MIT Medical and the COVID-19 Pandemic: Looking Back, Looking Forward

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MIT COVID-19 Response Timeline

• January
  • 21: Began monitoring coronavirus
  • 24: Message to entire MIT Community
  • 27: MIT Medical and EM begin holding daily meetings
  • 31: Travel restrictions from Mainland China

• February:
  • 2: Travel reporting form, tracking travelers and self-quarantine for those returning from China
  • 8: First MIT person under investigation
  • 27: Travel reporting form for all travel with self-quarantine

• March
  • 5: Limited travel, events, and visitors (letter to the community from President Reif)
  • 10: Decision to move undergrads out and cancel classes for one week
  • 12: Employees work from; additional day of canceled classes to speed up undergraduate move-out
  • 14: Research ramp-down decision
  • 20: Graduate students move-out encouraged
  • 24: First positive COVID-19 case in the MIT community; MIT delivers first load of PPE to local hospitals in need
  • 25: Limited Access Plan begins
  • 30: Remote learning begins
BE LIKE THE MANDALORIAN.

* Keeps distance from others *
* Avoids large groups *
* Never touches his face *

THIS IS THE WAY.
Sanitize your hands!
Ramping down MIT Medical

- All MIT Medical staff who could work from home started doing so 3/16
- Within a week, Urgent Care converted to appointments only
- Daily clinical huddles
- ~25 people total in building
- 18 month telehealth implementation in 2 weeks
- Developed the “swab team” to assess and test patients with COVID symptoms
Around Campus...
Testing, testing, testing

- MIT Medical fortunate to have adequate PPE and testing supplies
- COUHES-approved research study looking at surveillance testing of students and associated staff in MIT Housing
- We ramped up our testing efforts in mid-March as partnership with Broad came on-line
- Increased testing volume required a different strategy
Testing 2.0
COVID Care

Quarantine/Isolation Facility Support (Burton-Connor)

- Up to 300 private spaces in a dormitory to facilitate continued remote studies and work
- Self-monitoring of vitals and symptoms
- MIT Medical clinical staff (RN-level or higher) on site when operational

Alternative Care Site (Sean Collier Care Center)

- State-licensed “ward-style” facility for up to 75 patients with on-site physician staffing 24/7 located in Johnson Athletic Center
- Patients who would benefit from “eyes on” clinical care, but who are at very low risk of rapid escalation
- Regular vitals and symptom review by clinicians, ability to provide intravenous fluids, limited nasal canular oxygen, minor wound care and chronic condition management
- Currently being decommissioned with ability to be redeployed in ~72 hours
Sean Collier Care Center
Reaching our patients

MIT Medical @MITmedical · Mar 16
You’ve been practicing social distancing, but do you need to do more? What if someone in your lab is being tested for COVID-19 or gets a positive diagnosis? What if it’s a friend of a friend? We have a flow chart with answers. medical.mit.edu/Howto

What should I do if...

- I’ve been in close contact with someone...
  - who has tested positive for COVID-19?
  - who is being tested?
  - who might have been exposed?
- I am not experiencing any symptoms (yet!)
- I am not experiencing any symptoms (yet!)

Self-quarantine AND self-monitor
Self-monitor AND practice social distancing
Practice social distancing
Reaching our patients

The COVID-19 swab test is highly **specific** but not as **sensitive**.

That means a positive result is almost always true, but a negative result is sometimes false.

**Sensitivity** = \[
\frac{\text{number of true positives}}{\text{number of those tested who really are infected}} = \text{"how many of the infections did we find?"}
\]

**Specificity** = \[
\frac{\text{number of true negatives}}{\text{number of those tested who really are not infected}} = \text{"how many of the healthy people did we clear?"}
\]
Reaching our patients
Managing Stress around COVID-19

Teletherapy groups for MIT students — Spring 2020
Student Mental Health & Counseling Services

To learn more and sign up, contact Xiaoliu Hsi, PhD + hsi@med.mit.edu

Organized by Student Mental Health and Counseling Services

Managing Stress around COVID-19

This discussion group focuses on ways to better manage emotional responses to COVID-19 such as anxiety, feelings of isolation, sleep difficulties, difficulty with pronouncement and housing challenges in working from home remotely, maintaining a healthy and productive daily routine, difficulty connecting with peers, family and loved ones. Teletherapy groups will be held to address emotional and psychological challenges that are related to COVID-19.

