Understanding Covid & Developing Coping Strategies

A Virtual presentation for the Beth Am Community by
the Beth Am Health Initiative
December 8, 2020 7:30 – 9:00 pm

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1. Presenters

   Diana Guthaner, MD, FACR (*Fellow, American College of Radiology; Clinical Associate Professor, Dept. of Diagnostic Radiology, Stanford University Medical School).*

   Moderator and overview

   Art Bobrove, MD (*Adjunct Professor of Medicine, Immunology/Rheumatology, Stanford University Medical School*)

   Summary on how the virus attacks the body and the immune system and how the medical community is dealing with the disease and what tools it needs to deal with the disease.

Peggy Pizzo, **M.Ed, ED.M** (*Director, Early Learning Project, Stanford Graduate School of Education*)

Issues for families and young children with the stress of working from home, inadequate childcare; and intergenerational dynamics (not being able to see grandparents and other family members who act as support systems); standards for safely opening childcare facilities

Ross DeHovitz, MD ((*Pediatrician, Immunization Committee Chair, Palo Alto Medical Foundation*)

Immunity of children and vaccine development.

Devin Prouty, PhD (*Licensed Psychologist; Senior Research Psychologist at SRI International Human Sleep Research Lab*)

SIP (shelter in place) orders and distance learning and the impact on children, families, and sleep patterns

Sign up here

Diana Guthaner M.D.,F.A.C.R.

guthanermd@gmail.com

Northern California Women's Imaging Center

CONGREGATION BETH AM

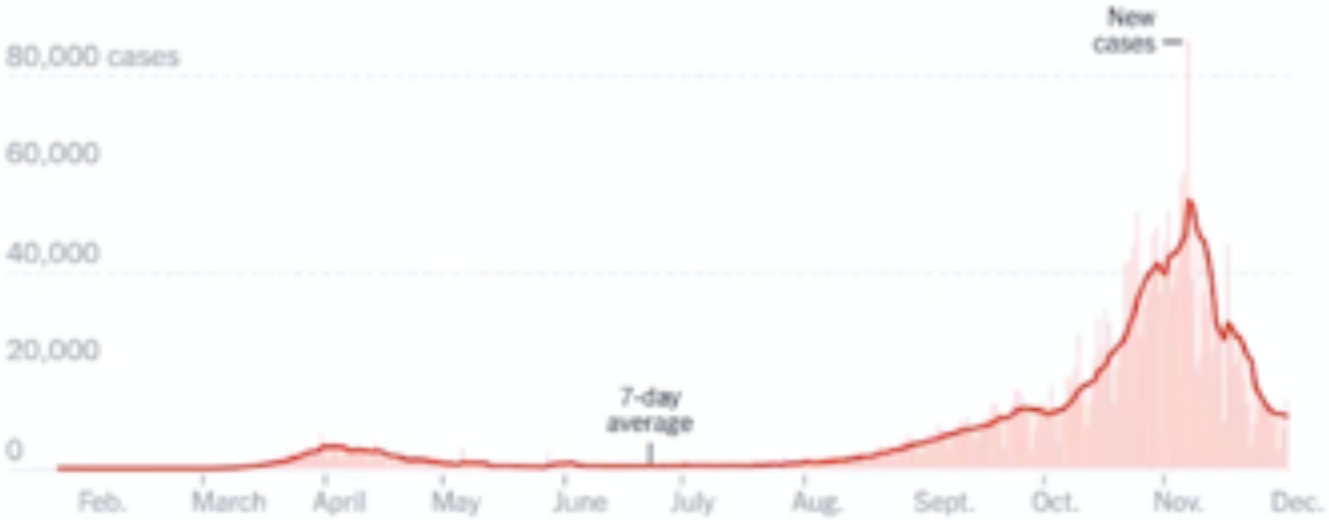
Understanding COVID-19 and
Developing Coping Strategies

United States

COVID-19 cases and deaths by day, California, 2020

COVID-19 cases, France, 2020

New reported cases by day in France



- Lockdown since late October
- Work from home
- Need exemption certificate to leave home
- K-12 open with masks, universities remote learning
- Shops open with masks
- Bars, restaurants, cinemas, theaters, gymnasia closed
- No internal travel within France
- Screening required at border

