President's Advisory Committee on Public Health
CONFIDENTIAL: DRAFT, PRELIMINARY AND ADVISORY

COVID-19

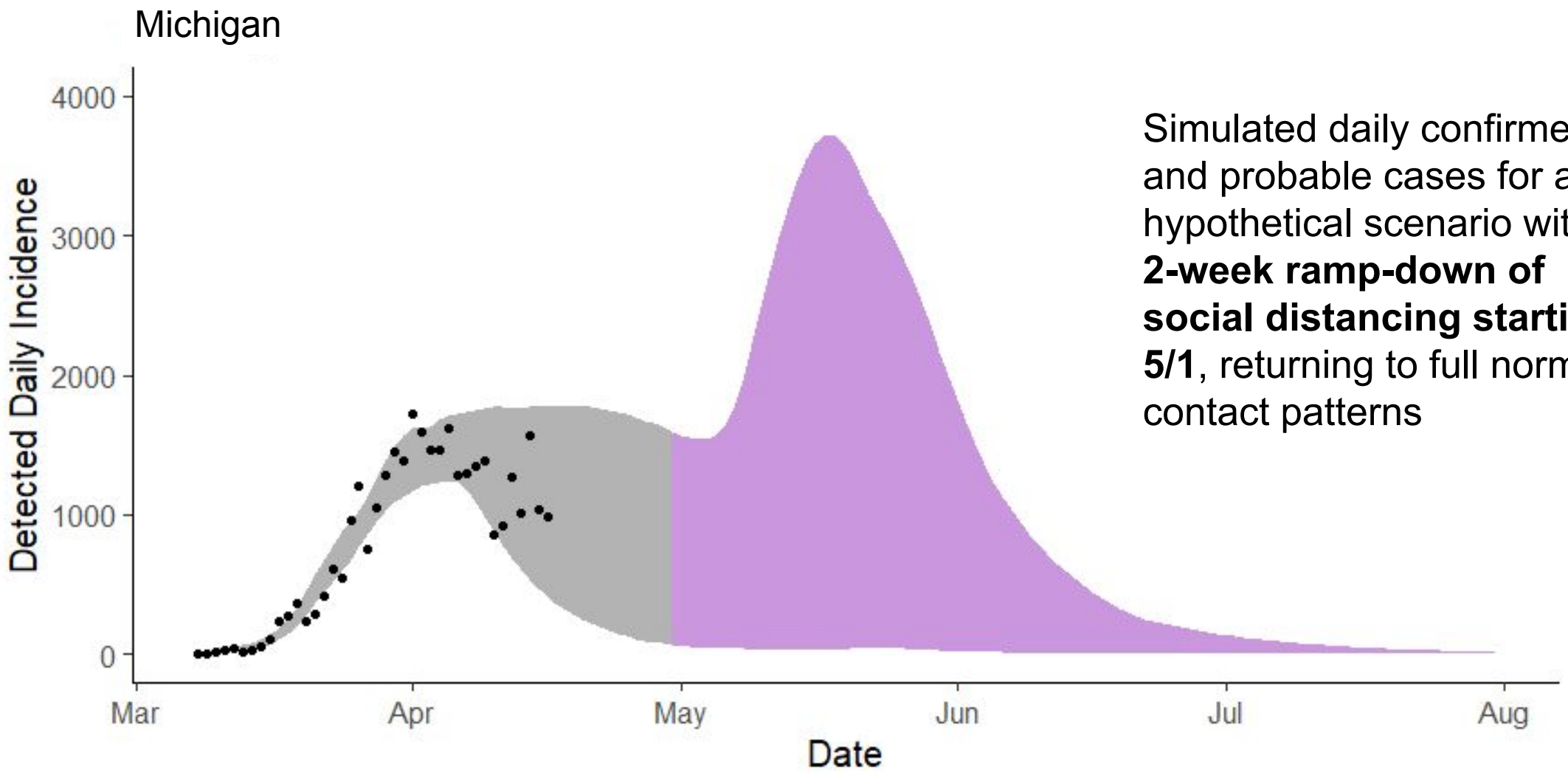
May 5, 2020

SCHOOL OF PUBLIC HEALTH
UNIVERSITY OF MICHIGAN

PUBLIC HEALTH

Aligning our work for the University with our work for the State of Michigan

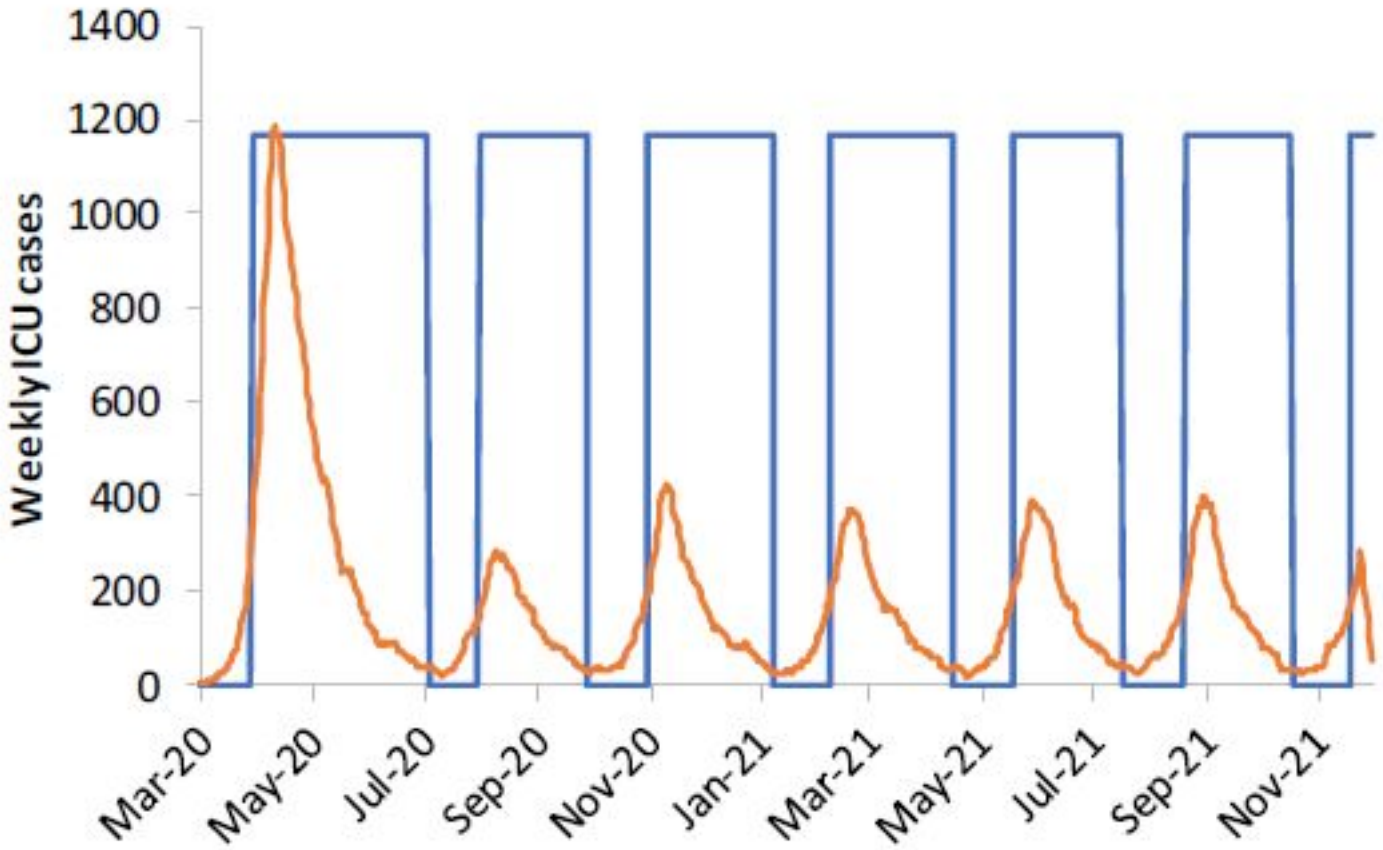
Epidemiological modeling scenarios to examine impact of lifting social distancing



Simulated daily confirmed and probable cases for a hypothetical scenario with a **2-week ramp-down of social distancing starting 5/1**, returning to full normal contact patterns

1. Model built by M. Eisenberg, A. Brouwer and the Epimath modeling group.

Adaptive Triggering Is Likely to Be Necessary



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Framework for a public health informed restart of the Michigan economy

(preliminary/confidential)

Public health informed restart of the Michigan economy:

Indicators of Epidemic Spread

(preliminary/confidential)

Key indicators to monitor as we move toward ramping down social distancing

Epidemic spread indicators

1 Flatten the curve

- A Symptom monitoring
- B Case and death data
- C Regional picture of transmission

