

COVID-19 Next Steps to Reopening Safely



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Crystal Watson, DrPH
Johns Hopkins Center for Health
Security
@C_R_Watson

Roadmap for Reopening

Lifting population-wide social distancing will only be possible if we reduce transmission, shore up hospital systems, and build some core public health capabilities. There are 4 phases to response that we see right now

- **Phase 1: Slowing the Spread** – this is the phase we are in now.
- **Phase 2: State-by-State Reopening** – We will be able to begin lifting some measures like business closures
- **Phase 3: Establish Immune Protection and Lift Distancing More Fully**
- **Phase 4: Rebuild Readiness for the Next Pandemic**



National Coronavirus Response

A ROAD MAP TO REOPENING

Scott Gottlieb, MD

Caitlin Rivers, PhD, MPH

Mark B. McClellan, MD, PhD

Lauren Silvis, JD

Crystal Watson, DrPh, MPH

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Phase 2: Easing Social Distancing at a State or City Level

- Before we can start gradually lifting social distancing measures, we need 4 things to happen:
 1. Sustained reductions in daily case numbers
 2. Hospitals that are not under stress, operating not in crisis-mode. Also we need plentiful supplies of personal protective equipment, essential medicines, and ventilators
 3. Much more widespread testing – need to be able to test anyone with symptoms and ideally their contacts
 4. Scaled-up public health workforce to identify cases and trace the contacts of each case



Scaling Up Contact Tracing

- Contact tracing is a core public health tool. It is not new. We just don't have enough
 - What does contact tracing actually mean?
- This capacity is needed to:
 - Break chains of transmission
 - Manage epidemics at an ongoing low level
 - Prevent future waves/surges of cases
 - Enable us to get back to work in a much safer way
- It can be combined with technologies/apps as workforce multipliers



Scaling Up Contact Tracing

- How do we accomplish this?
 - Massive workforce upgrade
 - Maybe as many as 100,000 new workers
 - Estimated cost of \$3.6 billion
 - Coordination, guidance, and support from state and national levels
 - Cooperation with NGO's and businesses



Phase 3: Establish Immune Protection and Open More Fully

- If we have a safe and effective vaccine that becomes widely available or a drug that can prevent infection and/or reduce severity of disease
- We will then be able to relax social distancing further and get back to a more normal life/economy

Phase 4: Rebuild Readiness for the Next Pandemic

- After the pandemic has run its course and/or we have a vaccine
- We need to begin preparing for the next pandemic



Resources

Johns Hopkins Center for Health Security: <https://www.centerforhealthsecurity.org/>

National coronavirus response: A road map to reopening

A National Plan to Enable Comprehensive COVID-19 Case Finding and Contact Tracing in the US

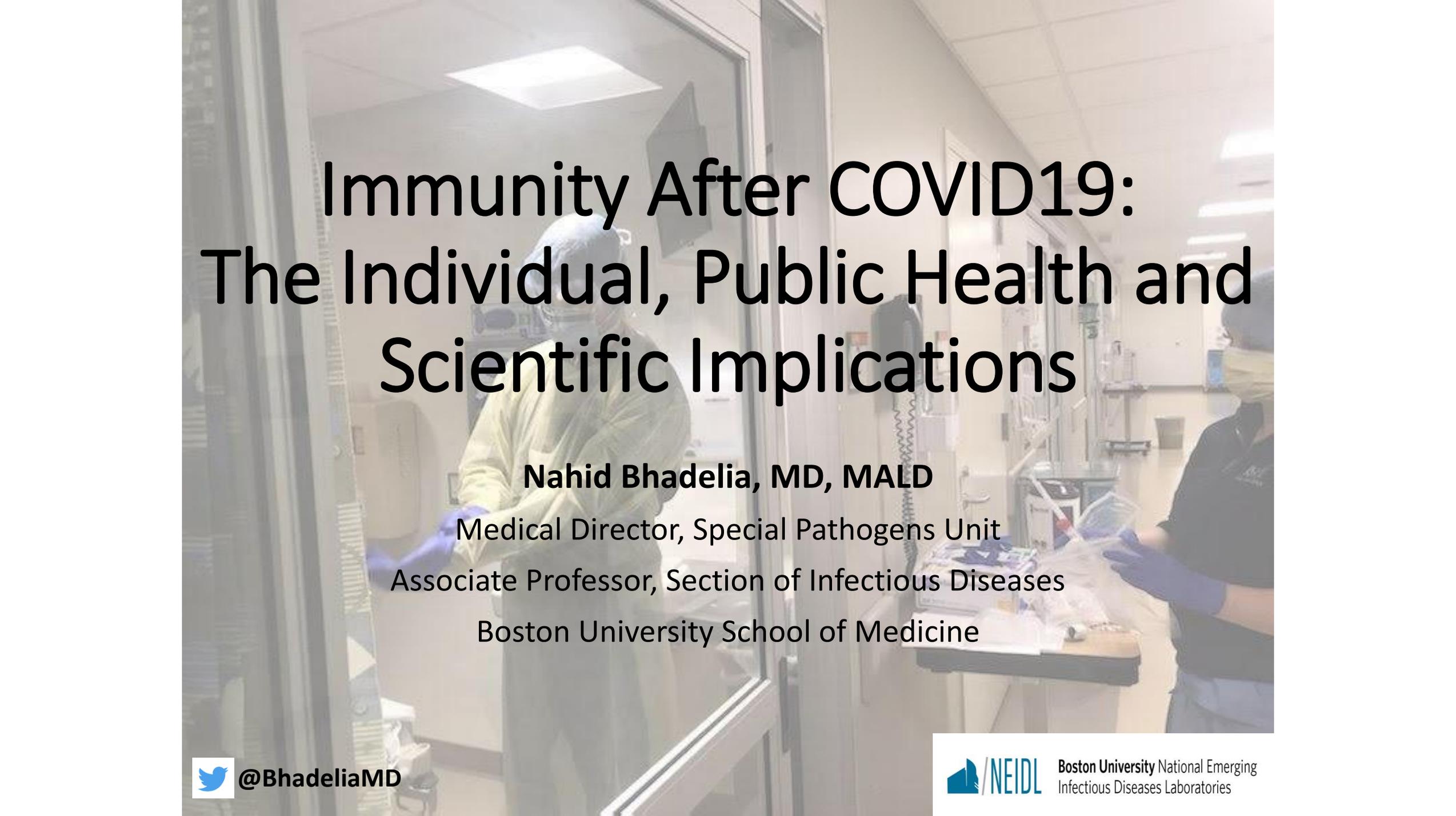
Public Health Principles for a Phased Reopening During COVID-19: Guidance for Governors

