Building the COVID-19 Testing Infrastructure for Massachusetts Colleges & Universities: A Crisis Driven Collaboration

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Presentation by Paula A. Johnson, president of Wellesley College,
to the NASEM Government-University-Industry Research Roundtable (GUIRR)

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Meet the Massachusetts Higher Education Working Group

Laurie Leshin, president, Worcester Polytechnic Institute, member of the Governor's Reopening Advisory Board

Robert Brown, president, Boston University

Nicholas Covino, president, William James College

Javier Cevallos, president, Framingham State University

Mary-Beth Cooper, president, Springfield College

Helen Drinan, president, Simmons University

Patricia Gentile, president, North Shore Community College

Deborah Jackson, president, Cambridge College

Paula Johnson, president, Wellesley College

Richard Lapidus, president, Fitchburg State University

Marty Meehan, president, University of Massachusetts

Anthony Monaco, president, Tufts University

Paula Rooney, president, Dean College

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Our phased approach to reopening

Phase 1: Start

- Repopulate research labs, medical, dental, veterinary & allied health clinical education and services
- Repopulate limited functions necessary for students to return

Phase 2: Cautious

- Relaunch/pilot limited student programming on campus

Phase 3: Vigilant

- Opening: Carefully repopulate residence halls, dining halls, classrooms

Phase 4: New Normal

- New normal operations on college and university campuses

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Guiding principles for safely reopening colleges and universities_

- Protect the health and safety of our students (including mental health), faculty, staff, and people in surrounding communities
- Enable students to make meaningful progress towards their educational goals
- Contribute to research and innovation
- Minimize adverse economic impact on families, employees, and the Massachusetts economy

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Higher education is critically important to the Massachusetts economy

136,000
Total employees including
58,000
Faculty and research
+
77,000
Staff

$24.5 Billion
Annual institutional expenditures

500,000
Students enrolled at
106 institutions

$4.1 Billion
Federal & sponsored
Research

$10B
Salaries paid to higher ed employees

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The challenge for Higher Education Working Group

- No national or state guidance on health and safety protocols
- No established standards for determining who should be tested and how often
- Huge need among local colleges and universities for accurate, timely, more affordable testing on a massive scale and no existing infrastructure in place

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MA Higher Education Testing Working Group

Higher education Presidents

- Boston University
- Cambridge College
- Harvard University
- Tufts University
- Wellesley College (Chair)
- WPI

Academic Medicine/Public Health

- Boston University School of Public Health
- Brigham and Women's Hospital
- Massachusetts General Hospital
- Mass General Brigham (Partners HealthCare)
- UMass Medical School

- Leadership committed the time in service to the entire higher education community.
- AICUM provided essential support and guidance

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Higher Education Testing Working Group

Guiding principles:

- Access to asymptomatic testing across higher education is critical to repopulation of campuses and preventing outbreaks of COVID-19
- The science and technology is rapidly evolving, so plans must be flexible
- The expectation is that large numbers of tests will be needed for the higher education community
- Contact tracing and quarantine and isolation protocols must be developed in conjunction with testing protocols
- Access to symptomatic testing is essential
- Behavioral strategies for prevention are part of the multilayered strategy that is critical to safety (masks, physical distancing, hand hygiene)

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Science Drives Protocols

- Evaluated emerging mathematical models of virus spread
- Screening protocols for COVID-19 were developed -- based on the biology of transmission, risk of exogenous exposure, and ability to limit contacts and contain disease quickly
- Modeling converged on a recommendation that testing between every two to seven days with the outer limits of 12 days under optimum conditions (None of us would have optimal conditions!)
- Populations at higher risk of infection and driving on-campus spread (residential students and individuals with high contact hours with residential students) were recommended to be tested more frequently than those at lower risk.

