COVID-19

Public Health and Vaccine Update

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Crystal Run Healthcare

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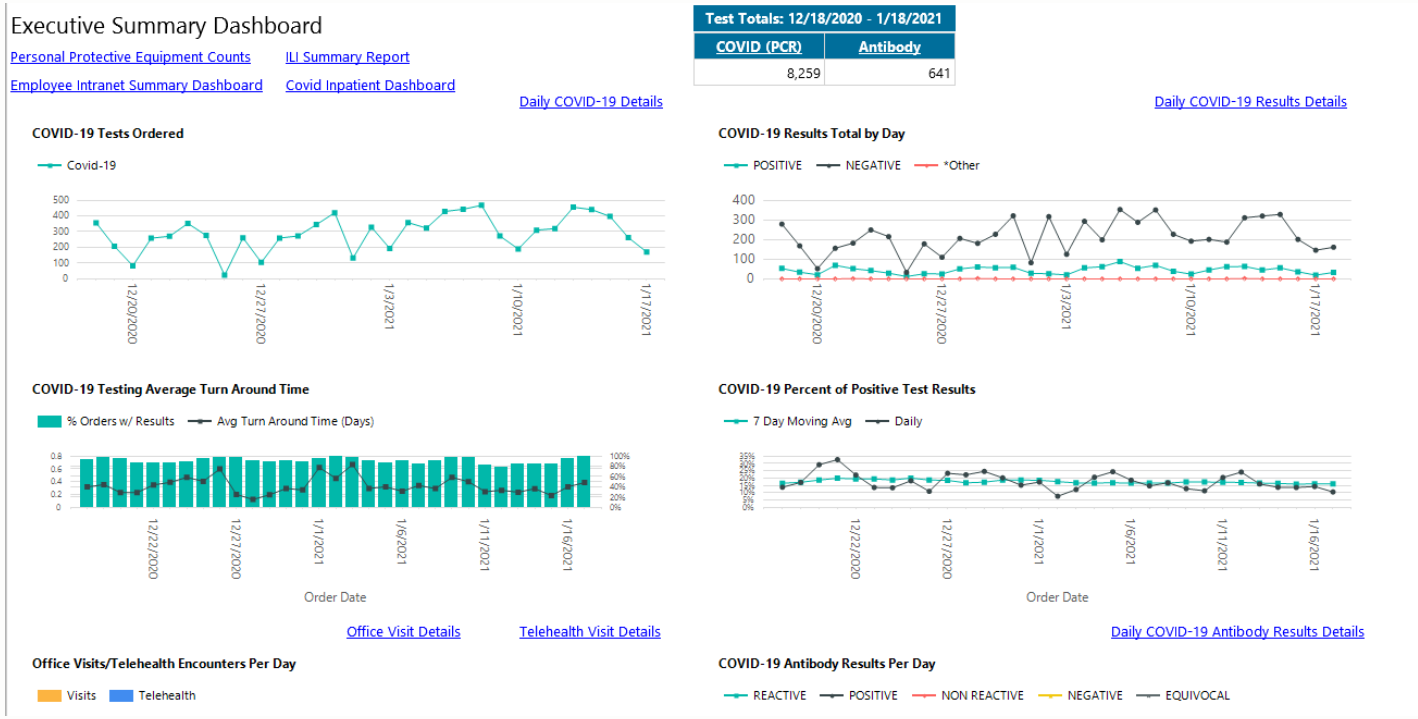
COVID Portfolio



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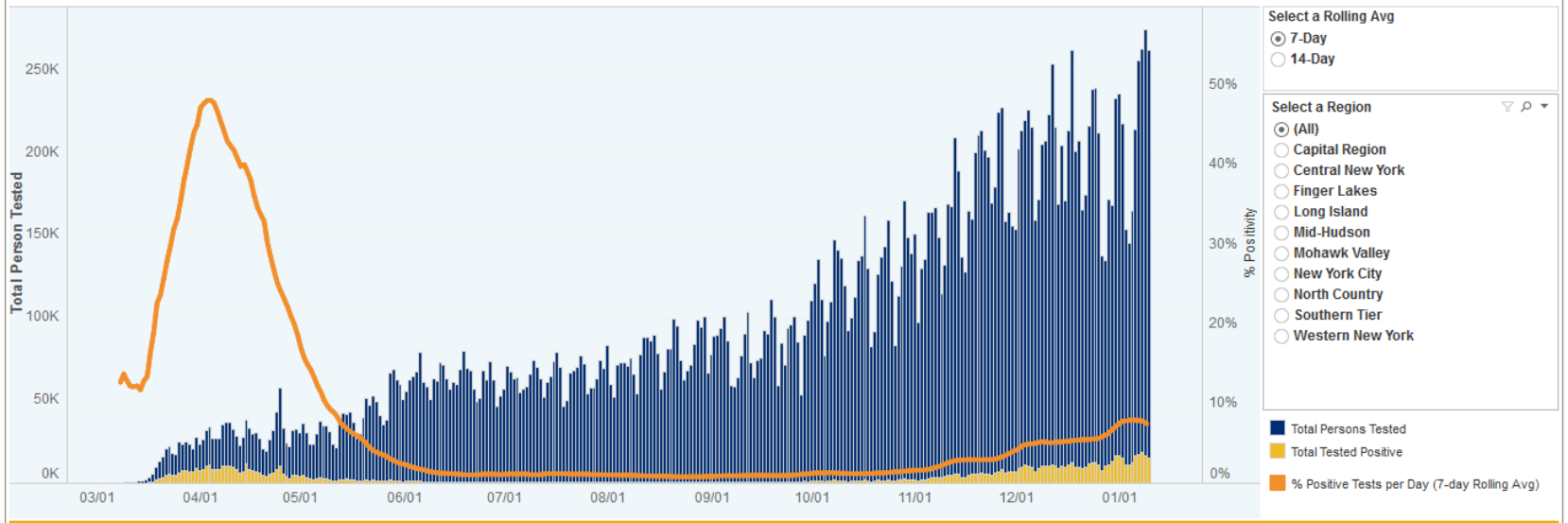
% Positive Results Over Time - All Regions