Thursday, 4-5 p.m via video conference

To learn more and sign up, contact Xiaoliu Hsi, PhD + hsi@med.mit.edu

Managing Stress around COVID-19

- 20% of college students say their mental health has significantly worsened under COVID-19
- 80% of college students report that COVID-19 has negatively impacted their mental health

The most common ways COVID-19 has affected student’s lives:

- Stress/anxiety - 91%
- Disappointment or sadness - 81%
- Loneliness or isolation - 80%
- Financial setback - 48%

Launch of a new series of podcasts: Stress Management During Covid-19, Strategies to Reduce Procrastination, Hacking your Potential, Black Mental Health Matters, Speculative Fiction and Mindfulness and Self-Care

Cognitive Behavioral Therapy (CBT) & Self-Compassion Toolkit — Part I
This is an introductory talk to CBT and self-compassion which is a comprehensive approach to help students learn to identify and change negative automatic thoughts and behaviors. This group is open to all students and will provide students with strategies to cope with stress, anxiety, depression, and other mental health concerns.

Cognitive Behavioral Therapy (CBT) & Self-Compassion Toolkit — Part II
This is a continuation of the CBT and self-compassion toolkit and is intended for students who have completed Part I. This group is for students who are interested in learning more about CBT and self-compassion strategies and how to implement them in their daily lives.

Therapy Coaching Group
This group focuses on helping students set and achieve goals, develop coping strategies, and improve mental health. The group is open to students looking to improve their mental health.

Workshops

Perfecting Your Personal Style: How to Build Confidence Through Clothing and Appearance

Launch of a new series of podcasts: Stress Management During Covid-19, Strategies to Reduce Procrastination, Hacking your Potential, Black Mental Health Matters, Speculative Fiction and Mindfulness and Self-Care

medical.mit.edu/groups

Reaching our patients
Looking forward – bringing the community back to campus

• Decisions, decisions, decisions – hundreds of dedicated staff, students and faculty
• How do we re-populate campus in a way that decreases risk of transmission?
  • Physical Distancing and Face Coverings
  • Testing
  • Tracing
• Less density in residences – 1/room, 3/WC
• Less density in classrooms and labs
• Daily Health Attestation and Surveillance Testing Program
Testing Considerations

Return-to-Campus Testing

• Prior to returning to campus, within 2-3 days of anticipated first day
• What: Viral RT-PCR collected by swabbing of both nostrils for 20-30 seconds each
• Where: Collected at MIT Medical testing tent/trailer
• Test processing by Broad Institute with <24 hour turn-around
• We also intend to test personnel who have been working on campus throughout

Surveillance and Antibody Testing

• We are working with campus and external experts to develop our surveillance testing strategy
• At minimum, this will likely twice weekly testing of on-campus community members
• Pros and cons to every strategy – need to weigh accuracy, acceptability, convenience and cost
• No role for antibody testing at this time as there is a high false positive rate; this may be a tool we use in the future

Symptomatic Testing

• Those who develop symptoms of COVID-19 will be tested via an occupational medicine/student health pathway that keeps them separate from asymptomatic individuals
• Additional clinical information may be collected (e.g. vital signs, additional symptom history)
• Testing process is otherwise the same
• Symptomatic individuals must quarantine while awaiting results
Testing 3.0
After a positive test

What happens if my test is positive?

• You will be required to isolate at home for up to 14 days, perhaps longer if still symptomatic
• You will be asked to provide the Occupational Medicine/Student Health team with a list of the people you have been in close contact with during the 48-72 hours prior to a positive test so that contact tracing can be completed; you may also be contacted by your local public health department
• We will check in with you periodically during the isolation period to make sure you are ok, and advise you when it is ok to return to your work/lab

Contact tracing

• People who have been in close contact with a person known to be positive will be contacted by phone and a history of the exposure will be obtained; they may also be contacted by a local public health department contact tracer
• Testing will be provided to close contacts; they will need to quarantine while awaiting results and possibly for longer
• If there are indications of a “cluster” in a particular area, we will advise on what public health measures need to be taken next (e.g. deep cleaning, everyone stays home for a period of time, etc.)
• Every situation is handled individually – it is not one size fits all
• We are exploring technology solutions to help with contact tracing efforts
Return to campus health attestation

Daily COVID-19 Attestation

Your last submitted form was:

- Sore throat
- New cough (not related to chronic conditions)
- New nasal congestion or runny nose
- Muscle aches
- New loss of smell
- Shortness of breath

You have completed your medical test. Please continue to the Daily COVID-19 Attestation form.

