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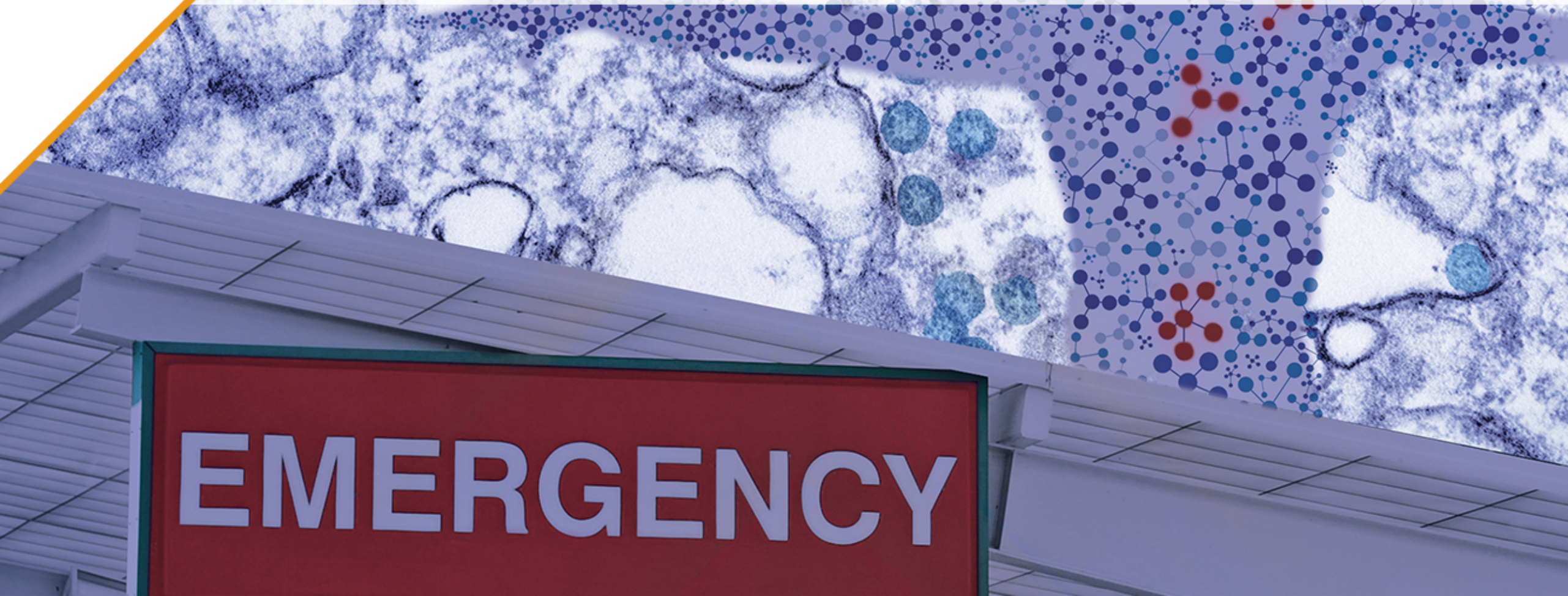
# The COVID-19 Chronicles:

## Real-World Perspectives on Cancer Care, Emergency Medicine and Healthcare Disparities



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# Learning Objectives

**Upon completion of this activity, participants should be better able to:**

- Explain how to ensure the protection of health care workers providing care for patients with cancer and others at high risk of COVID-19
- Provide optimal care for cancer patients and others at high risk of COVID-19 based on evolving data and recommendations
- Recognize and address racial disparities and inequities in health care delivery that may be exacerbated by the COVID-19 pandemic

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# Protecting Cancer Patients and Others at High Risk of COVID-19