Testing data as of: 1/9/2021
Testing data last updated on: 1/10/2021



Test Results - Yesterday

	Total Persons Tested	Total Tested Positive	% Positive, Yesterday	% Positive, 7-day Avg
Capital Region	12,082	994	8.2%	9.2%
Central New York	10,467	621	5.9%	7.8%
Finger Lakes	12,789	1,152	9.0%	9.6%
Long Island	36,777	3,135	8.5%	9.6%
Mid-Hudson	25,327	1,834	7.2%	7.9%
Mohawk Valley	5,961	486	8.2%	10.0%
New York City	109,654	5,319	4.9%	6.0%
North Country	3,650	246	6.7%	8.1%
Southern Tier	13,519	437	3.2%	4.4%
Western New York	16,610	1,131	6.8%	8.1%

www.forward.ny.gov/percentage-positive-results-region-dashboard

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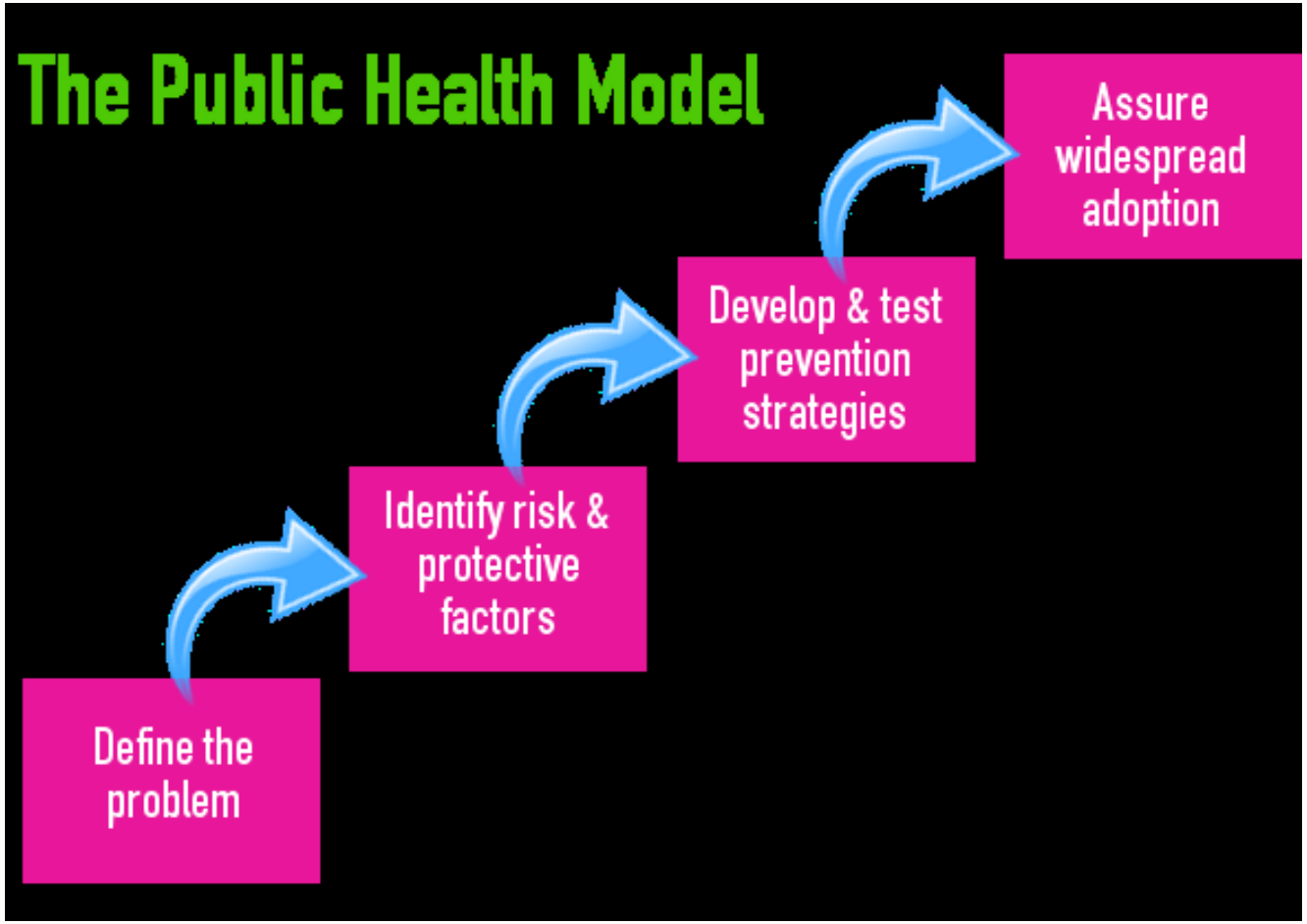
Outline

- Public Health
  - What we know and don't know
  - Risk Mitigation
  - Quarantine and Isolation
- Vaccine
  - Development
  - Safety and Efficacy
  - How do I get one?



