



# COVID-19: Strategies for Ambulatory Care

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**PERMANENTE MEDICINE.**  
Northwest Permanente



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Ellen L. Singer, MD  
*I have no conflict of interest to disclose.*



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# Goals

## Review of COVID-19 Care in Ambulatory Care Setting

Acute Infection

Complicated Infection

Post Acute Sequelae (PASC) or “Late Covid”

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## COVID-19 Pandemic: Before, During, After

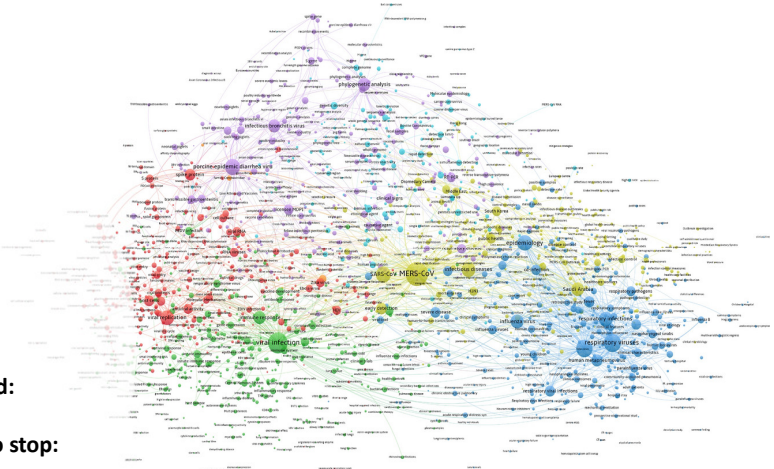


**What we thought would happen:**

**What we wished we knew when it happened:**

**What we started doing and what we need to stop:**

**“What and when is the new normal?”**



- <https://www.npr.org/2021/03/11/974025553/video-the-early-days-of-the-pandemic-as-seen-through-your-camera-roll>

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## *Around the World, 2020*

### New Disease, Unclear Decisions

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### Case History: NYC, March/April 2020

48- year- old history professor ("she/her/hers")  
 Lives in 900 square foot apartment with her husband and preteen son  
 Nonsmoker, has hypertension  
 Everyone is "in lockdown"  
 She developed cough, wheezing, fever, shortness of breath  
 "Stuck in bed" for a week but "not sick enough for ER"  
 No testing available  
 At day 20 she was still coughing, anxious, tired, 10 pounds lighter  
 States "I will probably never feel better"

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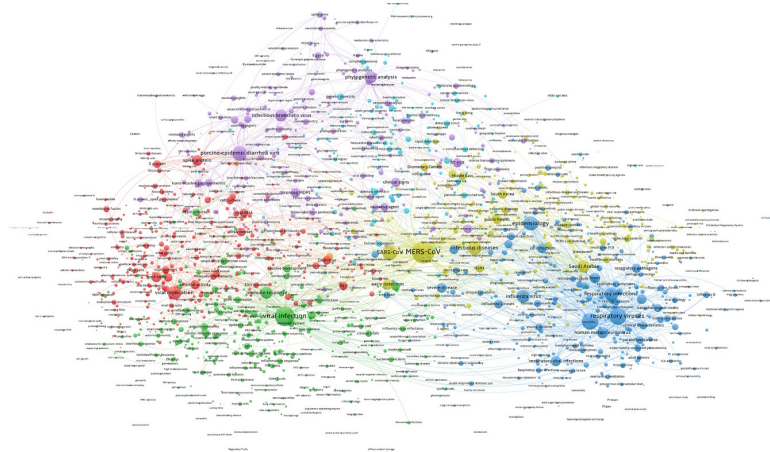
# The Livid Experience

## The Crash

## The Survivor Story

## The Fallout

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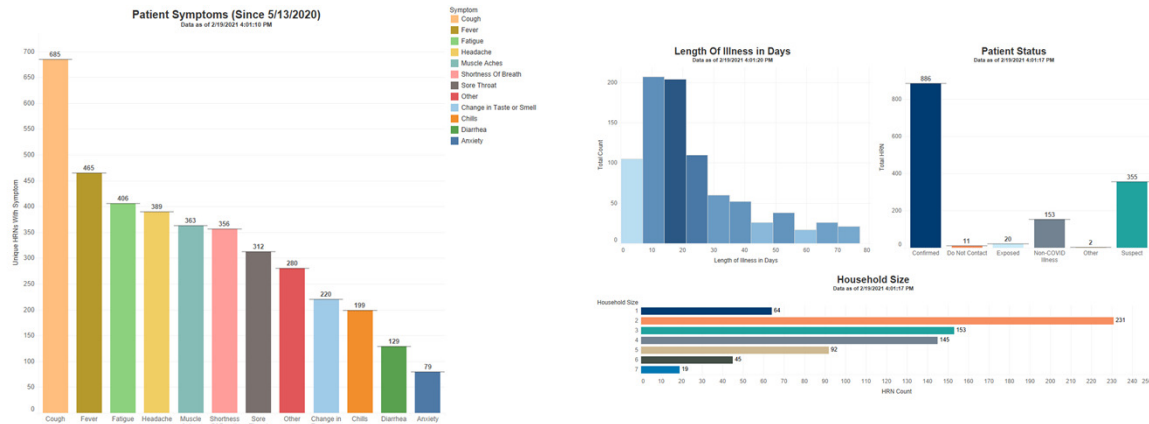
## Northwest Permanente COVID-19 “Homefront” Project