Healthcare system capacity

2 Safely diagnose and treat patients

- A Critical personnel
- B Beds
- C Ventilators
- D PPE

Public health capacity

3 Testing and monitoring

- A Testing capacity
- B Contact tracing

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Preliminary

The state can be characterized in three phases

	Urgent	Stabilizing	Recovery
Epidemic spread	• Accelerating growth in caseload • Increasing mortality (new deaths per day) • No measurable immunity	• Flattening growth in caseload • Reduced mortality (new deaths per day) • Growing immunity	• Caseload contracting (more recoveries than new cases / deaths) • Growing population immunity
Healthcare capacity	• PPE supply gap (below safety margin) • Inadequate labor / beds (below safety margin) • Ventilator supply below procurement target	• PPE supply (pipeline) at 100% of target • Labor supply (pipeline) at 100% of target • Ventilator supply at 100% of target	• PPE supply is adequate to support private sector risk mitigation at scale • Hospitals can resume nonessential procedure with normal capacity
Public health	• Material gaps in contact tracing and isolation protocols	• Comprehensive workplace test-and-trace / rapid response capability	• Availability of granular syndromic surveillance / symptom diaries

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Public health informed restart of the Michigan economy:

Workplace Risk Assessment and Mitigation

(preliminary/confidential)

Preliminary

Occupation specific transmission risk boils down to worker interaction, workplace characteristics, and worker characteristics

Worker interaction

Work type risk factors

- a Interaction with general public (sustained or intermittent)
- b Contact with fellow coworkers in normal course of work
- c Shared tooling / machinery

Workplace characteristics

Workplace risk factors

- d Indoor / Outdoor
- e Number of workers
- f Worker density (number per square foot active workspace)
- g Required travel
- h Basic industrial hygiene (sanitation facilities, airflow, etc.)

Worker type

Worker risk factors

- i Demography
- j Preexisting conditions
- k Contact outside of work
- l Transit options
- m Immunity

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Preliminary

Assessing workplace risk

Our focus now

1 Assess known risk factors in the workplace

- UofM Public Health experts review worker interaction and workplace characteristics to create transmission “risk scores”
- Team reviewing data on diagnoses and absenteeism submitted by businesses operating across the world to “sense check”

2 Integrate data from CDC and OSHA

- As available, update “risk score” algorithm based on best available data from CDC and OSHA on cases by workplace type

3 Use symptom tracking data

- Collect symptom tracking data from critical workplaces (and others, as they are reintegrated) to track highest-risk workplaces in real time

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Public health informed restart of the Michigan economy:

Phased Resumption

(preliminary/confidential)

A Public Health Informed Fall Semester

Public Health Informed Semester Committee

- **DuBois Bowman** (Chair; Dean, School of Public Health)
- **Angela Beck** (Assistant Professor of Health Behavior and Health Education and Director of a Public Health Training Center for the state of Michigan)
- **Rob Ernst** (Executive Director of UHS)
- **Sharon Kardia** (Professor of Epidemiology and Associate Dean for Public Health Education)
- **Sachin Kheterpal** (co-lead of Precision Health initiative; Prof. of Anesthesiology; IT entrepreneur)
- **Steve Kunkel** (Pathology Prof; Immunologist; EVD Research Michigan Medicine)
- **Preeti Malani** (Chief Health Officer)
- **Emily Martin** (Associate Professor of Epidemiology and Co-director of the CDC-funded influenza vaccine effectiveness surveillance efforts for the state of Michigan)
- **Laura Power** (Preventive Medicine and Infectious Disease Physician)
- **Laraine Washer** (ID clinician and head of Infection Control for Michigan Medicine)
- **Riccardo Valdez** (Professor and Director of Clinical Pathology)

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Committee Charge

Leverage campus-wide expertise to provide recommendations on best-practices for conducting a public health informed in-person Fall semester. Deliverables should seek to establish or bolster the campus's public health framework, infrastructure, and practices across all aspects of the student experience, in order to mitigate the risk of an in-person Fall semester for all members of the UM community.

- What sort of public health informed practices might we put into effect to allow us to get back to residential education?
- How might we modify the delivery of classes and the housing and feeding of our students so as to minimize risk of disease transmission?
- Presuming we are able to ramp up our virus and antibody testing capabilities, how might we deploy these assays supported by the appropriate technologies to make the campus safer and diminish disease transmission?
- What role can syndrome surveillance play in a return to operations framework?
- How might we set up a contact tracking and quarantine platform?

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Recommendations from this group will be shared with the COVID-19 Leadership Group.