https://www.gouvernement.fr/en/coronavirus-covid-19

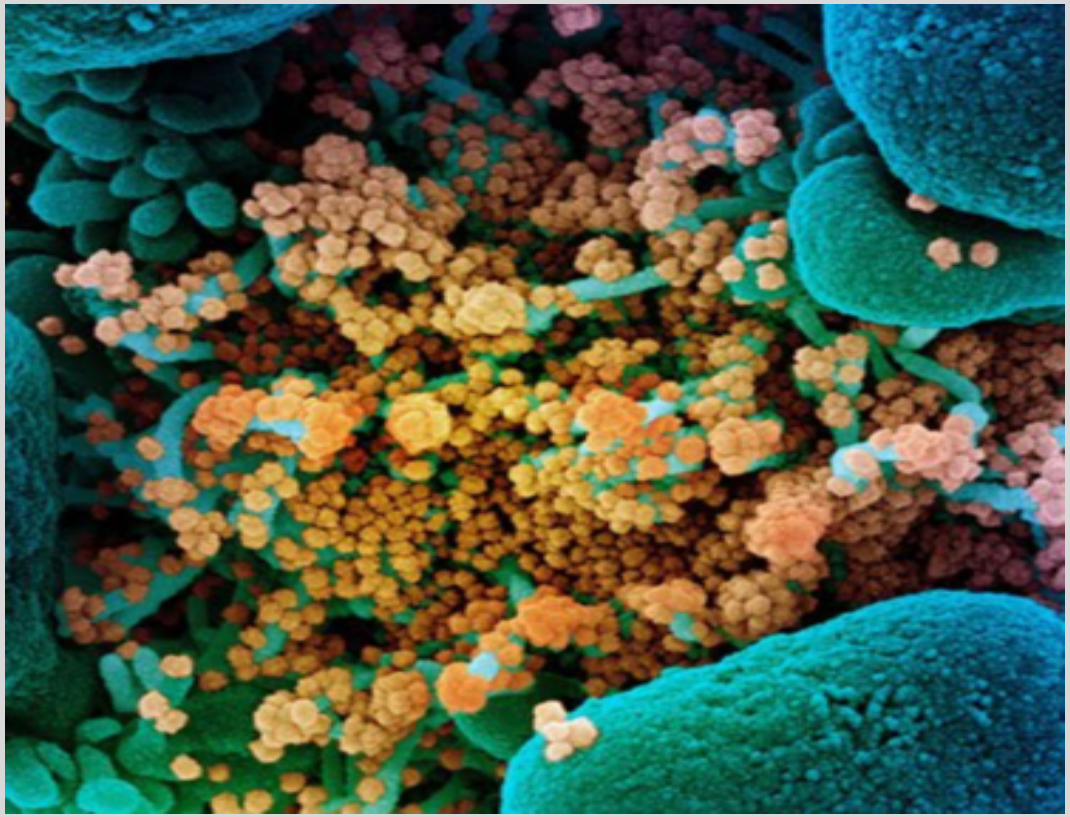
Covid-19: What is our State of Knowledge

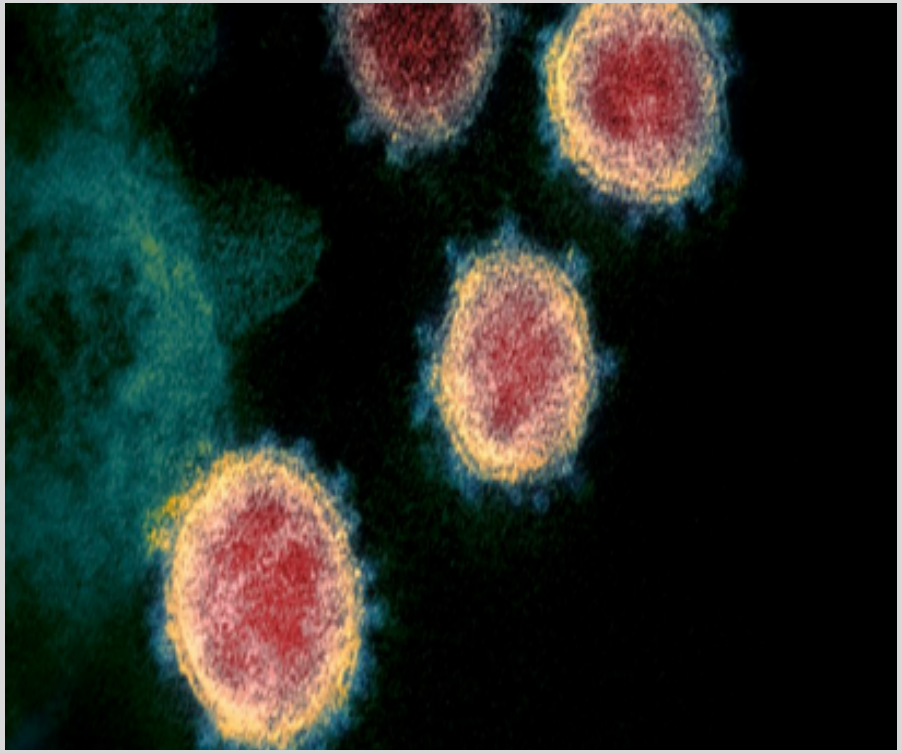
Arthur M. Bobrove, MD,

Adjunct Professor of Medicine,
Immunology/Rheumatology.
Stanford University Medical School

Physician, Palo Alto VA Health Center

SARS CoV2





Time Course for SARS CoV2 Transmission

- Day 0 - Exposure to Virus.
- Day 1 and 2 –Covid Test–Negative
- Day 3 – Covid Test–Positive (not yet Infectious)
- Day 4 – Infectious (able to spread virus)
- Day 5 or Day 6 – Symptomatic and infectious
- Day 7 - 10, - Remain infectious- Unless symptoms improve - Antibodies

Covid-19 Infection: Complex and variable

- 80% of infected patients have no or only mild symptoms.