- Proactive Outreach to newly diagnosed patients
- Retrospective review of patients diagnosed clinically
- Symptom profile and symptom resolution pattern
- Lived experience of illness
- Global stress score
- Tobacco use
- Financial & employment concerns
- Family safety



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## Northwest Permanente COVID-19 “Homefront” Project



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What Do We  
Know Now?

### Phases of COVID-19 infection and illness

**Exposure and incubation (Days -14 to 0)**

**Acute Symptoms (Days 1-14)**

**Inflammatory (Days 15-28)**

**Post Acute Sequelae (PASC) (Days 28 and beyond)**

<https://www.covid19treatmentguidelines.nih.gov>

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

### What patients describe in all phases:

Fatigue, cardiopulmonary symptoms, dizziness, vertigo, headache, “brain fog”, joint pain, anxiety, insomnia, headache

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## Early Disease and Symptom Management

What you and your clinical team can do:

PREVENT – Immunize!

Identify illness: TEST and contact patient with result

Coach on home safety, need for quarantine, prevention of spread

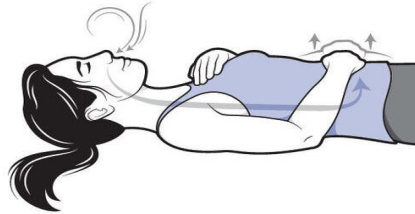
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## Early COVID-19 Symptom Management

- Prevent with immunization
- Identify illness, test and contact trace
- Review risks and refer for casirivimab and imdevimab infusion if high risk
- ***(On the horizon: molnupiravir – oral antiviral for COVID-19)!!!***
- Predict and manage symptoms: Fever, myalgia, diarrhea, nausea, cough, shortness of breath, loss of sense of smell/taste
- Coach on diet, deep breathing exercises, prone sleeping, home mitigation, use of bronchodilator, home oximetry, stress management
- Mid disease course “respite” then recurrence is common

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## Breathe, Breathe



Diaphragmatic breathing can inflate the tiny air sacs at the bottom of your lungs and enable them to expel any mucus lodged there. To perform this COVID-19 breathing exercise, lie flat on your back on the floor, with your knees bent and feet flat on the floor. Place your hand over your navel (belly button) and focus on pushing your hand up with each breath. Repeat 8 to 10 times or for one minute.

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## COVID-19 Ambulatory Medication Management

### Consider:

Fluvoxamine 100 mg twice a day for 10 days decreased hospitalization and death

(Together Study: [https://doi.org/10.1016/S2214-109X\(21\)00448-4](https://doi.org/10.1016/S2214-109X(21)00448-4) )

Offer the “Party pack”:

Albuterol/spacer, benzonatate, ondansetron

**Immunization:** Complete immediately after symptoms resolved and quarantine ends (if needed)

**Forego:** azithromycin, hydroxychloroquine, doxycycline, dexamethasone, high dose vitamin C, D, Zinc, ivermectin

### Reference Link:

<https://www.covid19treatmentguidelines.nih.gov/therapies>

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## Case History: Summer, 2021

- Not yet vaccinated 61- year -old patient ("he/him/his")
- Works in manufacturing, has been careful with masking at work
- Lives with adult son who was ill one week earlier
- Patient tested positive 3 days after symptoms began – developed progressive cough, shortness of breath, saturation 88% RA
- Hospitalized for 8 days – IV remdesivir, decadron
- Discharged home on 2 L NC, albuterol, benzonatate
- Now fatigued, short of breath, coughing, has new diagnosis of prediabetes. Wants to return to work as soon as possible

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## Covid 19 Post Hospital Care and Follow-Up

- Fatigue, cough, shortness of breath are consistent symptoms
- Needs proactive pulmonary rehabilitation, graduated home exercise plan
- Vaccination is critical
- Address other underlying health concerns (obesity, hypertension, prediabetes, iron deficiency or overload, sleep apnea, tobacco use)
- Create cogent "return to work" plan. Provide guidance on length of work- day, physical demands, safe alternative plans
- Re-assess every 1-2 weeks for improvement
- Engage Care Navigators for support with financial concerns related to prolonged recovery

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## Case History: March 2020 and beyond

