

Developing a Post-COVID Neurology Clinic at University Hospital of Brooklyn



Yaacov Anziska MD, MPH
Associate Professor of Neurology
SUNY-Downstate Medical Center

Outline: Adaptive Learning

Identify the need/problem and how it relates to our hospital



Meet with shareholders/influencers



Brainstorm



Explore different ways of treating the problem

Adaptive Learning

Identify challenges and ways of overcoming them



Obtain “buy-in” from all relevant parties



Design and implement a Pilot project



Receive feedback and adjust

And so on..

- Begin next cycle of iteration/treatment
- Continue monitoring of outcomes
- Readjust clinic operations as needed

1) Identifying the Problem: Long-COVID

- **CDC Definition: Post-COVID/“Long COVID”/“Long Hauler” conditions** is an umbrella term for the wide range of physical and mental health consequences experienced by some patients that are present **four or more weeks** after SARS-CoV-2 infection, including by patients who had initial mild or asymptomatic acute infection

(<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care/post-covid-index.html>)

1) Identifying the Problem: Long-COVID

Characterized by:

- 1) **“Brain fog”=cognitive impairment**
- 2) **Chest pain/palpitations—dysautonomia**
- 3) Shortness of breath
- 4) **Headache**
- 5) **Myalgias**
- 6) Exercise intolerance
- 7) **Loss of smell/taste**
- 8) Fatigue
- 9) Depression
- 10) Anxiety
- 11) **Pain—neuropathic, non-neuropathic**

Is there a need?

What about COVID and Brooklyn?

- **Worldwide Incidence:** Estimated at 10-35%, while for hospitalized patients it may reach 85% (Pavli, et al. Arch Med Res 2021;52(6):575-581. doi: 10.1016/j.arcmed.2021.03.010.)
- But → COVID was more common in people with lower incomes and those living together (multi-family dwellings, etc.)—our local population!
- Data shows higher rates of COVID-related hospitalization and death among African-American and Latino patients, compared to Whites—our local population!
- This is true even after correcting for demographic and socioeconomic factors
- Possibly related to existing medical co-morbidities—diabetes, hypertension, kidney disease.

Post-COVID in minority groups: A problem with Health Inequity

- The incidence of post-COVID in minority groups is unknown. Existing statistics on post-COVID do not distinguish based on race or socioeconomic status.
- At baseline, many articles have shown that concerns of minority patients are not adequately addressed by their physicians...

- **Influenced by:**

- Lack of access to primary care
- Lack of health insurance
- Lack of income
- Problems with English proficiency
- Inability to miss work

“Researchers fear people of color may be disproportionately affected by long Covid”

2) Obtaining background information

- Spoke with representatives from **Survivor Corps**, one of the largest post-COVID advocacy and research groups.
- Met with **Ms. Lauren Stiles**, head of Dysautonomia International.
- Reviewed data with **Dr. Jacob Shani** (Cardiology) to discuss cardiac complications in post-COVID patients and his current database of these patients.
- Collaborated with **Dr. Marina Boruk** (ENT) about the number of post-COVID patients she has seen in her outpatient clinic.
- Planning session with Drs. **Barbara Alvarez and Yu-Shia Lin**, co-directors of the Maimonides Center for Post-COVID care.
- Corresponded with **Dr. Igor Koralnik**, director of the Neuro-COVID-19 Clinic at Northwestern Hospital, the only neurology-focused post-COVID care clinic. I also read his research paper on neurologic complications in post-COVID patients and his experience in treating these issues.

Other Long-COVID clinics in NYC--Not in our catchment area

- Mount Sinai—Center for post-COVID Care
- NYU—Post-COVID Care Program
- BronxCare Health System—Post-COVID Care Clinic
- Stony Brook Medicine—Post-COVID Clinic
- Maimonides—Center for Post-COVID Care

How do we avoid an earlier failure?

- SUNY-Downstate used to have a post-COVID clinic (actually—one of the first in April 2020), but it was closed by summer 2020.
- The clinic was originally meant to follow up for discharged COVID patients from the hospital.
- This was a “telephone” clinic, never in-person.
- The clinic was never meant to establish long-term care or handle the array of organ dysfunction seen in post-COVID patients. I.e. there were no specialists involved, only general internists.
- It was closed after a few months when the first wave of COVID subsided.
- ?Lack of institutional willpower?
- At this point, all post-COVID patients are evaluated by their PCP’s, but there is no systematic care.