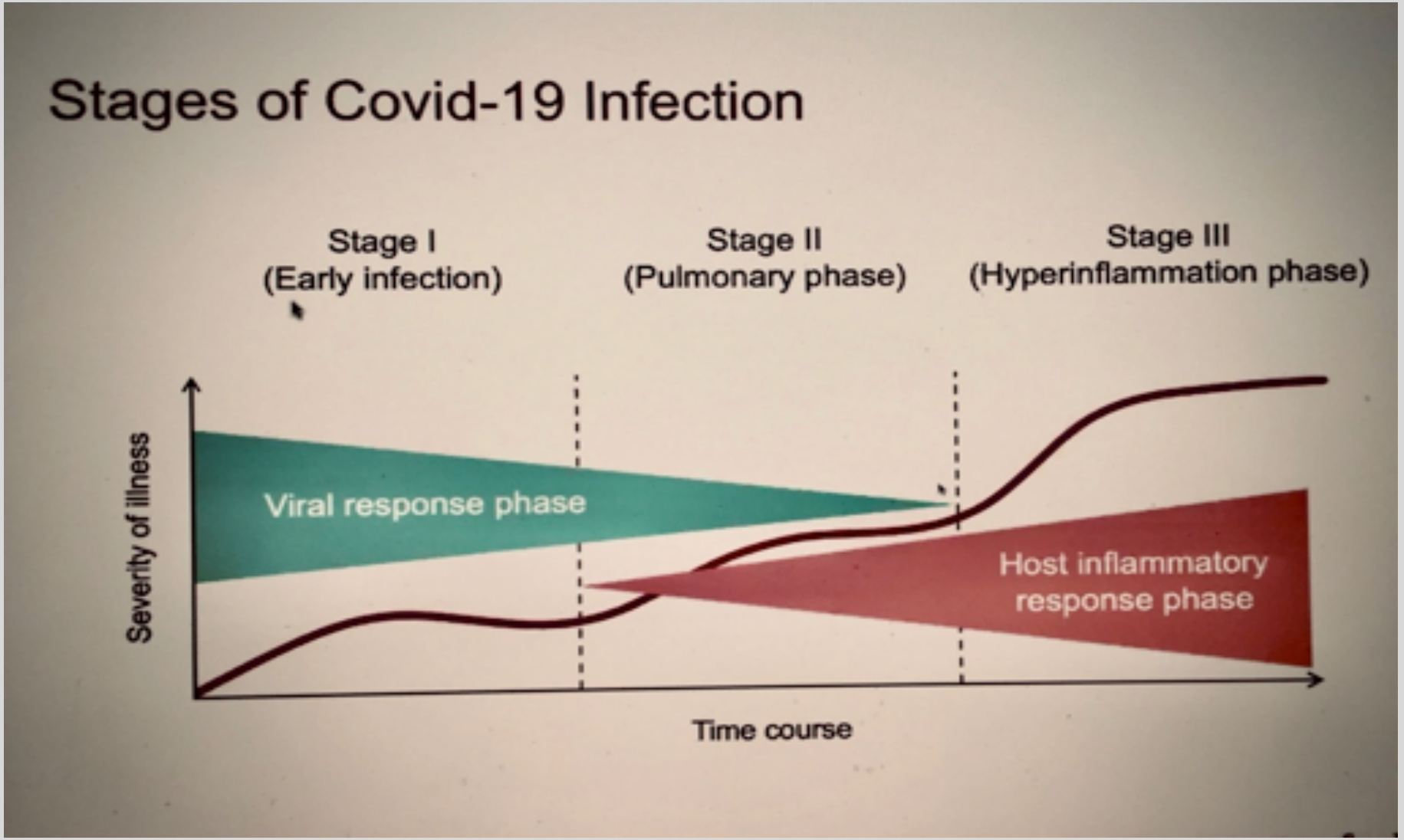
- Majority with Mild symptoms usually recover in 1- 2 weeks,
- although 35% of adults take at least 3 weeks to recover, and
- 20% of healthy, infected 18-34 year olds >more than 3 weeks.

- Moderate symptoms (S.O.B., abnormal chest x-ray, normal 02) > a month or longer.

- Severe disease - recovery - 6 weeks or more.

Complex multisystem disease

- Pneumonia > severe acute respiratory syndrome (SARS).
- Potential spread multiple organs: the heart, nervous system, liver, gastrointestinal tract, kidneys, skin, eyes, blood vessels.
- Blood Clots - lungs, brain, heart, etc.
- Multi-organ failure > Death


Stages of Covid-19 Infection
Stage I
(Early infection)
Stage II
(Pulmonary phase)
Stage III
(Hyperinflammation phase)
Viral response phase
Host inflammatory
response phase
Severity of illness
Time course

Immune-Inflammatory Response

- Innate Immunity — Interferon and cytokine production
- Adaptive Immunity — cellular response + cytokines + memory
  - Cytokine storm
  - Lymphocyte exhaustion and depletion
  - Insufficient naïve lymphocyte numbers

Current Treatments – phase of diseased

- Monoclonal Neutralizing Antibodies (synthetic)
- Remdesivir+ Baricitinib
- Dexamethasone
- Anticoagulants

Modifiable risk factors

- *Influenza Vaccination (including children) to avoid co-infection*
- *Smoking*
- *Excessive Alcohol*
- *Vitamin D*
-
- *Chronic Use of Proton Pump Inhibitor*

Preventive Measures

- Practice physical distancing at all times. Keep 6 feet space between yourself and others who are not part of your household. Stay in your household bubble!
- Wear a face covering in public.
- Wash your hands thoroughly and frequently.
- Avoid gatherings of any size with people who are not part of your household.
- Stay home if you are sick.
- Avoid unnecessary travel, and limit your outings to essential tasks.

The Solution

Effective and Safe Vaccines along with compliance.

Covid Vaccine Development

- Ross DeHovitz MD
  - Pediatrician
  - Chair, Immunization Committee
  - Palo Alto Medical Foundation

Covid Vaccine Development

- Typically it takes years to make a vaccine. (previous record was Mumps at 4 years)
- How do you make a vaccine during a global pandemic that avoids shortcuts.

4 major steps to vaccine development

- Is it technically feasible to make?
- Will the vaccine response be protective? (FDA wants it to be at least 50% effective.)
- Is there an acceptable side effect profile? (Generally, you need 15,000 to 30,000 patients in a placebo controlled trial to reveal safety issues.
- Can you mass produce it with the right buffer agents, the right stabilizing agent, the right vials. Will it be stable over time and distance?