View Recent Test Results  Continue to Attestation Form
WORE MASK IN PUBLIC
BEFORE IT WAS COOL
Physical distancing and face coverings are key
Thinking about “Pods”

- Within a pod, social distancing is relaxed (similar to family members in a home)
- Spread of COVID-19 could be contained to the pod, as long as the pod boundaries serve as a firewall
- Pros and cons of various sizes
- Pods may increase transmission, but there are benefits associated with increased happiness
- If pods are carefully constructed and paired with appropriate well-designed testing protocols, the increase in spread appears to be manageable and may be worth the trade-off.

Source: Peko Hosoi  [https://idss.mit.edu/vignette/rules-of-thumb-for-reopening-4/]
Other considerations

• Surveillance testing is most valuable when there is high participation
  • Opt-out rates >33% renders surveillance ineffective in controlling spread
  • Will require strong and coordinated messaging

• Quarantine/isolation capability for on-campus residents will be required
  • With large on-campus population, potential need >100 beds
  • Central vs. Distributed isolation capability
  • Approach enhanced by presence of small (<10 bed) on-site observation area

• Will need to maximize the number of people in the community who receive a flu vaccine this fall; discussions underway around how best to do this
A few words about FSILGs

• FSILGs are integral to the MIT residential education experience – and MIT leaders appreciate the role our organizations play in our community

• Virtually every discussion and decision considers what the impact might be to the MIT FSILG system, both individually and collectively

• Our input is necessary and valued – FSILG Ops Team providing input

Bottom Line

Leading our organizations through this pandemic will require flexibility, creativity and teamwork by all involved
Building a healthier MIT, so MIT can build a better world.
V-A-R Model

1. **VALIDATE THEIR FEELINGS**
   Let them know what they’re feeling is okay and that you believe them. Validation sounds like…
   - “That makes sense.”
   - “That sounds difficult.”
   - “I’m sorry you are struggling right now.”

2. **APPRECIATE THEIR COURAGE**
   Speaking up can be a challenging step — let them know it’s a good one. Also show you’re there to support them. Affirmation sounds like…
   - “Thank you for sharing.”
   - “You are not alone.”
   - “I’m here for you.”

3. **REFER THEM TO SKILLS AND SUPPORT**
   Let them know help is available and refer them to appropriate resources. Refer sounds like...
   - “Sometimes taking time for self-care and listening to a comedy podcast helps me, can we do that together?”
   - “I’ve been using this meditation app. It’s really helped me slow down my thoughts.”
   - “I think it might be helpful to talk to someone. I can stay with you while we call/text a hotline.”

Credit: [https://www.activeminds.org/about-mental-health/basic-var/](https://www.activeminds.org/about-mental-health/basic-var/)
## Testing Strategy: Test Types & Innovations

<table>
<thead>
<tr>
<th></th>
<th>PCR</th>
<th>Antigen</th>
<th>PCR Pooling</th>
<th>Antibody (Serology)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing</strong></td>
<td>Early (can detect ~2-3 days before symptoms present)</td>
<td>Later than PCR (often detection commences in line with onset of symptoms)</td>
<td>Early (in line with PCR testing)</td>
<td>During or after-the-infection</td>
</tr>
<tr>
<td><strong>Accuracy</strong></td>
<td>High (95% sensitivity) reported but lower (80%) in practice</td>
<td>Medium (80% PCR sensitivity) lower in practice (limited data)</td>
<td>High same as PCR, but requires additional follow up testing</td>
<td>Medium with false positives (~5%) a concern</td>
</tr>
<tr>
<td><strong>Commercial Cost</strong></td>
<td>Medium (~$100+ fully-loaded cost, ~$30-50 'at cost')</td>
<td>Low (~$20-30 fully-loaded cost)</td>
<td>Low (~$15-20 pooled / test)</td>
<td>Medium (~$50-120 cost)</td>
</tr>
</tbody>
</table>

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