SUNY-Downstate post-COVID clinic

Brooklyn clinic to provide follow-up care for discharged Covid-19 patients

May 20, 2020

Crain's New York Business

3) Identify Challenges

- Estimating the number of potential patients for this clinic
- Convincing the hospital administration of the need for a post-COVID neurology clinic
- Obtaining the necessary funding---Budget! Use existing resources, such as research grants for post-COVID (from the NIH), in-hospital grants, SUNY-challenges grants, ECRIP, Brooklyn Borough President, NY State Health Foundation.
- Finding the space for the clinic
- Staffing the clinic
- Time—how often to run the clinic monthly
- Receiving the necessary referrals---**Public Relations**
- Working with other departments to whom we will refer our clinic patients

How to estimate the number of potential patients?

- Look at number of discharged hospital patients from UHB during March 2020-January 2022 who all had a diagnosis of COVID-19—pull from the ICD-10 codes.
- Extrapolate based on number of referrals to all Neurology clinics for post-COVID conditions in calendar year 2021, based on billing, charting.
- Already spoke with the Maimonides Post-COVID clinic as to their referrals and workflow for a rough estimate, although this is a completely different population.
- Also spoke with Survivor Corps about their estimates based on number of members living in Brooklyn (by zip code).
- Estimate based on reported percentage of post-COVID patients and apply to our population of 2.3 million people for a theoretical number for the

Estimate number of potential referrals

“Evidence shows that at least one-third of people who have COVID-19 experience neurological complications,”

Igor Koralnik, MD

Director

Northwestern Neuro-COVID-19 Clinic

3b) Getting Buy-in from administration

- **Emphasize--This is not a “money-maker”!**
- But, this clinic is essential for appropriate health care and improving quality of life of our underserved patients
- Remind the administration of the hospital’s unique duty as the only SUNY in NYC—focusing on **health inequity**.
- Also, discuss the potential for **academic research**-- applying for grants, collaborating with colleagues within our institution—basic science and clinical research
- Emphasize the **favorable public relations** for the hospital—loop in our VP for Public Relations and Intergovernmental Affairs.
- There is potential for bringing in medical students and possibly residents interested in Neurology and neuro-infectious disease—**teaching/education**

Who needs to Buy-In?

- CEO of university Hospital of Brooklyn—Dr. David Berger
- President of Downstate Health Sciences University—Dr. Wayne Riley
- Chairman, Department of Neurology—Dr. Daniel Rosenbaum
- Director, Neurology Clerkship—Dr. Lisa Merlin
- Chairman, Department of Medicine—Dr. Moro Salifu

4) Logistics--Initiation

- The clinic will start in the last Thursday afternoon of each month—for a four-hour block, divided into six 40-minute visits.
- Initially, there will be 6 new patients, but after a few months, it will be divided into two follow-up visits (30 minutes each) and four new patient visits (45 minutes each).

-----Based on current hospital policies (subject to change)

- A) 12:30 pm—new visit
- B) 1:15 pm—new visit
- C) 2 pm—follow-up visit
- D) 2:30 pm—follow-up visit
- E) 3 pm—new visit
- F) 3:30 pm—new visit
- G) 4:15 pm—new visit

4) Logistics-Clinic Workflow

- Clinic will be held in our outpatient suite of University Hospital—in Suite A.
- Only adult patients, over age 18.
- Clinic will be staffed by myself, two medical students, and one Neurology outpatient resident—the medical student or resident will first evaluate the patient, present to me, and then we will see the patient together.
- The medical student or resident will take vitals, assess pain, etc. so there is no need for a CNA or nurse.
- The ratio of new:follow-up patients will be adjusted based on demand.
- No telemedicine!---yet—but this could change..