Enabling Emergency Mass Vaccination: Innovations in Manufacturing and Administration During a Pandemic

Recommendations for a Metropolitan COVID-19 Response—Special Area of Emphasis: Guidance on Protecting Individuals Residing in Long-Term Care Facilities

Developing a National Strategy for Serology (Antibody Testing) in the United States





Immunity After COVID19: The Individual, Public Health and Scientific Implications

Nahid Bhadelia, MD, MALD

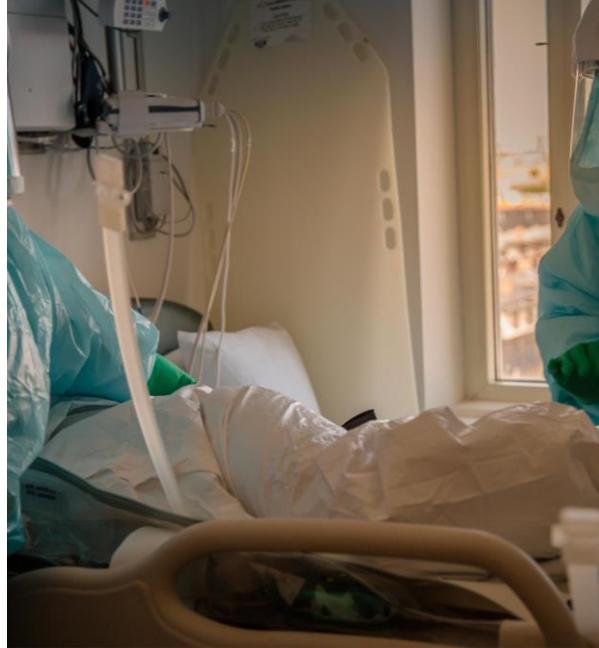
Medical Director, Special Pathogens Unit
Associate Professor, Section of Infectious Diseases
Boston University School of Medicine