Types of vaccines

- Killed virus vaccines- Polio vaccines
- Live Attenuated viruses- like MMR vaccine or Varicella vaccine
- Viral vector vaccines- using a harmless adenovirus that makes spike protein on its surface to stimulate immunity.
- Subunit viral vaccines- hepatitis B, Zoster vaccine, HPV vaccine
- Injecting pure DNA or RNA – provides instructions for making a viral protein such as the spike protein.
  - Advantages- needs very little material, fast to make
  - Disadvantages- very short expiration date

Leading Vaccine Candidates

- RNA Vaccines
  - Pfizer/BioNtech- in review at FDA- 2 doses, 21 days apart
  - Moderna- in review at FDA- 2 doses, 28 days apart
- Adenovirus Vaccines
  - University of Oxford/AstraZeneca - Phase 3- in UK,
  - Johnson & Johnson- in Phase 3- may only require one dose
- Protein subunit vaccine
  - Novavax- Phase 3 in UK

Phases of vaccine studies

- Phase I- to given to 10-20 to see if it generates an immune response
- Phase II- given to about 100 or so- to figure out optimal dosing and vaccine production specifications
- Phase III- given to 15-30,000 of the population intended for the vaccine. This will help identify rare side effects that would not be seen in smaller studies. If its placebo controlled, we hopefully identify how protective the vaccine is compared to those getting placebo.
- FDA- considers licensure based on these studies
- CDC- will then recommend which groups should get the vaccine.
- Phase IV- post licensure ongoing monitoring.

Safety

- It's never a matter of when you know everything. The question is when do you know enough. Paul Offit MD

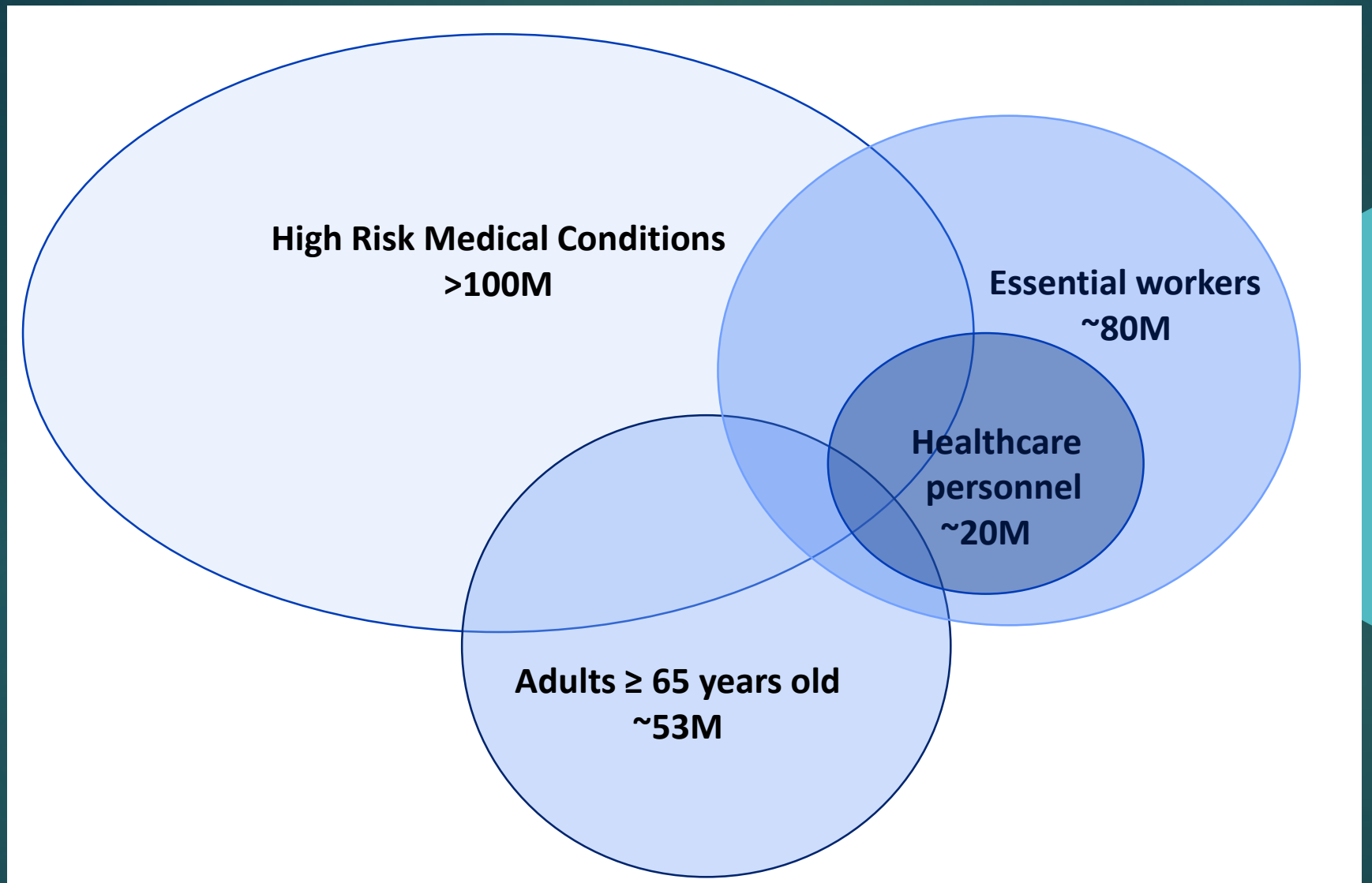
- Impractical to wait years and years for side effects in the middle of a pandemic. But you need to know what you don't know.
  - We won't know how long it protects for (until later)
  - We won't know initially if there are extremely rare side effects.
    - But we have mechanisms in place to pick them up