Guiding Principles of a Public Health Informed Semester

- Prioritize the health and safety of all members of the University of Michigan community with special consideration and thought toward more vulnerable sub-populations
- Maintain continuity of high-quality educational experience for students
- Use real-time epidemiological data to inform decision making
- A robust communication strategy will be required up front and ongoing
- Attend to our core position of equity/inclusion and access
- Learn from others' experiences (e.g., closed society model in China peer domestic institutions)
- Must be prepared to plan, monitor and pivot as needed due to the ever-changing nature of the pandemic

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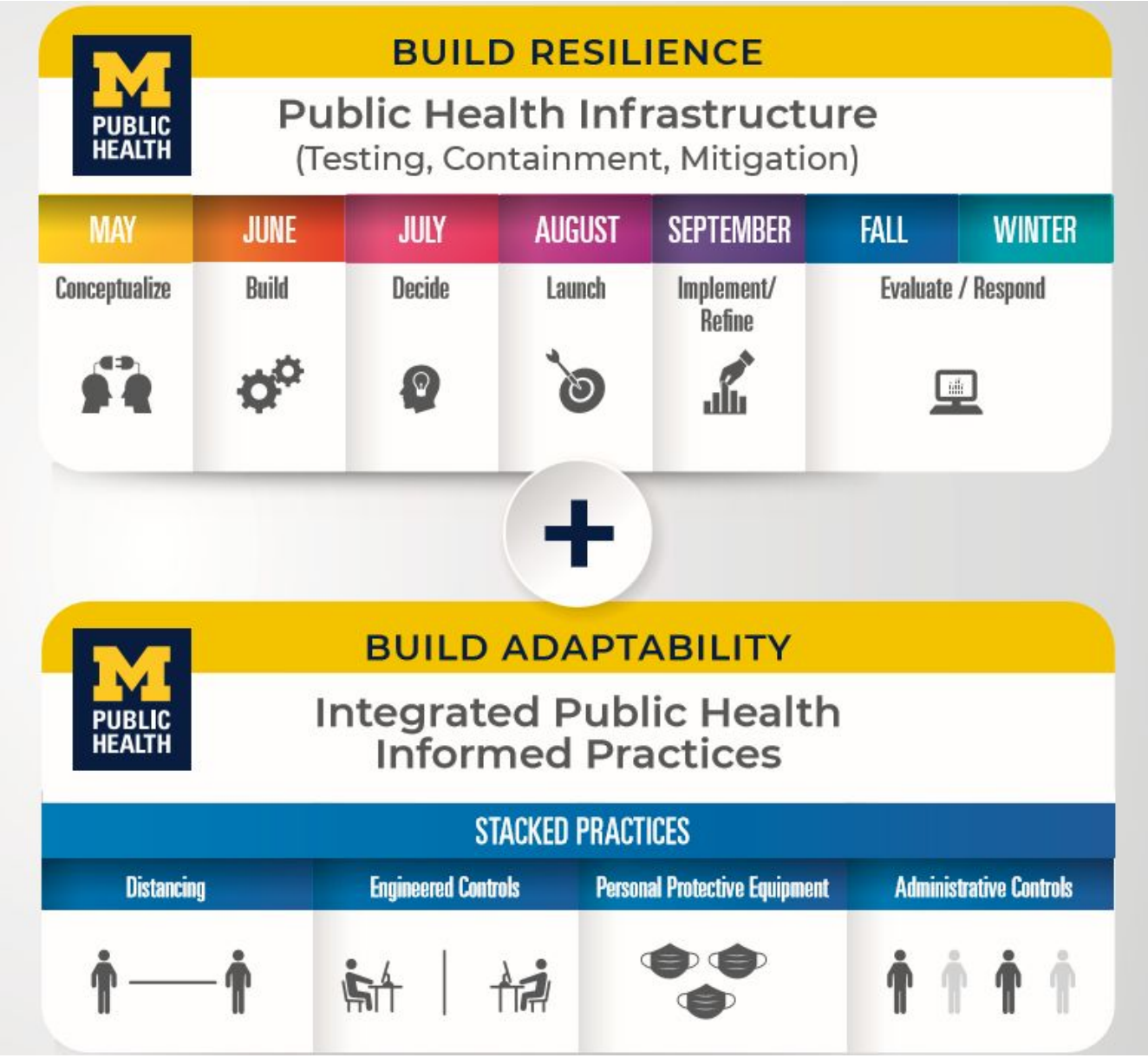
The Approach to a Public Health Informed Fall Semester