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Meeting the challenge: A breakthrough partnership

The Broad Institute, the world leader in genomics research based in Cambridge, Mass. with largest genetic sequencing capacity in the world

- Eric Lander, Stacey Daniel, and Deborah Hung saw the problem and converted from research to COVID-19 testing using PCR
- Commonwealth provided an early investment of $15 million to Broad

Model offers:

- **Scale**: Currently 100 colleges and universities in New England and eastern New York (43 private and 14 public in Mass.)
  - Total of 3M tests to date; 70,000/per day; expanding capacity to 100,000
- **Flexibility**: Institutions decide who is eligible and how often tested
- **Speed and accuracy**: 24-hour turnaround; highly accurate PCR test

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AT A COST OF $25/test

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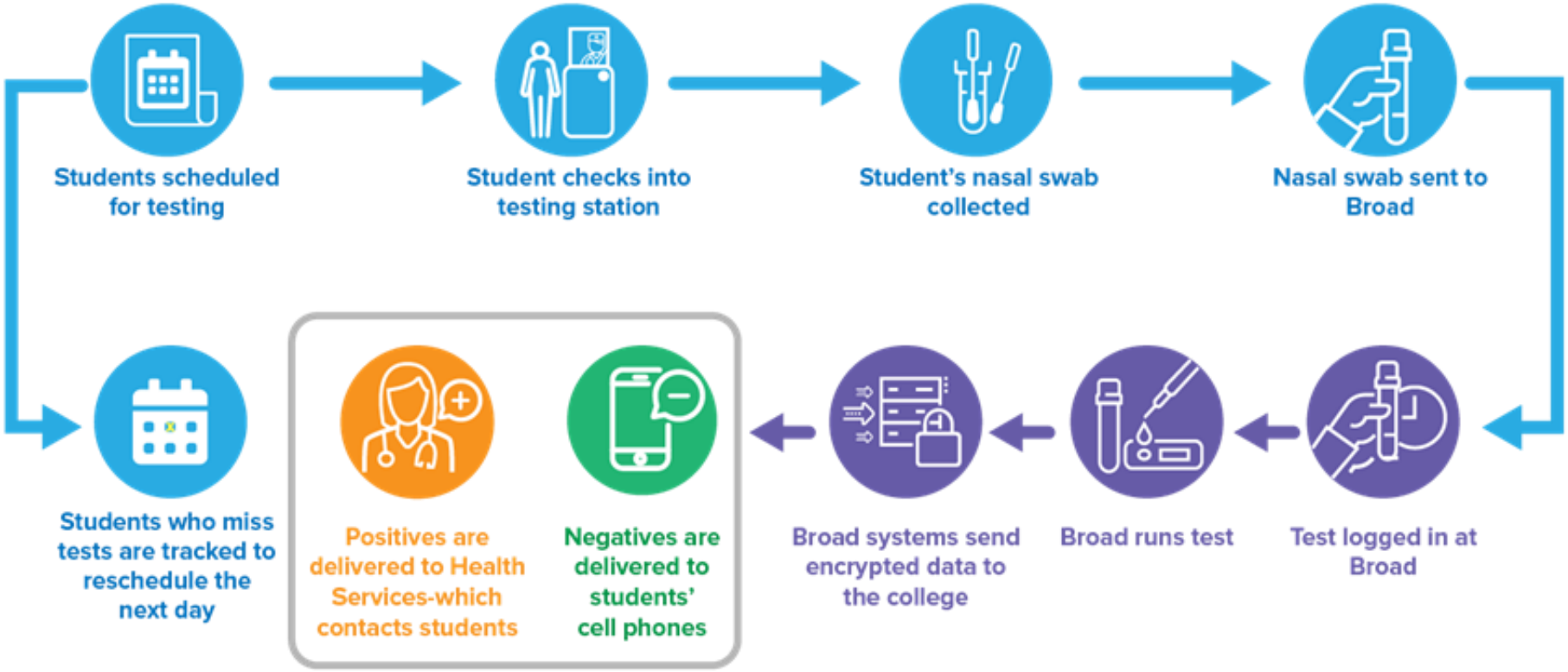
Process for testing



Infrastructure Innovation: IT systems are essential

- **IT interfaces between the Broad and Colleges/Universities critical**
  - Collaboration with Tufts University that led the development of logistics technology (mechanics of using internal ID system to label and track testing adherence)
  - Technology through the Broad to deliver encrypted data that is stored in each school's system.
- **Smoothing testing over time**
  - Campus Key Mobile App developed by Tufts to identify preferred testing times
- **Transportation system**
  - Developed by the Broad to ensure delivery from across the state to the Broad in order to produce results within 24 hours of arrival to Broad

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Building a health and safety infrastructure for higher education

- The partnership with the Broad Institute made it possible to do the widespread testing necessary to bring students back
- Sustained collaboration and creativity among higher education and between higher ed and the scientific/medical community—from disease modeling to best practices to technology
- Continued relationship with the Commonwealth and looked to as a resource
- Optimizing for success—sharing best practices, adapting as we go, continuous improvement