Safety Surveillance after licensure

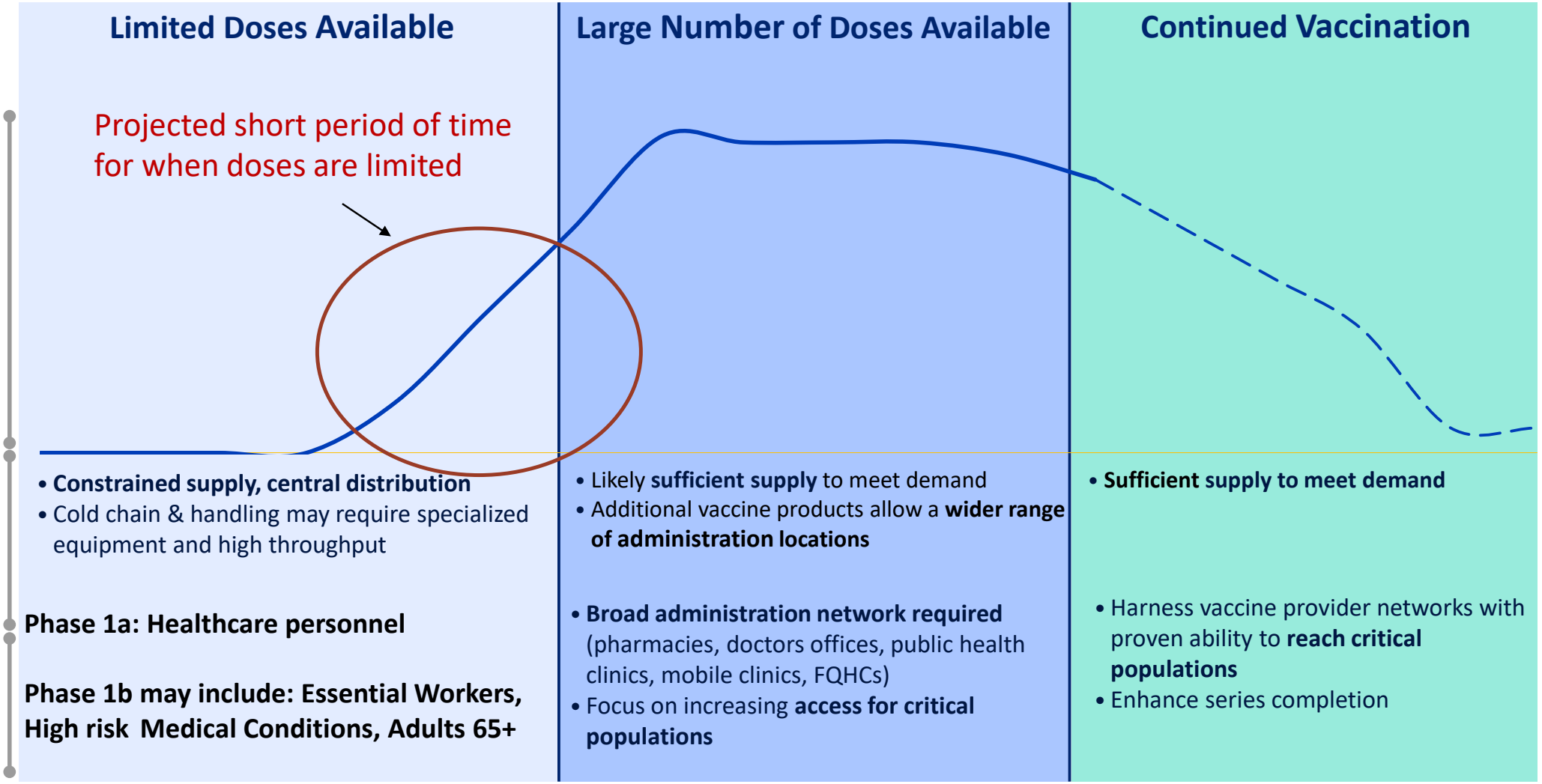
- Vaccine Adverse Event Reporting System (VAERS)
  - A passive reporting system, national in scope, anyone can report.
  - CDC and FDA maintain this and look for signals (i.e. More heart attacks or strokes than expected)
- Vaccine Safety Datalink
  - An Active reporting system – CDC and 8 integrated systems (Kaiser)
- V-SAFE
  - Early in the COVID vaccine introduction, a smartphone based surveillance text system for early vaccine recipients.