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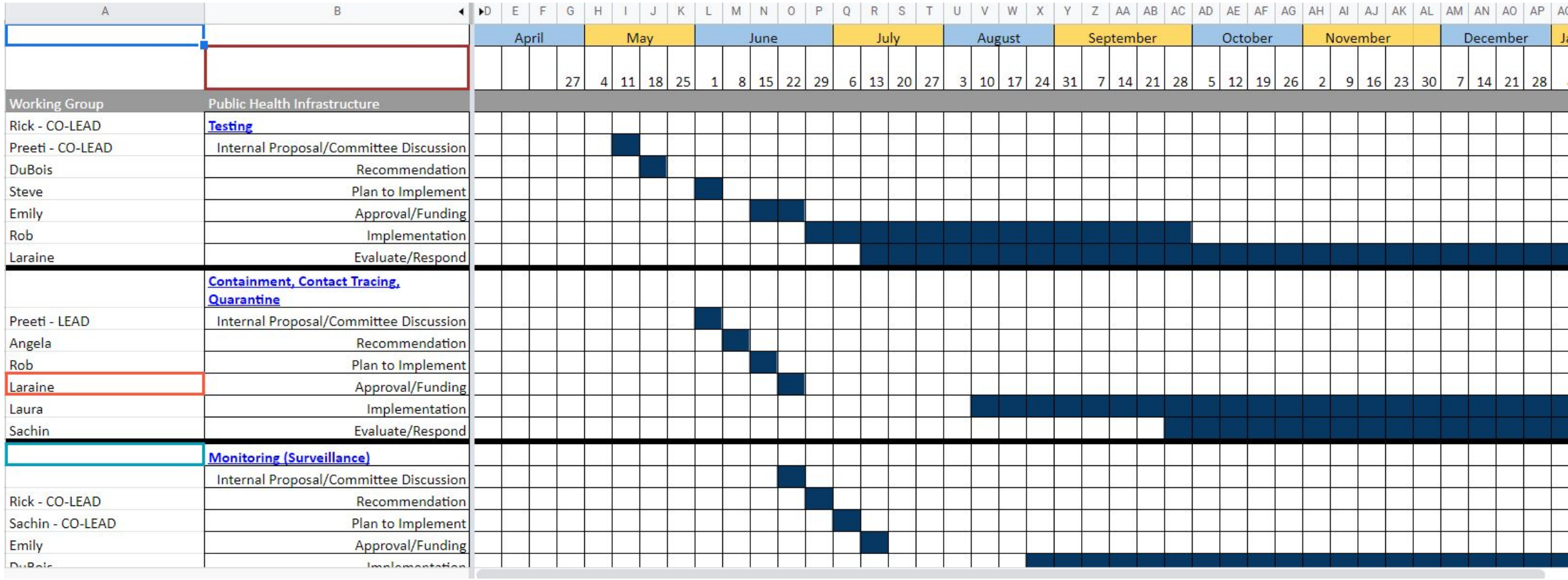
Master Timeline for Recommendations and Decision Making



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Priority #1: Testing Update – In Progress

Two main types of tests available:

1. **Diagnostic (PCR)** – sample from respiratory system (e.g., nose swab) tested for the presence of SARS-CoV-2.
2. **Antibody (Serology)** – blood or serum sample tested for the presence of antibodies.

UM currently working on options for both types; in-house capabilities as well as industry partnerships to meet demand (e.g., Abbott, Roche, Siemens).

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More About Diagnostic Tests

- Various types including: Abbott m2000, Diasorin, Thermo Fisher TaqPath, Abbott ID Now, Cepheid Gene Xpert
- Variable Timing:

  Rapid tests - results in < 1 hour; accuracy may be lower

  Others developed in a lab - up to 6 hours (plus transport)
- Only identifies active cases
- Testing facilities need specific certifications
- Working on additional options for specimen collection (saliva, 3D printed swabs)

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More About Antibody/Serology Tests

- Various types including: Diasorin Liasison XL Chemiluminescence, Euroimmun ELISA, Lateral Flow Immunoassay Chromatography
- Developed in a lab with length of time ranging from 15 minutes – 6 hours (plus transport); working on high throughput low cost option 24/7/365
- Currently requires blood draw but working on other options (e.g., finger stick)
- May not find antibodies if current infection
- Not everyone develops antibodies

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Factors Being Considered for Fall

- Testing landscape is changing quickly
- Will need to decide who, how, and when to test to minimize risk of various populations, including high risk
- Factors to consider will include: test availability and accuracy, speed of results, lab capacity, cost

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