What we know

- COVID-19 is predominantly spread by respiratory droplets
- Masks, social distancing reduce the risk of infection
- The infectious period is 2 days before and 10 days after symptom onset
- Household Contacts have a high rate of becoming infected
- Reinfection is rare
- The mRNA vaccines are effective with a reasonable side effect profile

What we don’t know

- The role of antibody testing
- The duration of immunity after infection
- The impact of mutations on the vaccine and reinfection
- The efficacy of one dose of the vaccine

Public Health

- Primary Prevention:
  - Mask, Social Distance, Hand washing
  - Travel Restriction
- Reducing Risk of Transmission after Infection:
  - Identify Infections Early
  - Aggressive Testing
  - Isolation after Infection
  - Quarantine after exposure
  - Contact Tracing

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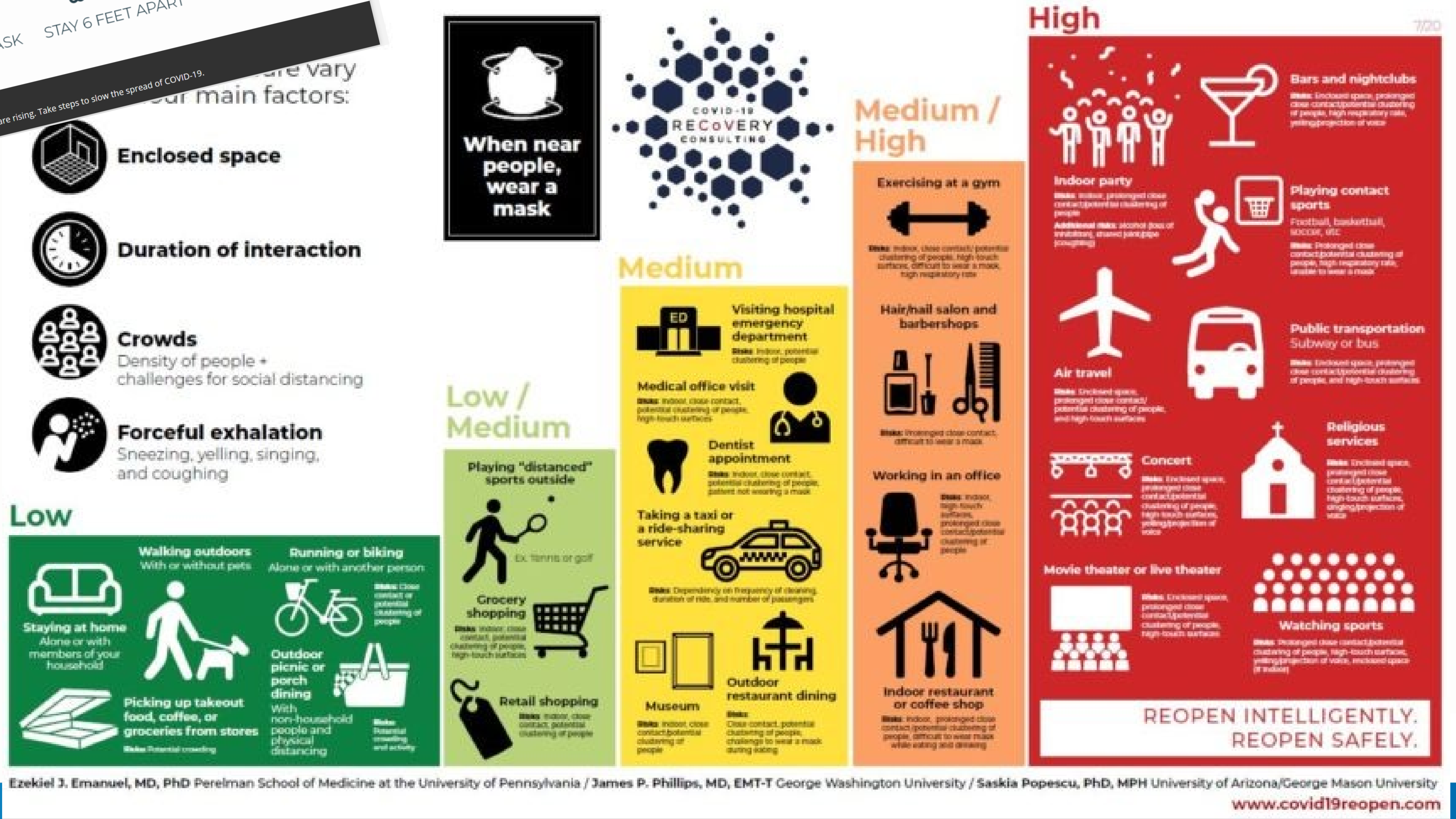
CASES ARE RISING.
ACT NOW!
WEAR A MASK
STAY 6 FEET APART
AVOID CROWDS
Coronavirus Disease 2019
COVID-19 cases, hospitalizations, and deaths across the United States are rising. Take steps to slow the spread of COVID-19.