# Incidence of COVID-19 in Patients with Cancer

**Higher incidence of COVID-19 has been reported in patients with cancer**

| | |
|---|---|
| **Yu et al[1]** | • 1,524 patients with cancer admitted between Dec 2019-Feb 2020<br>• 0.79% were diagnosed with COVID-19 (cumulative incidence in community 0.37%) |
| **Liang et al[2]** | • Incidence of 1% compared with 0.29% in the general population |
| **Rogado et al[3]** | • Incidence of 4.2% compared to 0.63% in the community |
| **Richardson et al[4]** | • Higher prevalence of cancer in those with COVID-19 has been reported from NYC<br>• 6% of 5,700 hospitalized patients with COVID-19 had cancer |
| **Grasselli et al[5]** | • In Italy, 8% of the 1,591 patients admitted to the ICU with COVID-19 had histories of cancer (active and in remission) |

PE, pulmonary embolism.

1. Yu J, et al. JAMA Oncol. 2020;6:1108-1110; 2. Liang W, et al. Lancet Oncol. 2020;21:335-337; 3. Rogado J, et al. Clin Transl Oncol. 2020:1-5;
4. Richardson S, et al. JAMA. 2020;323:2052-2059; 5. Grasselli G, et al. JAMA. 2020;323(16):1574-1581.

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# Which Cancer Patients Are at Risk?

**Patients who are older, obese, with medical co-morbidities and who have been diagnosed with heme malignancies, lung cancer, and metastatic disease are at higher risk**

| | |
|---|---|
| **Passamonti, et al[1]** | • Mortality rates higher (37%) among 536 symptomatic patients with hematologic malignancies and positive PCR for COVID-19 (Feb 25 to May 18, 2020)<br>• Compared with general Italian population with COVID-19, standardized mortality ratio was 2.04 (95% CI 1.77–2.34) |
| **Malard, et al[2]** | • 25 patients with hematologic malignancies (mostly multiple myeloma)<br>• Patients with hematologic malignancies appear to be a population very vulnerable to COVID-19 infection; very high mortality (~40% at 1 month) |
| **Van Doesum, et al[3]** | • Among 59 patients with hematologic malignancies, 34% died due to COVID-19<br>• Mortality rates:<br>  • Patients >60 years of age, 45%<br>  • Patients ≤60 years of age, 11%<br>• No difference in survival between lymphoid and myeloid malignancies |

1. Passamonti F, et al. *Lancet Haematol.* 2020;7:e737–745; 2. Malard F, et al. *Bone Marrow Transplant.* 2020:1–5; 3. van Doesum J, et al. *Leukemia*. 2020;34:2536-2538.

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# Factors Associated With COVID-19 Severity

| Variable | Univariate | | Multivariate | |
|---|---|---|---|---|
| | OR (95% CI) | *P* | OR (95% CI) | *P* |
| **Predictors of hospitalization, by logistic regression (n=411)** | | | | |
| Age (>65 y) | 1.81 (1.20-2.71) | .004 | 1.53 (0.96-2.43) | .072 |
| Sex (female) | 0.89 (0.60-1.32) | .575 | | |
| Race (non-white) | 1.36 (0.91-2.04) | .135 | 1.62 (1.05-2.51) | .029 |
| BMI (≥30 kg/m$^2$) | 0.89 (0.58-1.36) | .585 | | |
| Smoking (current/former) | 1.60 (1.07-2.40) | .022 | 1.37(0.88-2.13) | .169 |
| Asthma/COPD | 1.39 (0.81-2.37) | .226 | 1.07 (0.59-1.92) | .828 |
| **Cancer (non-metastatic solid)** | **1.00 (Ref)** | **-** | **1.00 (Ref)** | |
| **Cancer (metastatic solid)** | **0.89 (0.53-1.50)** | **.647** | **0.76 (0.43-1.34)** | **.338** |
| **Cancer (hematologic)** | **2.24 (1.25-4.06)** | **.007** | **2.49 (1.35-4.67)** | **.003** |
| Major surgery (within 30 days) | 1.24 (0.53-2.84) | .612 | | |
| Diabetes | 1.20 (0.73-1.96) | .467 | | |
| Cardiac disorder | 1.86 (1.13-3.07) | .015 | 1.35 (0.7-2.36) | .297 |
| HTN/chronic kidney disease | 1.84 (1.24-2.75) | .003 | 1.51 (0.96-2.39) | .077 |
| **Systemic chemotherapy (within 30 days)** | **1.04 (0.70-1.54)** | **.845** | | |
| Chronic lymphopenia or corticosteroids | 1.86 (1.11-3.15) | .019 | 1.85 (1.06-3.24) | .030 |
| **ICI** | **2.53 (1.18-5.67)** | **.017** | **2.84 (1.24-6.72)** | **.013** |