@BhadeliaMD

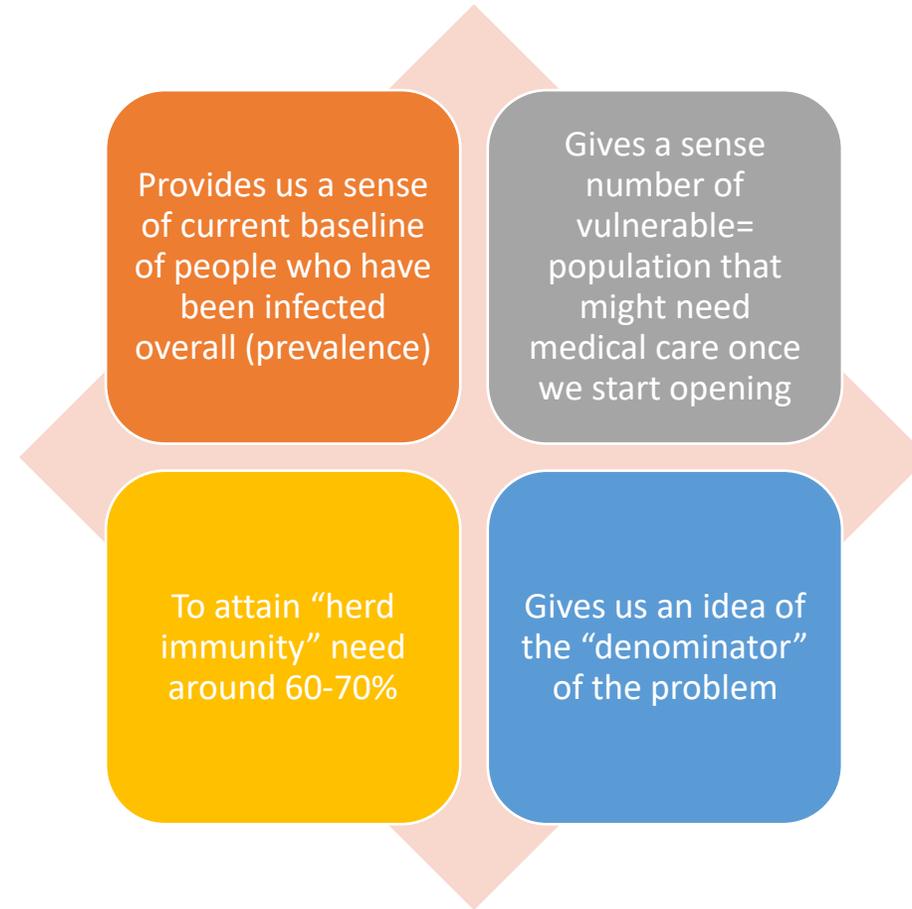


Boston University National Emerging
Infectious Diseases Laboratories





Why is it important to measure immunity to COVID19?





Current data about immunity after SARSCOV2

- Immunity is determined by antibodies as well as other immune cells (T cells)
- For all infectious diseases, small portion may not mount enough antibodies (what is enough antibodies? “Titers”)
- MERS/SARS study show survivors have “neutralizing” antibodies (those that block action of virus) but they decline between 1-2 years after infection (Payne et al, Mo et al)
- For other coronaviruses, prior infection with similar strain could reduce severity of infection with new strain (Callow et al, Reed)
- Animal study with SAR-COV-2 showed no reinfection after recovery when rechallenged (Bao et al)



Current Testing for COVID19

- Diagnostic tests that detect genetic material of virus– look for active infection
 - Unclear how accurate these are in asymptomatic patients
 - Lot of issues with supplies for these tests
 - Are generally tests performed on saliva or nasal or lung fluid
- Antibody tests that detect immune memory– look for evidence of past infection
 - Concerns that many tests maybe positive when they should be negative “false positive, and vice versa, “false negative”
 - Are generally pin prick or blood draw tests



Are current immunity tests useful for individuals?

- Tests themselves maybe falsely positive negative or falsely positive so it's hard to know how to advise patients
- Even if they are a true positive, we think that may mean patients are immune
 - But we cannot guarantee that with current science
 - we need to follow that up with understanding if there are enough levels of antibodies to prevent reinfection



Are current tests useful for public health?

- It could give us a sense of comparative burden in disease in different populations
- It could help identify hot spots that tell us where we need to concentrate public health surveillance when we open society
- It could tell us about trends over time in the same population

References

- Callow KA, Parry HF, Sergeant M, Tyrrell DA. The time course of the immune response to experimental coronavirus infection of man. *Epidemiol Infect.* 1990 Oct;105(2):435-46. doi: 10.1017/s0950268800048019. PMID: 2170159; PMCID: PMC2271881.
- Reed SE. The behaviour of recent isolates of human respiratory coronavirus in vitro and in volunteers: evidence of heterogeneity among 229E-related strains. *J Med Virol.* 1984;13(2):179-192. doi:10.1002/jmv.1890130208
- Mo H, Zeng G, Ren X, et al. Longitudinal profile of antibodies against SARS-coronavirus in SARS patients and their clinical significance. *Respirology.* 2006;11(1):49-53. doi:10.1111/j.1440-1843.2006.00783.x
- Payne DC, Iblan I, Rha B, Alqasrawi S, Haddadin A, Al Nsour M, et al. Persistence of Antibodies against Middle East Respiratory Syndrome Coronavirus. *Emerg Infect Dis.* 2016;22(10):1824-1826. <https://dx.doi.org/10.3201/eid2210.160706>
- Bao et al. Reinfection could not occur in SARS-CoV-2 infected rhesus macaques. *BioRxiv* <https://doi.org/10.1101/2020.03.13.990226>. <https://www.biorxiv.org/content/10.1101/2020.03.13.990226v1.full.pdf>