FDA will vote shortly on an EUA

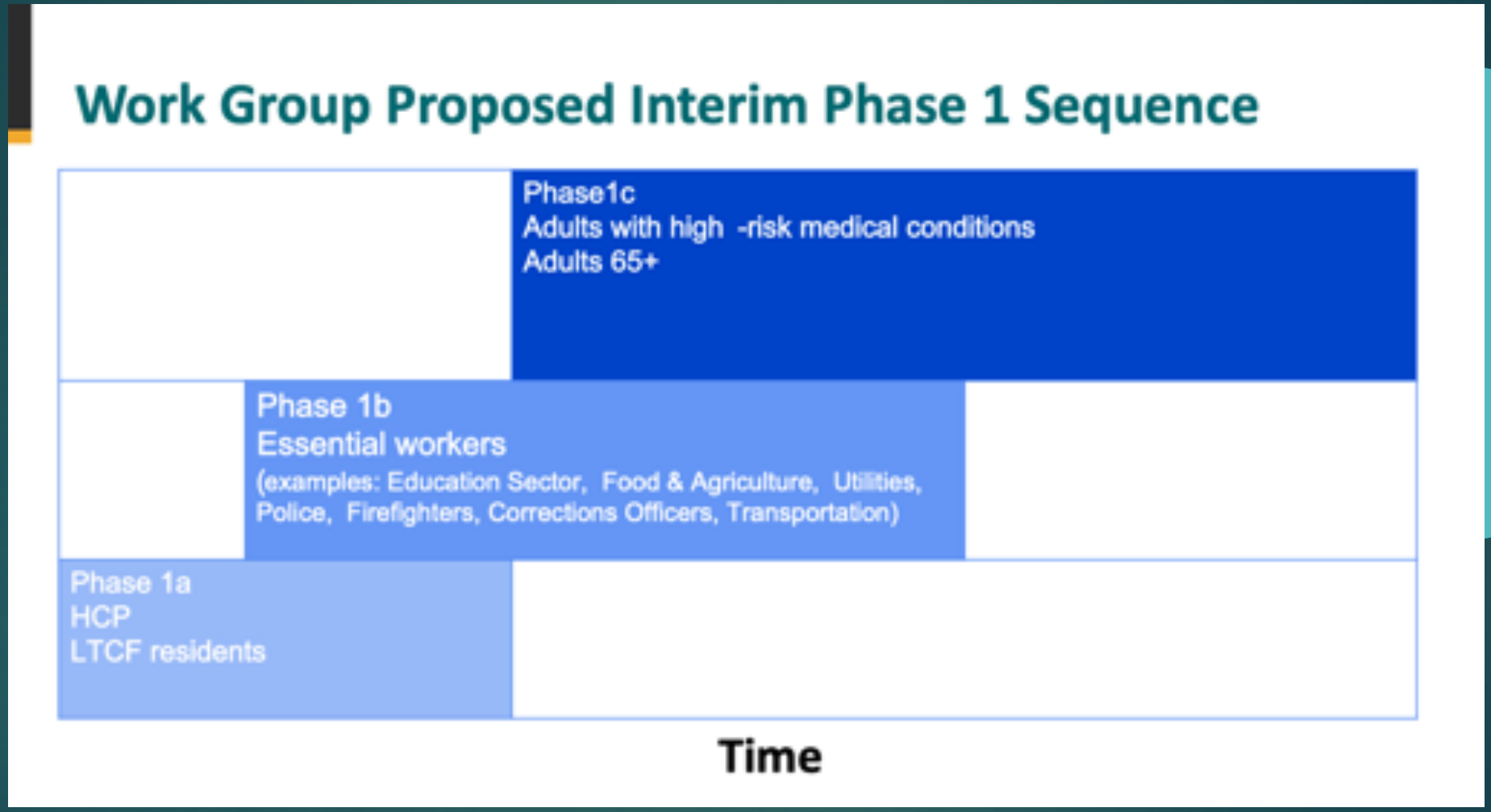
- Emergency Use Authorization
  - Needs to be a declaration by the HHS Secretary of an emergency situation leading to life threatening disease or condition
  - Needs to have enough data where benefits outweigh the known and potential risks
  - Needs to have no available alternatives


High Risk Medical Conditions
>100M
Essential workers
~80M
Healthcare
personnel
~20M
Adults ≥ 65 years old
~53M

Administration of COVID-19 vaccine will require a phased approach



Proposed sequence



mRNA technology

- The technology is new but not unknown. These vaccines have been studied for a decade preparing vaccines for influenza, Zika and rabies. Also in Cancer to stimulate immune responses to tumors.
- mRNA vaccines do not carry a live virus and pose no risk of causing disease in the vaccinated person
- mRNA from the vaccine never enters the nucleus of the cell and does not interact with a person's DNA.

Vaccine efficacy-Pfizer

- 170 people in the study developed Covid-19 disease

- 162 developed disease in the placebo group
- 8 in the vaccinated group
- 162 /170= 95% vaccine efficacy