Enclosed space
Duration of interaction
Crowds
Density of people + challenges for social distancing
Forceful exhalation
Sneezing, yelling, singing, and coughing
When near people, wear a mask
COVID-19 RECOVERY CONSULTING
Low
Staying at home
Alone or with members of your household
Walking outdoors
With or without pets
Running or biking
Alone or with another person
Outdoor picnic or porch dining
Picking up takeout food, coffee, or groceries from stores
Low / Medium
Playing "distanced" sports outside
Ex: Tennis or golf
Grocery shopping
Retail shopping
Medium
Visiting hospital emergency department
Medical office visit
Dentist appointment
Taking a taxi or a ride-sharing service
Museum
Outdoor restaurant dining
Medium / High
Exercising at a gym
Hair/nail salon and barbershops
Working in an office
Indoor restaurant or coffee shop
High
Bars and nightclubs
Indoor party
Playing contact sports
Football, basketball, soccer, etc
Air travel
Public transportation
Subway or bus
Concert
Religious services
Movie theater or live theater
Watching sports
REOPEN INTELLIGENTLY.
REOPEN SAFELY.
Ezekiel J. Emanuel, MD, PhD Perelman School of Medicine at the University of Pennsylvania / James P. Phillips, MD, EMT-T George Washington University / Saskia Popescu, PhD, MPH University of Arizona/George Mason University
www.covid19reopen.com

COVID Testing

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Public Health Scenarios

Scenario	Recommendation	Notes
COVID-like illness, test negative	Isolate until symptoms improve AND 24 hours fever free	Consider false positive
COVID infection	Isolate 10 days after symptom onset AND fever free for 24 hours	Don't repeat testing
Close Contact to Infection	Quarantine for 14 days after last contact 10 days can be considered	Separation in household important
Travel	Quarantine for 10 days but can "test-out"	Non-contiguous states

Outline

- Public Health
  - What we know and don't know
  - Scenario-based Recommendations
- **Vaccine**
  - **Development**
  - **Safety and Efficacy**
  - **How do I get one?**

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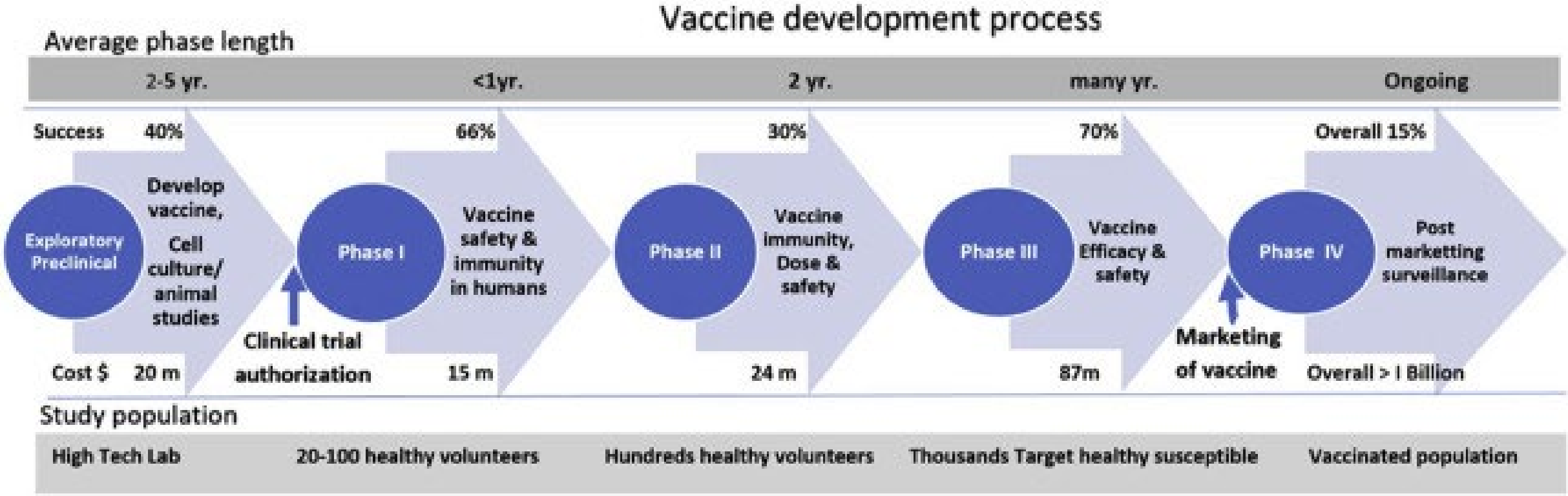
Vaccine development process



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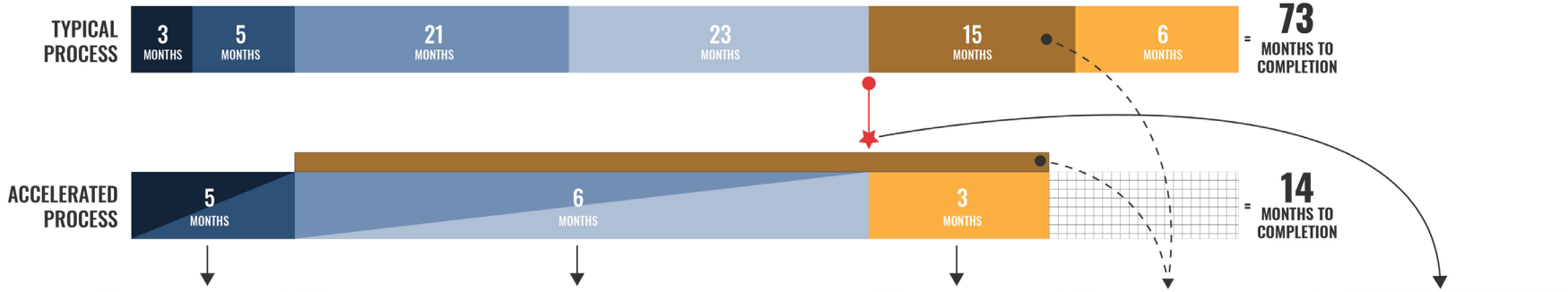
OPERATION WARP SPEED
ACCELERATED VACCINE PROCESS

MISSION: Deliver 300 million doses of safe and effective vaccine by 1 January 2021.