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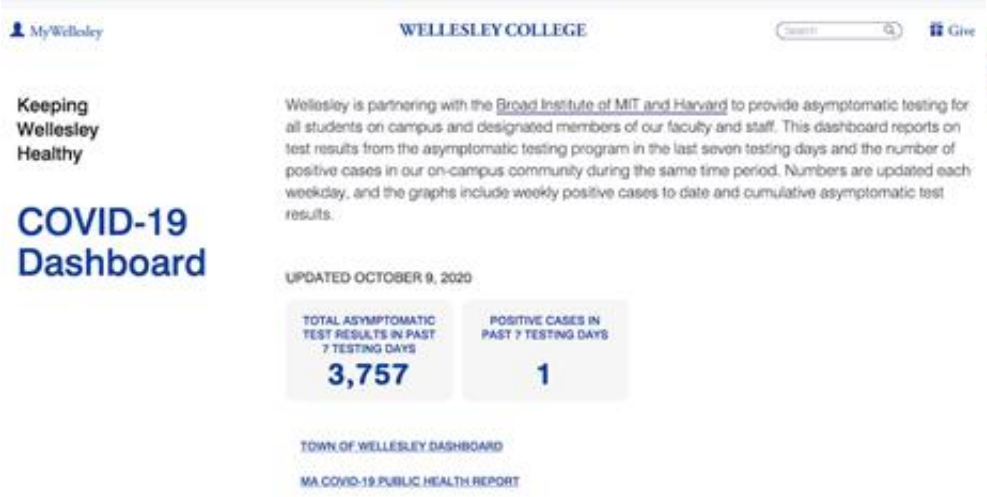
END

The 106 colleges and universities in Massachusetts

American International College
Amherst College
Anna Maria College
Assumption College
Babson College
Bard College at Simon's Rock
Bay Path University
Becker College
Benjamin Franklin Institute of Technology
Bentley University
Berklee College of Music
Berkshire Community College
Boston Architectural College
Boston Baptist College
Boston College
Boston Graduate School of Psychoanalysis Inc
Boston University
Brandeis University
Bridgewater State University
Bristol Community College
Bunker Hill Community College
Cambridge College
Cape Cod Community College
Clark University
College of Our Lady of the Elms
College of the Holy Cross
Conway School of Landscape Design
Curry College Dean College
Eastern Nazarene College
Emerson College
Emmanuel College
Endicott College
Fisher College
Fitchburg State University
Framingham State University
Franklin W Olin College of Engineering
Gordon College
Gordon-Conwell Theological Seminary
Greenfield Community College
Hampshire College
Harvard University
Hebrew College
Hellenic College
Holy Cross
Greek Orthodox School of Theology
Holyoke Community College
Hult International Business School
Laboure College
Lasell College
Lawrence Memorial Hospital School of Nursing
Lesley University
Longy School of Music of Bard College
Massachusetts Bay Community College
Massachusetts College of Art and Design
Massachusetts College of Liberal Arts
Massachusetts Institute of Technology
Massachusetts Maritime Academy
Massachusetts School of Law
Massasoit Community College
MCPHS University
Merrimack College
MGH Institute of Health Professions
Middlesex Community College
Montserrat College of Art
Mount Holyoke College
Mount Wachusett Community College
New England College of Optometry
New England Law-Boston
Nichols College
North Bennet Street School
North Shore Community College
Northeastern University
Northern Essex Community College
Northpoint Bible College
Pine Manor College
Pope St John XXIII National Seminary
Quincy College
Quinsigamond Community College
Regis College
Roxbury Community College
Saint John's Seminary
Salem State University
Signature Healthcare Brockton Hospital School of Nursing
Simmons University
Smith College
Springfield College
Springfield Technical Community College Stonehill College
Suffolk University
The New England Conservatory of Music
Tufts University
University of Massachusetts Medical School Worcester
University of Massachusetts-Amherst
University of Massachusetts-Boston
University of Massachusetts-Dartmouth
University of Massachusetts-Lowell
Urban College of Boston
Wellesley College
Wentworth Institute of Technology
Western New England University
Westfield State University
Wheaton College
William James College
Williams College
Worcester Polytechnic Institute
Worcester State University

Results to date

Dashboard showing cumulative asymptomatic tests, # of positive