- Efficacy in Seniors was 94%

Vaccine efficacy- Moderna

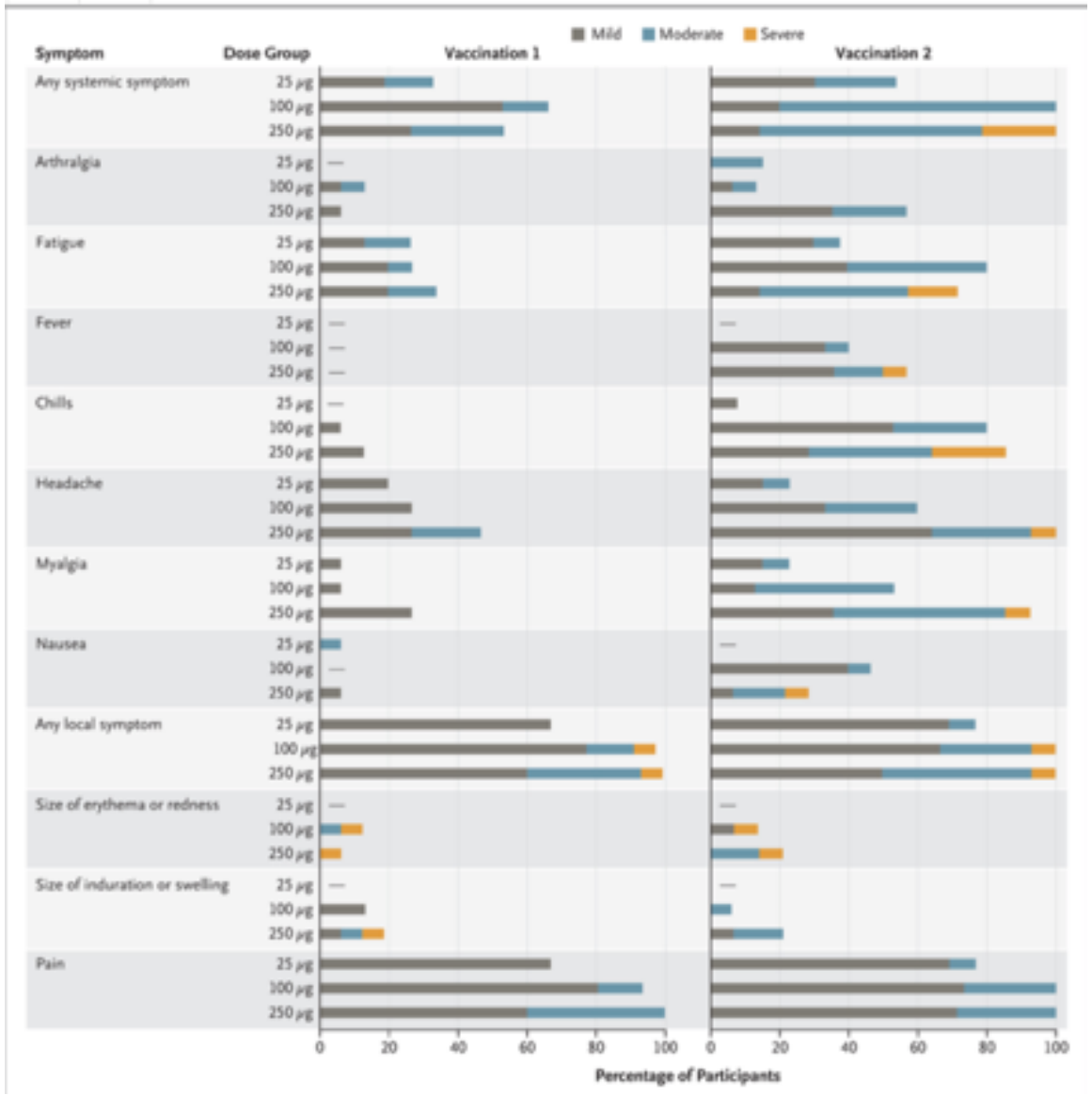
- 196 total cases of Covid-19

- 185 in the placebo group
- 11 in the mRNA Vaccine group
- 185/196 = 94.1 % vaccine efficacy

- 30 severe cases of Covid-19 were all in the placebo group.

Pfizer vaccine side effects

- General
  - Well tolerated but most people felt something
  - 2nd dose is worse than 1st dose
  - Less side effects in the elderly
  - There was no serious, uncommon side effect within 2 months after dose 2
- Local side effects
  - Pain at the injection site
- Systemic effects
  - Fever, Fatigue, Headache, Chills
  - Most were mild to moderate (Moderate: some interference with activity)



Moderna-Side effect profile

Conclusions

- Both mRNA vaccines appear to have high efficacy against Covid 19 disease.
- Rollout of these vaccines will begin this month and proceed into 2021
- Side effects are common but generally well tolerated.
- Over time we will learn whether booster doses are needed.