1

A typical 8-month process is accelerated by:

- Creating vaccine candidates immediately after viral genome sequence is available.
- Using vaccine platforms developed for other diseases.

2

A typical 42-month process is accelerated by:

- Large scale Phase III clinical trials of 30,000 volunteers allowing for rapid collection and earlier analysis of safety and efficacy data of demographically diverse populations by the FDA, reducing the typical 12-month approval process to three months.
- Two promising candidates began Phase III clinical trials in July, with others to follow quickly in coming months. Before beginning Phase III, candidates must show safety data from animal and human studies.
- The U.S. Government funding at-risk, large-scale manufacturing of the most promising vaccine candidates during Phase III clinical trials to ensure any vaccine proven to be safe and effective is available immediately upon FDA Emergency Use Authorization (EUA) approval or licensure.

4

A typical 6-month process is accelerated by:

- A tiered approach based on CDC recommended allocation methodology used as part of pandemic flu planning and the COVID-19 response will be used to determine vaccine distribution.

3

A typical 15-month process is accelerated by:

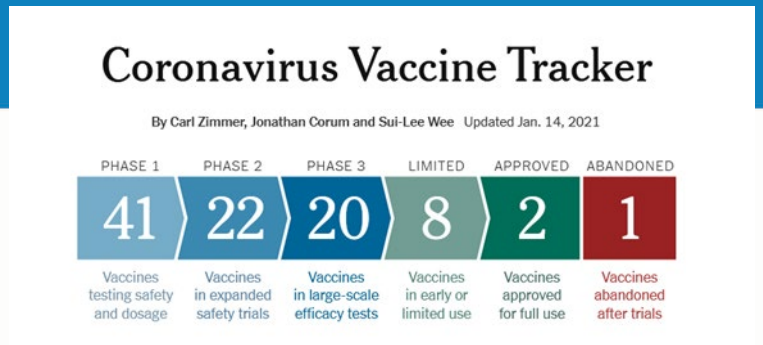
- Planning for infrastructure and distribution before the vaccines are approved or authorized.
- CDC leading distribution planning with DoD augmentation.

5

A typical 12-month FDA review for EUA approval or licensure is accelerated by:

- Providing continuous safety and efficacy data collected in large Phase III clinical trials.

R&D + Preclinical Trials Vaccine Candidate/s Identified
Phase I Clinical Trials
Phase II Clinical Trials
Phase III Clinical Trials
Manufacturing
Distribution



Vaccine Types

Name	Type	Mechanism	Status	Efficacy	Examples
Pfizer-BioNTech, Moderna	RNA	Program cells to produce spike protein	Emergency Use U.S., EU, others	95% (2 doses)	none
Oxford-AstraZenica, Johnson&Johnson	Replication Incompetent Viral vector	Another virus transports COVID gene	Emergency Use Britain, India	62% - 1dose 90% - 2 doses	Dengue
Novavax	Viral Protein	Protein particles from virus create immune response	Phase 3	Pending	Hepatitis B HPV Tetanus
Sinovac	Inactivated Virus	Virus modified so cannot replicate	Phase 3	50%	Polio

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SIZING UP THE SHOTS

The Oxford University-AstraZeneca

TECHNOLOGY: Viral Vector (Genetically modified virus)
When injected, the vaccine instructs human cells to produce the SARS-CoV-2 spike protein — the immune system's main target in coronaviruses.
EFFICACY: 62-90%
PROCESS: Passed all three trials
MAJOR BUYERS: EU (400 million doses), US (300 million doses), UK (100 million doses)
THAILAND: 26 million doses
PRICE: US$ 4 per dose
DOSED REQUIRED: 2

Pfizer-BioNTech

TECHNOLOGY: mRNA
The new mRNA technology tricks the body into making the viral protein itself which, in turn, triggers an immune response
EFFICACY: 95%
PROCESS: Passed all three trials
MAJOR BUYERS: EU countries (200 million doses), US (100 million doses)
PRICE: US$20 per dose
DOSED REQUIRED: 2

Sinovac

TECHNOLOGY: Inactivated vaccine
Using the dead Covid-19 virus itself to trigger an immune response
EFFICACY: 50-70% (varies in tested countries)
PROCESS: Phase 3 trials
MAJOR BUYERS: Indonesia (40 million doses), Philippines (25 million doses)
THAILAND: 2 million doses
PRICE: US$5 per dose
DOSED REQUIRED: 2

Sputnik V (by Russia's Gamaleya Institute)

TECHNOLOGY: Adenoviral vector-based platform
The technology delivers the genetic instructions for SARS-CoV-2 antigens directly into patients' cells, triggering an immune response
EFFICACY: 91.4%
PROCESS: Phase 3 trials ongoing
MAJOR BUYERS: Brazil (10 million doses), Argentina (10 million doses) Bolivia (2.6 million doses), India (contracted to locally produce 100 million doses)
PRICE: US$10 per dose
DOSED REQUIRED: 2

Moderna

TECHNOLOGY: mRNA
A new type of vaccine which uses messenger RNA, which contains instructions for human cells to make proteins that mimic part of the coronavirus, to trigger an immune response.
EFFICACY: 95%
PROCESS: Passed all three trials
MAJOR BUYERS: EU (160 million doses), US (100 million doses), Canada (40 million doses)
PRICE: US$33 per dose
DOSED REQUIRED: 2