- 47 -year -old case manager (“she/her/hers”)
- Had severe flu like illness mid March 2020. No PCR testing available.
- Given inhalers, told to stay home and rest. She had diarrhea, vomiting, cough, fever, chills, myalgias, some change in smell/taste
- Cough gradually resolved but she had severe chest pain, palpitations and dizziness. Seen in ER for same – had sinus tachycardia on EKG
- Now has persistent low -grade headache, fatigue, anxiety, inability to walk more than 50 feet without heart racing, skin rashes, coating on tongue, intermittent tinnitus, joint pain, intermittent diarrhea

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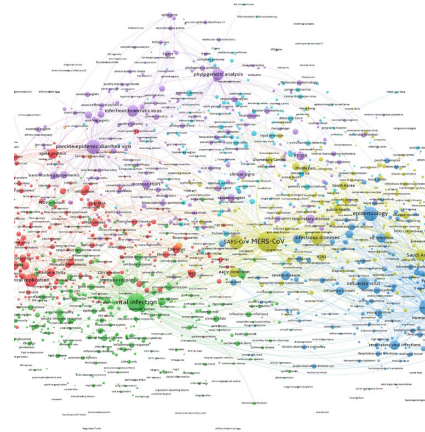
### Type, Proportion, and Duration of Post Acute COVID-19 Symptoms

Persistent symptom	Proportion of patients affected by symptoms	Approx. time to symptom resolution
Common physical symptoms		
Fatigue	15 - 87%	3 months or longer
Dyspnea	10 - 71%	2-3 months or longer
Chest discomfort	12 - 44%	2-3 months
Cough	17 - 26%	2-3 months or longer
Anosmia	13%	1 month, rarely longer
Less common physical symptoms		
Joint pain, HA, sicca syndrome, dysgeusia, poor appetite, dizziness, vertigo, myalgias, insomnia, alopecia, sweating, diarrhea	<10%	Unknown (likely weeks to month)
Psychologic and neurocognitive		
Post-traumatic stress disorder	24%	6 weeks - 3 months or longer
Impaired memory	18%	
Poor concentration	16%	Weeks to months
Anxiety/depression	22%	Weeks to months
Reduction in quality of life	50%	Unknown (likely weeks to month)

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## Post Acute Sequelae of COVID-19 (PASC)

- **Loss, pandemic fatigue, fear of the future**
- **Pulmonary symptoms:** shortness of breath, chest pain, cough
- **Cardiac symptoms:** chest pain, palpitations, fatigue
- **Sensory symptoms:** numbness, loss of smell/taste, funny feelings on tongue, paresthesia, skin itching with and without rash, migraine
- **Dysautonomia symptoms:** Dizziness/POTS, diarrhea/constipation/GERD
- **Mood and Mind Symptoms: "Brain Fog"** Anxiety, depression, PTSD, insomnia, nightmares



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## Managing Post Acute Sequelae of COVID-19 (PASC)

**Listen with empathy:** offer solutions for gradual return to daily demands. Coach to recovery - -attention, smell therapy, stress box

**See and evaluate patients:** In clinic!

**Pulmonary:** CXR, treat post infectious cough, check PFTs, evaluate for PE with D-dimer/CTPA if concern

**Cardiac:** EKG, echocardiogram, orthostatic bp/pulse, Holter monitor

**Assess for and correct metabolic risks:** lab panel, sleep apnea assessment, manage chronic conditions, close care gaps

**Refer:** PT/OT/ST/biofeedback/EMDR and to specialty if needed

**Keep meds simple:** beta blockers (bisoprolol propranolol), inhalers, SSRI/SNRI, mirtazapine, cetirizine, famotidine, pregabalin, vitamin supplements

**IMMUNIZE!** It helps!

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## What we don't know... and are still learning

What is optimal evaluation for cardiac symptoms?

*MRI/angiogram? Stress testing? Echocardiogram?*

What is optimal cardiac and pulmonary rehabilitation program?

How do we manage ongoing chronic cough and dyspnea?

*LABA/steroid? Tiotropium? Pulmonary Rehab?*

How do we help with sensory symptoms?

*"Smell" therapy? Vestibular retraining? EMDR?*

How quickly and for how long do we initiate SSRI/SNRI?

What are other modalities that restore function?

What are long term quality of life and economic consequences of COVID-19 infection?

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Taquet, M, Decron, Q et al. Incidence, co-occurrence, and evolution of long COVID features: A 6 month retrospective cohort study of 273, 618 survivors of COVID-19, *Plos One*, 2021.

### Web links:

Patient facing: <https://www.wearebodypolitic.com/bodytype/2020/8/16/covid-19-support-group-long-haul>

Physiatry guidelines: <https://www.aapmr.org/members-publications/covid-19/physiatrist-resource-center/long-covid-pasc-resources>

BMJ talk: <https://www.youtube.com/watch?v=zTrII52JV0s>

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