| Cancer | Endpoint | Non-ICI/total n (%) | ICI/total n (%) |
|---|---|---|---|
| **Lung cancer** | Hospitalization | 12/23 (52) | 10/12 (83) |
| | Severe respiratory illness | 8/23 (35) | 7/12 (58) |
| **Other solid cancers** | Hospitalization | 82/216 (38) | 8/17 (47) |
| | Severe respiratory illness | 34/221 (15) | 5/19 (26) |

BMI, body mass index; COPD, chronic obstructive pulmonary disease; HTN, hypertension; ICI, immune checkpoint inhibitor.
Adapted from Robilotti EV, et al. *Nat Med.* 2020;26:1218-1223.

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# COVID-19 and Cancer: Additional Considerations

- TERAVOLT[1] study in lung cancer patients with COVID-19
  - High mortality but low admission rates to intensive care units in patients with thoracic cancer
    - 88% met criteria for ICU admission but only 9% were actually admitted
  - Type of systemic therapy, including TKIs, chemotherapy, and immunotherapy, did not affect survival in patients with COVID-19
- Multiple meta-analyses have also shown a worse clinical outcome among patients with cancer who have COVID-19[2-4]
- To decrease the risk of complications due to neutropenia, anemia and thrombocytopenia, NCCN® developed consensus guidelines on the use of granulocyte colony-stimulating factors, erythropoiesis-stimulating agents and thrombopoietic mimetics[5]

TKI, tyrosine kinase inhibitors.

1. Garassino et al. *Lancet Oncol*. 2020;21:914-922; 2. Giannakoulis et al. *JCO Glob Oncol.* 2020;6:799-808;
3. Desai et al. *JCO Glob Oncol.* 2020;6:557-559; 4. Venkatesulu et al. *medRxiv.* 2020;2020.05.27.20115303; 5. Griffiths et al. JNCCN 2020.

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# Patient and Healthcare Worker Safety During Early Phases of the Pandemic

## Patient Safety

- Prescreen & screen for COVID-19 symptoms & exposure history via telephone calls or digital platforms
- Develop screening clinics to allow for patients with symptoms to be evaluated and tested in a dedicated unit with dedicated staff
- Convert in-person visits to telemedicine visits when possible
- Institute limited or no visitor policy
- Limit surgeries & procedures to only essential, urgent, or emergent cases
- Consider alternative dosing schedule to allow for fewer in-person visits to the cancer center and/or the infusion center
- Switch therapy to oral oncolytics if equivalent formulation of infusional therapy is available
- Transition outpatient care to care at home whenever possible (pump disconnection, administration of growth factors, hormone tx)
- Increase interval between scans or use biochemical markers in lieu of scans
- Provide resources for wellness & stress management for patients

## Healthcare Worker Safety

- Assure appropriate personal protective equipment (PPE) per guidelines
- Create a centralized resource or website to communicate recommendations to healthcare workers as guidelines around PPE & workflows change
- Implement daily screening tools and/or temperature checks
- Telecommute when possible, with limited onsite staff participating in rotations on a daily basis
- Establish clear stay-at home & return-to-work guidelines
- Provide resources for wellness & stress management for healthcare workers