Johnson & Johnson

TECHNOLOGY: Uses a cold virus to deliver genetic material from the coronavirus into the body to prompt an immune response.
EFFICACY: Expected to be released by the end of January
PROCESS: Phase 3 clinical trials ongoing
MAJOR BUYERS: EU (160 million doses), US (100 million doses), Canada (40 million doses)
PRICE: Estimated US$10 per dose
DOSED REQUIRED: 1

Source: World Health Organization (WHO), agencies, respective companies

BANGKOK POST GRAPHICS

How does mRNA vaccine work

https://www.youtube.com/watch?v=DCk7LyMslxo&feature=youtu.be

Infectivity after mRNA vaccine

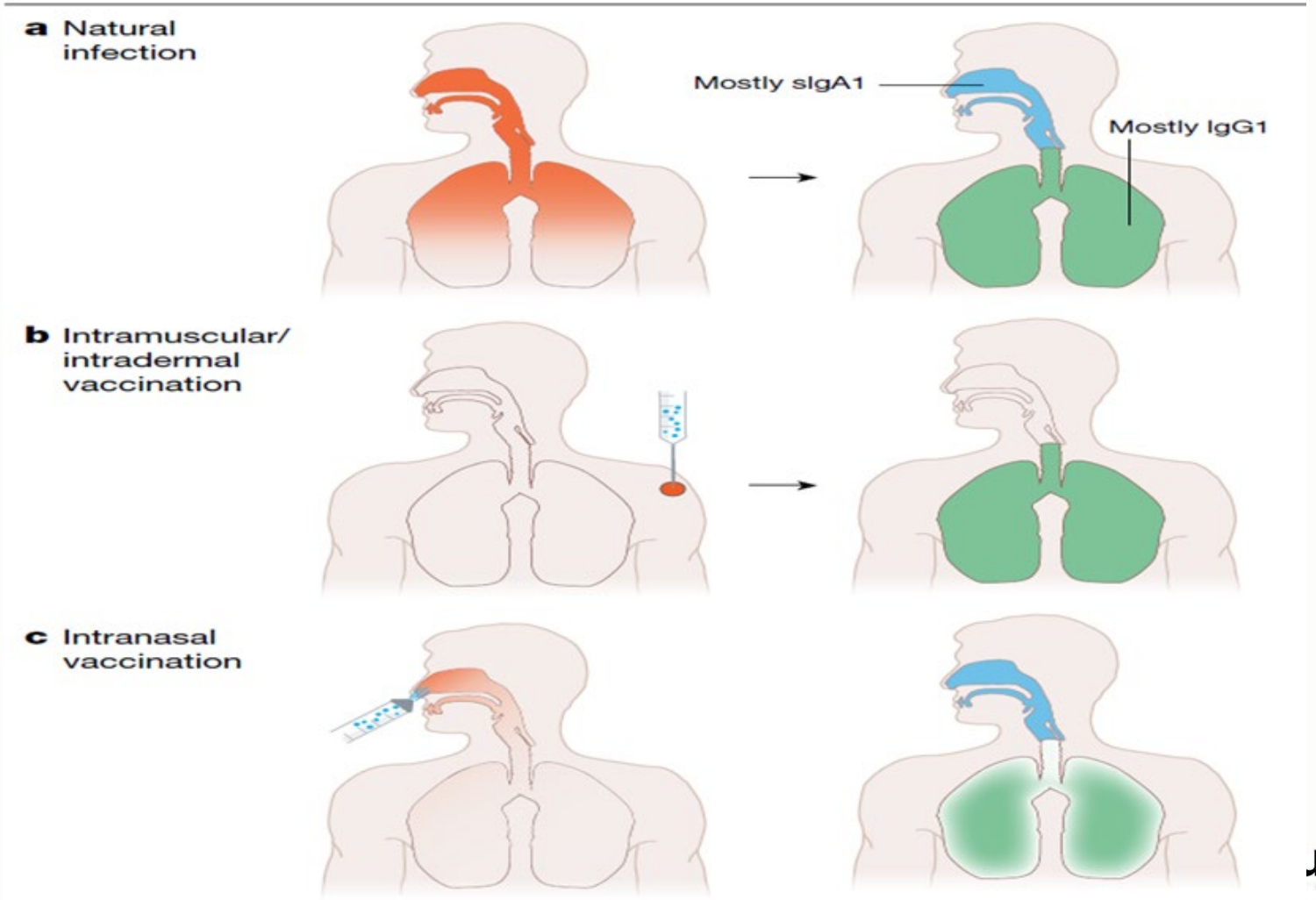


Fig. 2 | Mucosal and systemic immune responses to natural infection with

Vaccine Efficacy

- Efficacy = Placebo Rate – Treatment Rate / Placebo Rate
  - Pfizer 1.3% Placebo, 0.07% Treatment = 95%
- Number Needed to Treat = 1 / (Placebo – Treatment)
  - Pfizer = 81

Vaccine	Efficacy
Pfizer / Moderna	95%
Influenza	40-60%
MMR	97%
Polio	100%

mRNA Vaccine Comparison

	Pfizer-BioNTech	Moderna
Study Participants	43548	30420
Efficacy	95%	94%
Adverse Reactions	80% injections site pain 34-47% - dose 1 51-59% - dose 2 ? Allergic Side effects less age > 55	85% injection site pain 54.9% - dose 1 79.9% - dose 2 1.5% allergic (1% placebo) 3 Bell's palsy (1 placebo)
Notes	2 doses, 3 weeks apart Ultrafreezer Required	2 doses, 4 weeks apart

Evaluation of mRNA vaccine

1. Did the vaccine follow traditional approval pathway?
2. Was clinical trial data released to the public?
3. Is the vaccine effective?
4. Does the vaccine provide long term protection?
5. Do benefits outweigh the harms?

v-safe℠
after vaccination
health checker

Get vaccinated.
Get your smartphone.
Get started with v-safe.

