boarding students; diagnostic as needed; no surveillance testing unless an outbreak or PH recommends
- **School B** – onboarding for all students; diagnostic as needed; surveillance testing every other week for all students/every week for athletes that compete
- **School C** – onboarding for all students; diagnostic as needed; surveillance testing every other week for all students/every week for athletes that compete additional pooled testing of wastewater





# Final Thoughts



- The new guidance is.....dependent on the school

*Your specific situation dictates best testing strategy (geography, campus, student population, staff demographics, access to tests and labs, other mitigations)*

- Testing is another layer to add to existing strategies
- Testing helps – the science and the optics
- Current trends in the disease may mean it's a good time to do more
- Testing has limitations – time to get results, manpower
- There is a cost-benefit analysis that is unique to each school
- If what you were doing is working, it should continue to work





## Q&A

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**Free Discovery Session:**  
**[www.fusioncell.com/COVID19](http://www.fusioncell.com/COVID19)**