Cinar et al. *J Natl Compr Canc Netw*. 2020;1-6. doi:10.6004/jnccn.2020.7572

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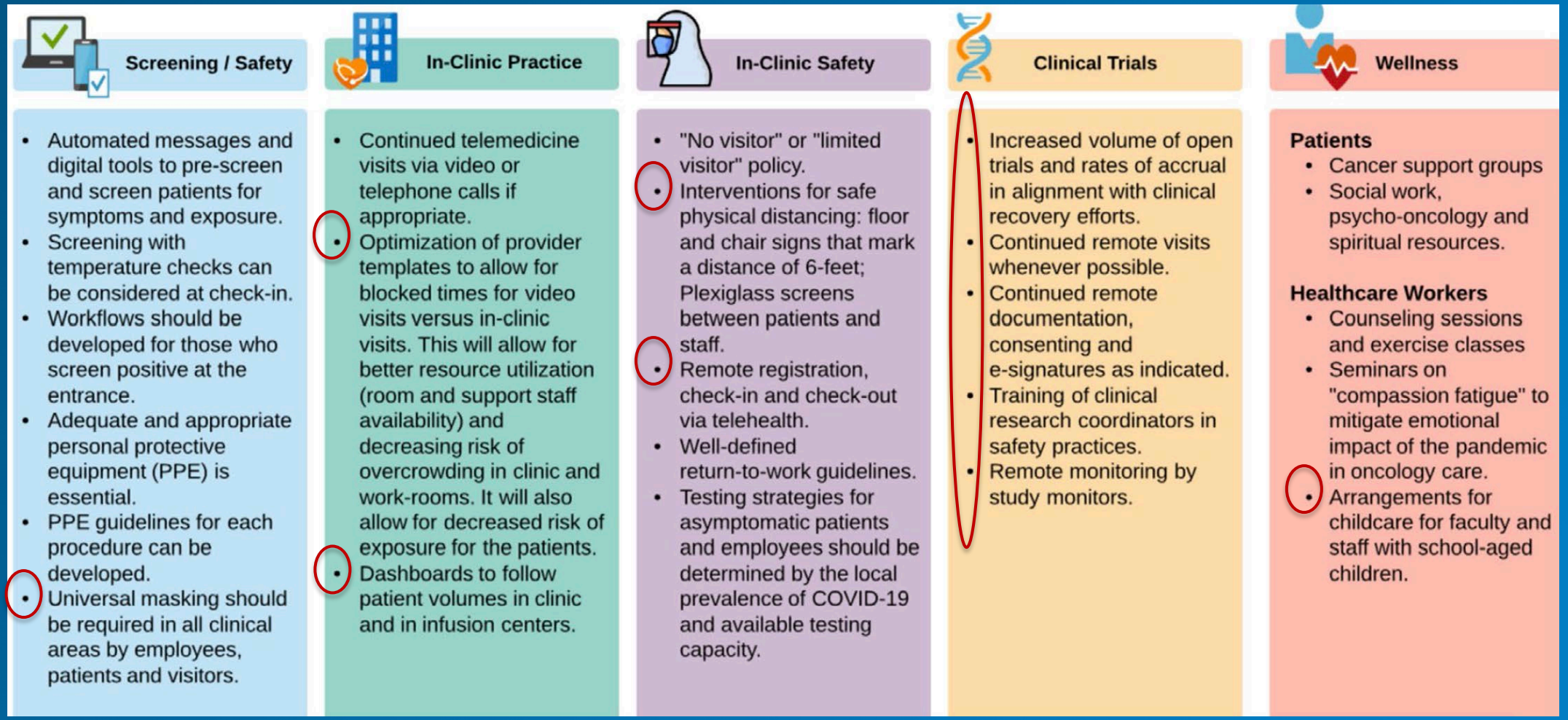
# Patient and Healthcare Worker Safety During the Pandemic




Cinar et al. *CA: A Cancer Journal for Clinicians*, First published: 30 September 2020, DOI: (10.3322/caac.21644)

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# CDC Recommendations for Discontinuation of Isolation

- Isolation and precautions can generally be discontinued 10 days *after symptom onset* and resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms
- For persons who never develop symptoms, isolation and other precautions can be discontinued 10 days *after the date of their first positive RT-PCR test for SARS-CoV-2 RNA*
- For persons who are severely immunocompromised, a test-based strategy could be considered
- For all others, a test-based strategy is no longer recommended except to discontinue isolation or precautions earlier than would occur under the strategy outlined above

Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html

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# CDC Recommendations for PCR testing Beyond Discontinuation of Isolation

| | |
|---|---|
| **Patients previously diagnosed with symptomatic COVID-19 who remain asymptomatic after recovery** | • Retesting not recommended **within 3 months** after date of symptom onset for initial COVID-19 infection |
| **Patients who develop new symptoms consistent with COVID-19 during the 3 months after date of initial symptom onset** | • If alternative etiology cannot be identified by provider, may warrant retesting<br>• Isolation may be considered during this evaluation, especially in the event symptoms develop within 14 days after close contact with an infected person |
| **Patients who never developed symptoms** | • The date of first positive RT-PCR test for COVID-19 should be used in place of date of symptom onset |

Centers for Disease Control and Prevention. https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html

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# Patient Populations at High Risk of COVID-19 in the Emergency Department

**Emergency departments are the safety nets for our healthcare system**

- Every patient population passes through the emergency department doors
- However, emergency department tend to see more marginalized and minority community members at high risk of contracting and dying from COVID-19
- Why?
  - Increased exposure
  - Increased susceptibility
  - Decreased access to care

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# Racial Disparities and Inequities in Healthcare Delivery During the COVID-19 Pandemic

# Disparities and Healthcare Inequities

- Minorities are more likely to hold essential jobs that don't allow for the flexibility of working from home[1]
- Minorities are also more likely to work lower-income jobs that provide minimal or no health insurance coverage[1]
  - Uninsured rate as of 2018: 11% for blacks, 18% for Hispanics[2]
- Of 965 patients with COVID-19 reported in ASCO CancerLinQ[3]
  - Black and LatinX patients with cancer had a higher risk of developing COVID-19 (RR: **1.69** and **5.25**, respectively)
  - Although all-cause mortality was not elevated in these patients


1. Balogun et al. *JAMA Oncol*. 2020;10.1001/jamaoncol.2020.3327.
2. Kaiser Family Foundation estimates, based on the Census Bureau's American Community Survey, 2008-2018.
3. Potter et al. ASCO Quality Care Symposium 2020.


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# Disparities and Healthcare Inequities

- Barriers to using Tele-Health include:
  - Inability to access or navigate technology
  - Inadequate internet connection
  - Lower healthcare literacy
- Minorities, individuals with less education, and those in lower socioeconomic classes are less likely to engage in telemedicine activities

Balogun et al. *JAMA Oncol*. 2020;10.1001/jamaoncol.2020.3327.

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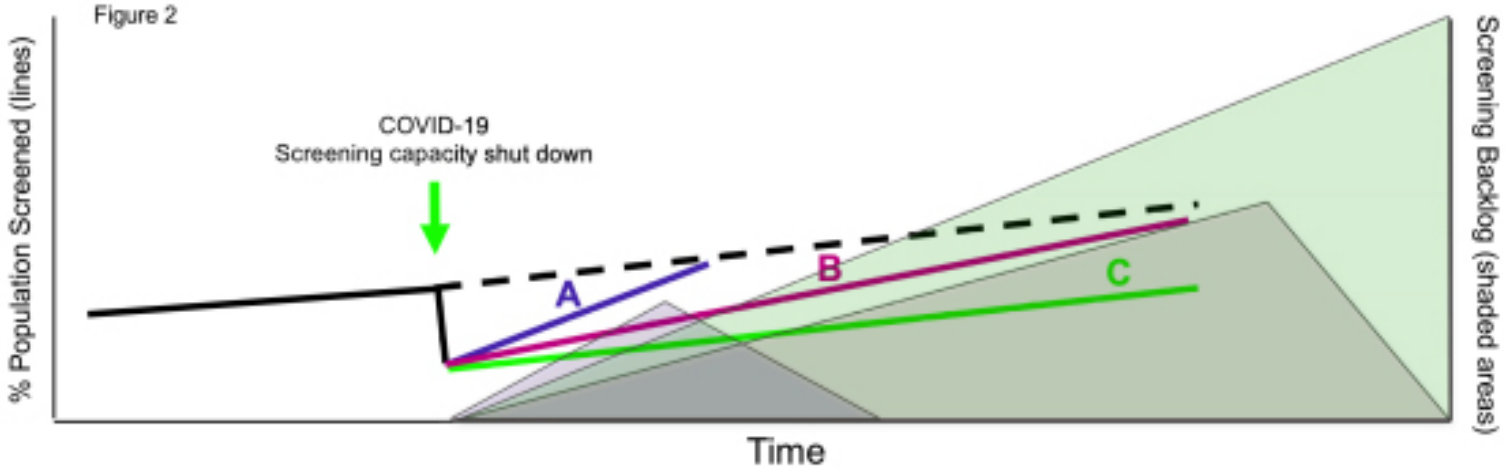
# Disparities and Healthcare Inequities