V-safe is a smartphone-based tool that checks in on you after your COVID-19 vaccination. Your participation helps keep COVID-19 vaccines safe — for you and for everyone.

If you got vaccinated in the last 6 weeks, you can participate in v-safe!

It takes just a few minutes to register and get started. All you need is your smartphone and information about the COVID-19 vaccine you received. This information can be found on your vaccination record card. If you cannot find your card, please contact your healthcare provider.

1 **Register for v-safe**

Enter basic information about yourself and follow the prompts to set up your account.

2 **Enter your vaccine information**

Tell us which COVID-19 vaccine you received and when you got it.

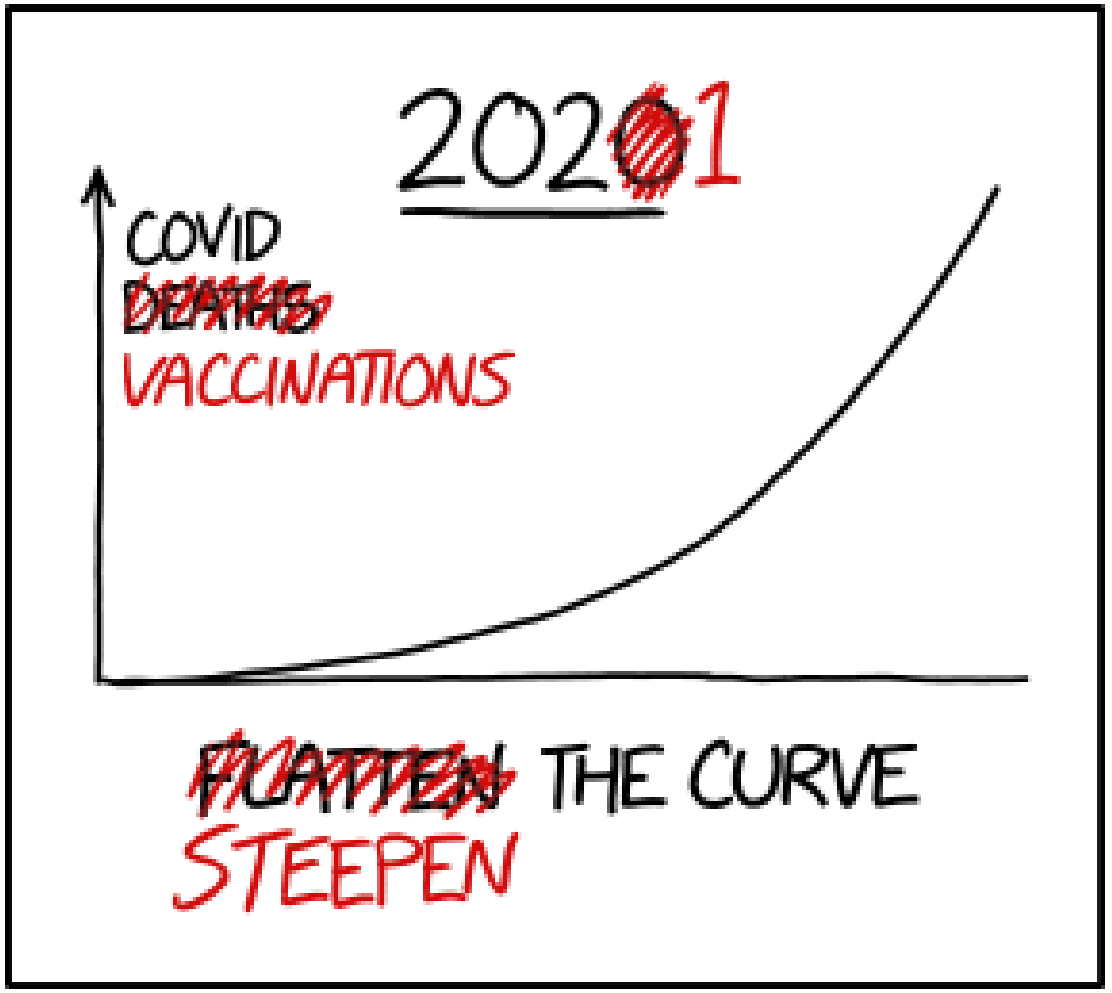
COVID vaccine FAQ

1. What vaccine should I get?
2. Can I get the vaccine if I have already had COVID?
3. I get sick every time I have a flu shot. Can I get the COVID vaccine?
4. What if I've had another vaccine recently?

COVID vaccine FAQ (cont.)

5. What if I have food allergies or an allergic reaction to another vaccine?
6. Can I get the vaccine if I am immunocompromised?
7. How important is the 3 or 4 week interval between doses?
8. Will I need a COVID vaccine every year?
9. Is it safe for me to resume normal life after being vaccinated?