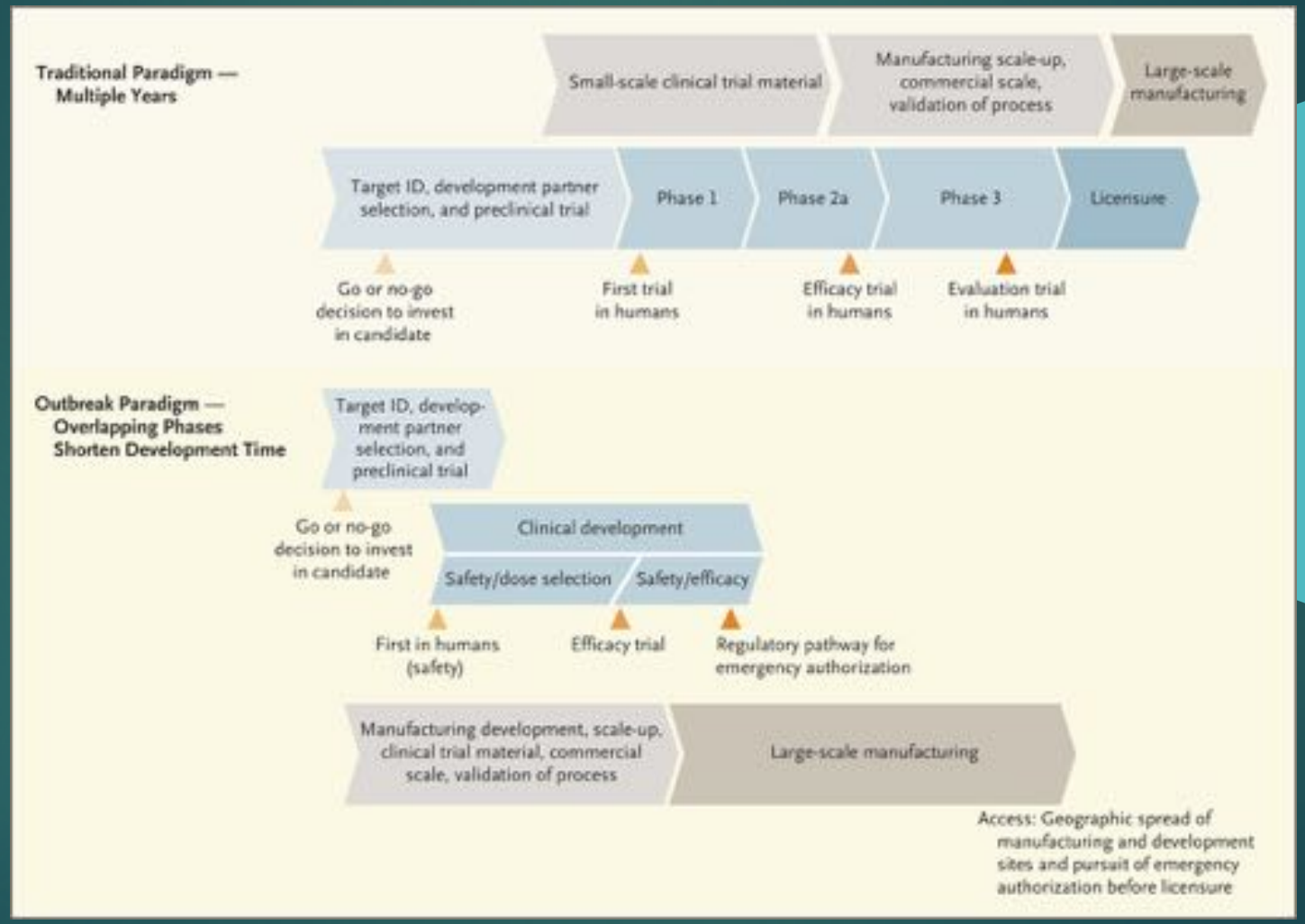
Resources on COVID-19 vaccines

- Children's Hospital of Philadelphia - Vaccine Education Center
- CDC's ACIP Home Page
- COVID-19 Vaccine Tracker at RAPS.org
- New York Times Coronavirus Vaccine Tracker

CDC's ACIP (advisory committee on immunization practices) vote whether to recommend the vaccine(s)

- 3 possible outcomes from this vote
  - Recommend
  - Recommend based on shared clinical decision making
  - Not recommend
- If recommended, they will identify which populations it is recommended for
  - All Adults, Seniors, High Risk Patients, First Responders

Difference between Traditional Vaccine Development and Development Using a Pandemic Paradigm.



N Lurie et al. N Engl J Med 2020;382:1969-1973.

The NEW ENGLAND JOURNAL of MEDICINE

SHELTER IN PLACE DISTANCE LEARNING

IMPACT ON CHILDREN AND FAMILIES

Devin Prouty Ph.D.

IMPACT OF SHELTER IN PLACE ON SLEEP

- Teens going to sleep later, getting up later, following natural Circadian rhythm shift,
- Lack of exercise can impact sleep
- Increased screen time may impact sleep
- Increased stressors across the family

DISTANCE LEARNING

- Social/emotional learning
- Decreased identification of abuse and neglect
- Widened disparities in education based on income, language, undocumented status, special needs,
- Some are thriving
- Online learning shown to work, but different from remote learning.
- Increased teacher burnout

HOW TO HELP STUDENTS

- Sleep
- Exercise
- Socialization
- News/information diet
- Empowerment
- Lead by example

CHALLENGES (AND SOLUTIONS) TO THE SOCIAL AND EMOTIONAL HEALTH OF YOUNG CHILDREN DURING THE COVID19 PANDEMIC

By Peggy Daly Pizzo, M.Ed, Ed.M
Former Director, Early Learning Project
Stanford Graduate School of Education
December 2020

The Impact of Pandemic-Related Quarantine on Young Children

- Only data thus far is from China
- A study of 2,330 schoolchildren in Hubei province, where children had been quarantined for an average of 33.7 days

22.6%

Reported depressive symptoms

18.9%

Reported experiencing anxiety

Impact of school and child care closures and of isolation on adults, including parents

An NIH review of 24 studies **noted:**

- economic harm to working parents and to society
- learning loss among children;
- harm to child welfare particularly among the most vulnerable young children; and
- nutritional problems especially in children for whom free school meals are an important source of nutrition

PSYCHOLOGICAL IMPACT OF PREVIOUS QUARANTINE ON ADULTS, INCLUDING PARENTS

A review of 24 studies, published in The Lancet in 2020, showed :

- depression,
- stress,
- insomnia,
- post-traumatic stress symptoms,
- anger, and
- emotional exhaustion.

PTSD AND PANDEMIC-RELATED QUARANTINE

A NIH synthesis of the research on the psychological impact of pandemic-related quarantine found :

28% of parents quarantined reported in a UCLA study symptoms that warrant a diagnosis of a trauma-related mental health disorder

Isolated and quarantined children met the criteria for PTSD at rates close to children who have experienced natural disasters

What Helps Adults (Parents, Grandparents, etc)

Six Strategies:

1. Communities of adult support generally.
2. Parenting and grandparenting support groups, e.g. Hand in Hand Parenting.
3. A telephone support line.
4. A personally meaningful spiritual framework.
5. Outdoor time, sleep, social support, exercise, good nutrition, meditation.
6. Professional and pastoral counseling and guidance.

WHAT HELPS CHILDREN WITH SPECIAL NEEDS

FOUR strategies:

1. Parent and Grandparent support among themselves (INCLUDE)
2. Video-based technology that reduces CHILDREN'S fear and anger, e.g. Mightier
3. COUNSELING, including family counseling
4. Pet Therapy

Grandparents buffer stress

THREE Strategies:

1. Seek your own medical practitioners' advice re: in- person interaction with young children

2. Master new technology: good for elder brain health?

3. Seek help with mastering technology: a community service intergenerational role for Beth Am teens and young adults?

ADDITIONAL SOURCES

https://bingschool.stanford.edu/

https://www.kidango.org/

https://www.chconline.org/

https://www.childrenspartnership.org/

https://www.naeyc.org/

https://www.aap.org/en-us/Pages/Default.aspx