**"Prolonged delays in cancer screening will increase cancer in the overall population from pre-COVID-19 trajectories, and elevate the cancer disparity in minority populations."**




| | Scenario | Factors affecting scenario | Relative # cancer deaths from baseline trajectory |
|---|---|---|---|
| A | rapid return to screening trajectory within 6-12 months | • no further COVID-19 shutdowns of clinical capacity<br>• unrestricted screening capacity | ~1000 annually |
| B | delayed return to trajectory over 1-3 years | • restricted/delayed screening capacity due to COVID-19 testing (preventing some screening services) and social distancing | 1000-5000 annually |
| C | prolonged return to trajectory over several years | • prolonged screening capacity restraints due to large backlogs of delayed screening<br>• potential public and individual awareness for screening wanes<br>• exacerbation of fears for clinic settings due to ongoing pandemic | ≥5000-10,000 annually |

Adapted from Carethers et al. *Cancer Prev Res (Phila).* 2020;canprevres.0447.2020.

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# Increased Exposure

- Black and Hispanic populations are overrepresented in service-related jobs which have increased their exposure to the virus[1]
- Black and Latinx populations tend to live in multigenerational homes or are overrepresented in congregate settings: homeless, detained, and incarcerated[2,3]


1. U.S. Bureau of Labor Statistics, 2019
2. Pew Research Center, 2018. https://www.pewresearch.org/fact-tank/2018/04/05/a-record-64-million-americans-live-in-multigenerational-households/
3. Chicago Urban League, 2020. https://chiul.org/wp-content/uploads/2020/05/ChicagoUrbanLeague_An-Epidemic-of-Inequities_5-12-20.pdf


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# Increased Susceptibility

**COVID-related morality rates are higher in Black, Hispanic, and Native American populations**

- Blacks and Hispanics are 3 times more likely to get infected and 2 times more likely to die
- Black and Hispanic populations have higher rates of underlying comorbid medical conditions

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# Increased Susceptibility (cont.)

**The presence of underlying and comorbid conditions is influenced by:**

- Social determinants of health (SDOH): housing, environment, income, etc1
- Perceived racism can lead to conditions such as diabetes, heart disease, and hypertension
- Lack of positive health behaviors (nutritious diet, exercise, smoking etc)
  - Impact of SDOH makes it difficult to practice healthy behaviors (eg, living in a food desert, avoiding exercise out of fear that you will become a victim of violence, being exposed to 10x more tobacco ads in Black neighborhoods, living in areas with high concentrations of liquor stores)
- Even if we control for chronic conditions, income, obesity etc. there will still be inequities in COVID-19 rates and outcomes[2]

1. Wu et al. *medRxiv*. 2020;2020.04.05.20054502.
2. Knittel and Ozaltun. *medRxiv*. 2020;2020.06.09.20126805.

# Decreased Access to Care

- The states that have the highest rates of Black residents are the states that did not expand Medicaid
  - This is devastating for Black patients who contract COVID-19
- Black patients are less likely to be tested for COVID-19 if they present with a fever and cough than their white counterparts[1]