COVID Vaccine Distribution



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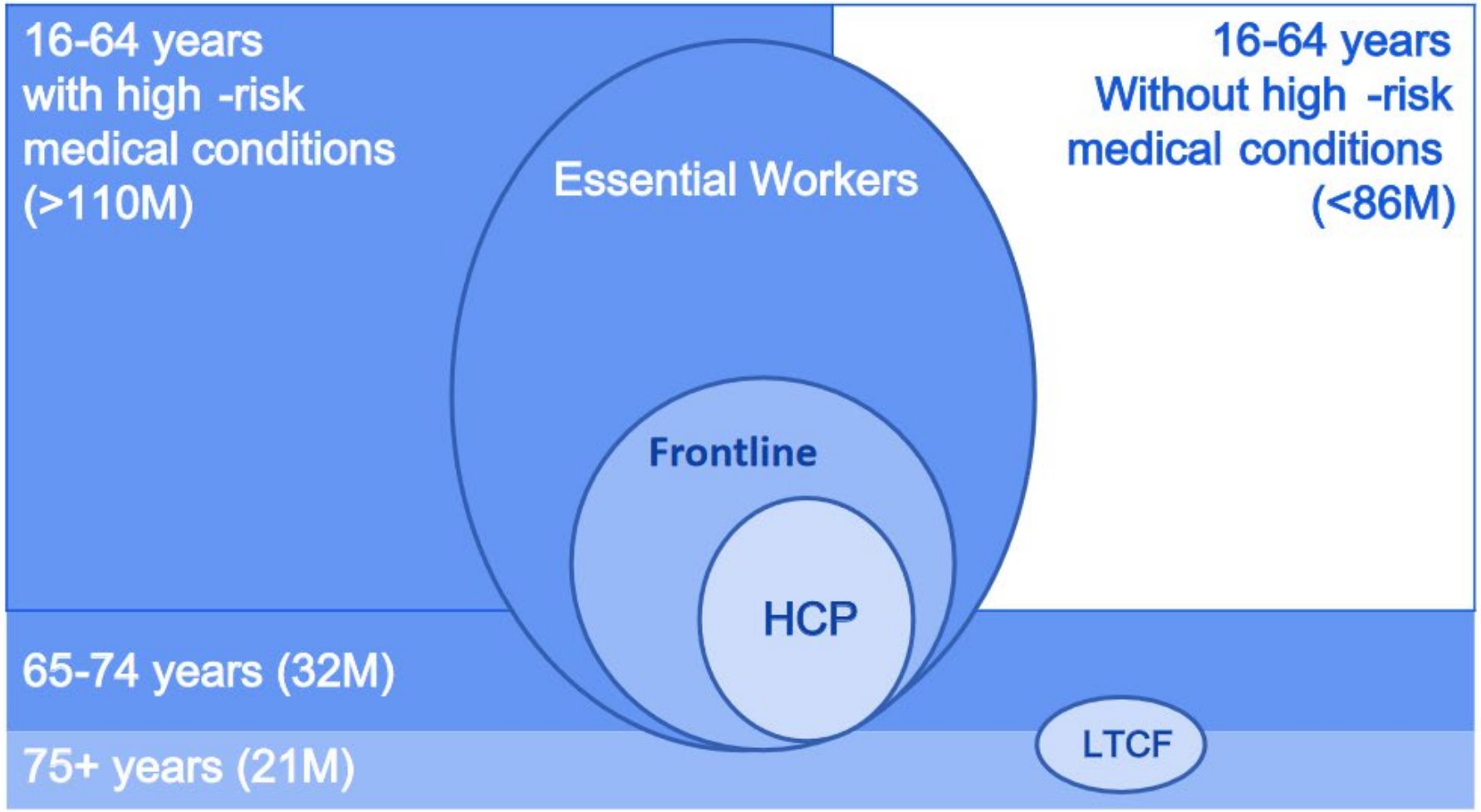
Vaccine Prioritization Strategy

- Preserve Societal Function
- Reduce Morbidity and Mortality
- Reduce Disease Transmission
- Equity based strategy

Proposed Phases of COVID-19 Vaccination



	Phase 1a		Phase 1b		Phase 1c		Phase 2

New York State COVID Vaccine Rollout

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Strategies for Improvement

- Improve transparency
- Let the experts vaccinate
- Improve queuing
- Increase Supply

www.covid19vaccine.health.ny.gov

See if you may be Eligible to Receive the COVID-19 Vaccine

The Federal Government determines how much vaccine New York State receives and has given New York approximately 250,000 vaccines/week for over 7 million people who are eligible – as a result supply is very limited. Vaccines are available at pharmacies, hospitals and through local health departments - please contact the provider of your choice to schedule a vaccine appointment.

You can use this tool to determine eligibility and to schedule an appointment at a New York State-run vaccination site. If eligible, you will see all available appointments at New York State-run vaccination sites. **AN APPOINTMENT IS REQUIRED. IF YOU VISIT A LOCATION WITHOUT AN APPOINTMENT YOU WILL NOT RECEIVE A VACCINE.** To find out if you may be eligible, click Get Started below.

List of New York State-operated vaccination locations and availability:

Location Name	Location Address	Appointments Available
Javits Center	New York, NY	No Appointments Available Currently
Jones Beach - Field 3	Wantagh, NY	No Appointments Available Currently
State Fair Expo Center: NYS Fairgrounds	Syracuse, NY	No Appointments Available Currently
SUNY Albany	Albany, NY	Appointments Available
Westchester County Center	White Plains, NY	No Appointments Available Currently
SUNY Stony Brook University Innovation and Discovery Center	Stony Brook, NY	Appointments Available

Questions?

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