Collaboration with other specialties

- **Identify a “point-person”** in other specialties that would handle the various complaints/complications of post-COVID patients.
 - 1) **Cardiology/electrophysiology**—Dr. Adam Buzikowski
 - 2) **Psychiatry**—Dr. Daniel Friedman
 - 3) **Neuropsychology**—Dr Luba Nakutina
 - 4) **Pulmonary**—Dr. Robert Foronjy
 - 5) **Pain Management and Rehabilitation**—Dr. Sanjeev Agarwal
 - 6) **Physical Therapy/Occupational Therapy**—Motion Physical Therapy group—with special expertise
 - 7) **Otolaryngology**—Dr. Marina Boruk
 - 8) **?Integrative/Holistic Medicine**—new faculty member in department of Neurology—to be determined

Advertising/recruitment

1) **Within Downstate**

- I will personally reach out to representatives from other departments, including Family Medicine, Internal Medicine (Cardiology, ID, Pulmonary), Psychiatry, and Rehabilitation Medicine
- Consider speaking for Grand Rounds to these departments to publicize the clinic
- Send email bursts through the CEO's office to the entire institution
- Print flyers to be distributed throughout the hospital and outpatient offices
- Include clinic information on the video displays in the institution
- I will give a lecture about the clinic, through the CEO's office, that will be included on Downstate's Youtube channel



Have you had COVID?

Are you experiencing?

- Problems with your memory
- “Brain fog”
- Dizziness or light-headedness
- Loss of taste/smell
- Headaches
- Weakness/problems walking
- Nerve pain/numbness



Call 718-270-7207 for the SUNY-Downstate Post-COVID Neurology clinic

Advertising/Recruitment

2) Outside Downstate

- Send email blasts to referring physicians that commonly send patients to Downstate-include outside neurologists, internists, family medicine
- Mail flyers (and possibly brochures) to the local community centers, large practices, and other common sources of referrals.
- Engage with Survivor Corps, COVID Survivors for Change, and Long-COVID Support Group for potential referrals of members within Brooklyn and parts of Queens.
- ?Reach out to nearby post-COVID clinics for patients coming from Brooklyn.
- Become listed on NYC.gov as an outpatient post-COVID clinic.
- Downstate's Youtube channel with my video describing the clinic (I don't use Twitter, Facebook)
- Collaborate with our VP of PR and Intergovernmental Affairs

5) Measure success--Outcome scores

- **There are no validated outcome scores for post-COVID patients and care!!**

? Adapt from other post-COVID clinics and the literature

--We could use a general quality of life measure, such as the SF-36 or Likert score.

--We could use organ system-specific outcome measures, based on patient complaints.

Psychiatry—Hamilton Anxiety rating Scale (HAM-A) and Hamilton Depression Rating Score (HAM-D)

Cardiac—autonomic—COMPASS

Pulmonary—Six-minute walk test

Neurology--MOCA

Research objectives

- **Basic science**--Dr. Henry Tiedge--Neuroscience—looking at the breakdown of the blood-brain barrier and how the virus disrupts neuronal function.
- **Public Health**—Divisions of Health Policy and Community Health—working with MPH students on health inequity and post-COVID care
- **Cardiology**—engage with Dr. Jason Lazar and Adam Budzikowski (UHB) and Dr. Jacob Shani (Maimonides) about autonomic dysfunction in post-COVID patients.
- **Neurology**—work with Dr. Deborah Gustafson (Neuroepidemiology) about post-COVID elderly patients and cognitive dysfunction.

Measurables—include number of posters, publications, grant submissions (to NY State, federal government, such as NIH)

Other Academic Benefits--Teaching

- Invaluable learning opportunity for medical students rotating through Neurology
- Opportunity for Neurology residents to learn about neuro-ID
- Consider reaching out to Downstate's School of Health Professions—Physical therapy, occupational therapy

5b) How to measure progress?

What metrics to use?

- Re-evaluate at six-month interval after clinic start.
- Can look at the post-COVID outcome scores, mentioned before, such as quality of life measures—i.e. SF-36
- Poll referring physicians about their level of satisfaction with the clinic
- Assess waiting times for clinic appointments
- Send surveys to all clinic patients, using a score from 1-5 about level of satisfaction with patient services in clinic.
- Consider adjustment to clinic workflow, based on above responses—change the ratio of new:old patients, use different specialists to whom patients are referred, etc.

THANK YOU!