1. Rubix Life Sciences. March 2020. https://rubixls.com/wp-content/uploads/2020/04/COVID-19-Minority-Health-Access-6.pdf

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# Impact on Individuals, Institutions, and Society

- Moment of crisis for marginalized and minority communities and the institutions that serve them
- The Church of God in Christ (largest Black Pentecostal denomination in United States): up to 30 bishops and prominent clergy died of COVID-19 in a matter of months[1]

1. Boorstein M. Washington Post. April 19, 2020

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# Healthcare System: What Needs to Change?

- Apply an **equity lens** to work we do in the healthcare system
  - Acknowledge healthcare disparities exist, even in the care that we provide
  - Detect them and develop strategies to mitigate bias and reduce inequities
- Expand access to care
  - Continue to expand Medicaid
  - Support continuation of health coverage (COBRA)
- Better community engagement
  - Need to address long-standing mistrust of the medical community by Black people due to unconscionable racist actions by physicians and researchers (eg, Tuskegee, J. Marion Simms, Henrietta Lacks)
  - We need to partner with communities, rebuild trust, and work towards a shared model of achieving optimal health for all

# How to Better Engage Communities

- Ongoing and real-time communication or visits with community organizations, leaders, and residents
- Invite community members to serve on our committees and boards in leadership positions
- Hire from the local community
  - Not “us versus them”
  - Instead, the organization and the healthcare system becomes the community

# Case Example 1

# Case:
# Patient With Metastatic Breast Adenocarcinoma

## History of Present Illness

- 49-year-old Black female with *BRCA*+, metastatic triple negative breast cancer and history of PE
- Metastatic disease to the internal mammary node, lungs and pleura
- Lost to follow-up between February and July 2020 due to loss of insurance
- Presented in July 2020 with fever (102.7ºF) with productive cough, dyspnea, and myalgias
- Similar presentation 1 month prior when CT chest was negative for a PE and COVID-19 PCR was negative. She was discharged with antibiotics for pneumonia.
- No sick contacts, exposures to COVID-19 or recent travel

## Breast Cancer History

- Metastatic Breast Cancer
  - Initially diagnosed in 2013
  - Received paclitaxel, doxorubicin, and cyclophosphamide followed by surgery and adjuvant carboplatin
  - Metastatic disease diagnosed in 2016 when she was found to have an enlarged right internal mammary node, an anterior mediastinal mass, and a left para-aortic node (biopsied and confirmed positive for metastatic disease)
  - 2016- EMBRACA trial: randomized to talazoparib
  - 2017- dinaciclib/pembrolizumab trial
  - 2018- capecitabine
  - 2019- ASCEND trial: randomized to sacituzumab
- Diastolic heart failure diagnosed in 2013
- HTN
- Segmental PE diagnosed in 2017

HTN, hypertension; PE, pulmonary embolism.

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# Case: In the Emergency Department

**Vitals:**

- T 100ºF, BP 82/51 - 98/71 mmHg, Pulse:106 -> 81 beats per min (s/p IVF), Respiratory rate: 26 -> 18 breaths per min, SpO2 89% on room air improved to 94-95% on 2-3 L nasal cannula

**Physical Exam:**

- Cardiac: Regular rate and rhythm. Normal S1 and S2. No murmurs, rubs, or gallops. +L port without swelling, fluctuance, erythema
- Pulmonary: Unlabored breathing, +crackles in left lower and mid lung fields. No rhonchi or wheezing.
- Extremities: Warm and well-perfused. No cyanosis, clubbing, or edema

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# Case: Differential Diagnosis?

- With this history and presentation, what is the differential diagnosis?
  a) Disease progression
  b) Pneumonia / COVID-19
  c) Pulmonary embolism
  d) Exacerbation of diastolic heart failure
  e) More than one of the above
  f) Unsure

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# Case: Next Steps?

- What should the work-up include at this point?
  a) Chest radiograph
  b) COVID-19 PCR testing
  c) Computed tomography angiogram/pulmonary embolism protocol
  d) a + b
  e) b + c
  f) All of the above
  g) Unsure

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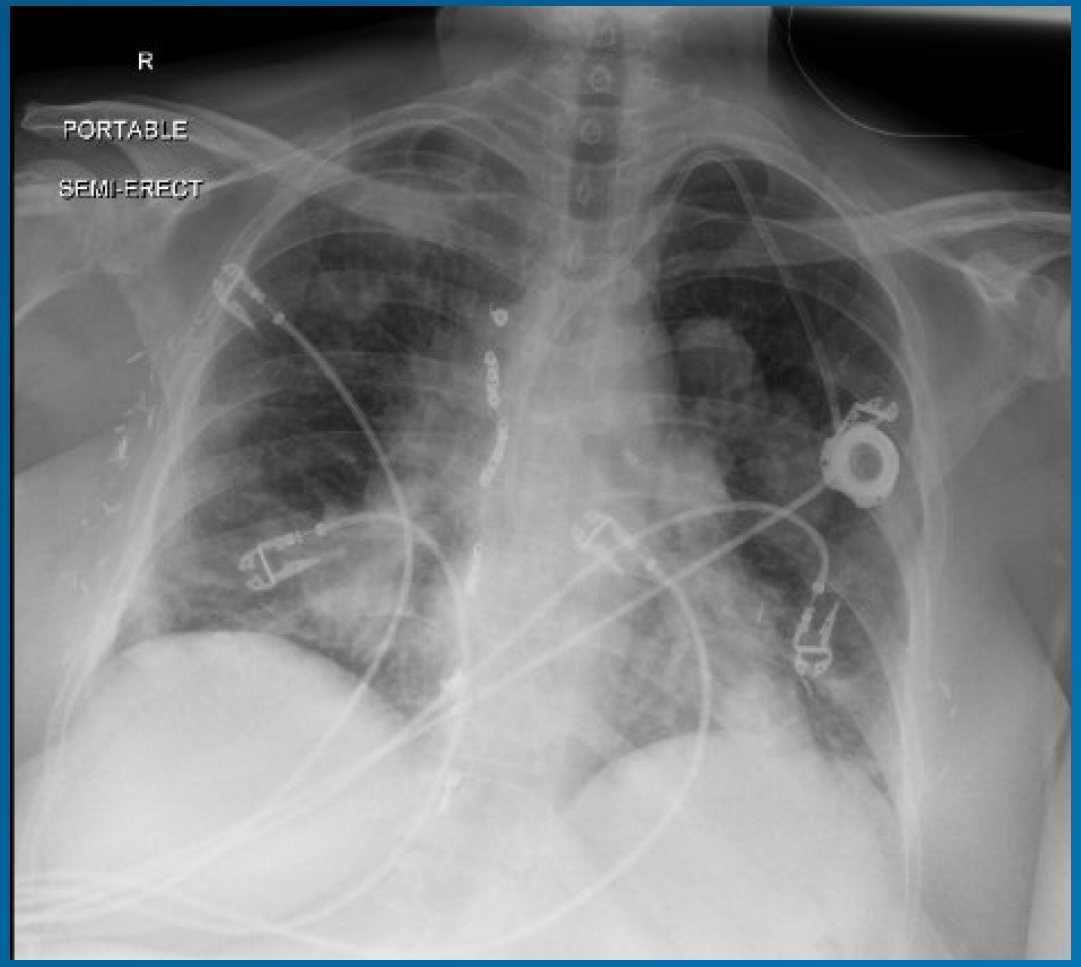
# Case: Key Findings

## Chest X-ray




COVID-19 PCR: Positive

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# Case: Next Steps?

- 10 days after presentation, patient was found to be more tachycardic (P: 120-150 beats per min) with decreasing oxygen saturation on room air (90%) while ambulating
- COVID-19 PCR negative
- Chest radiograph and chest computed tomography scan were obtained

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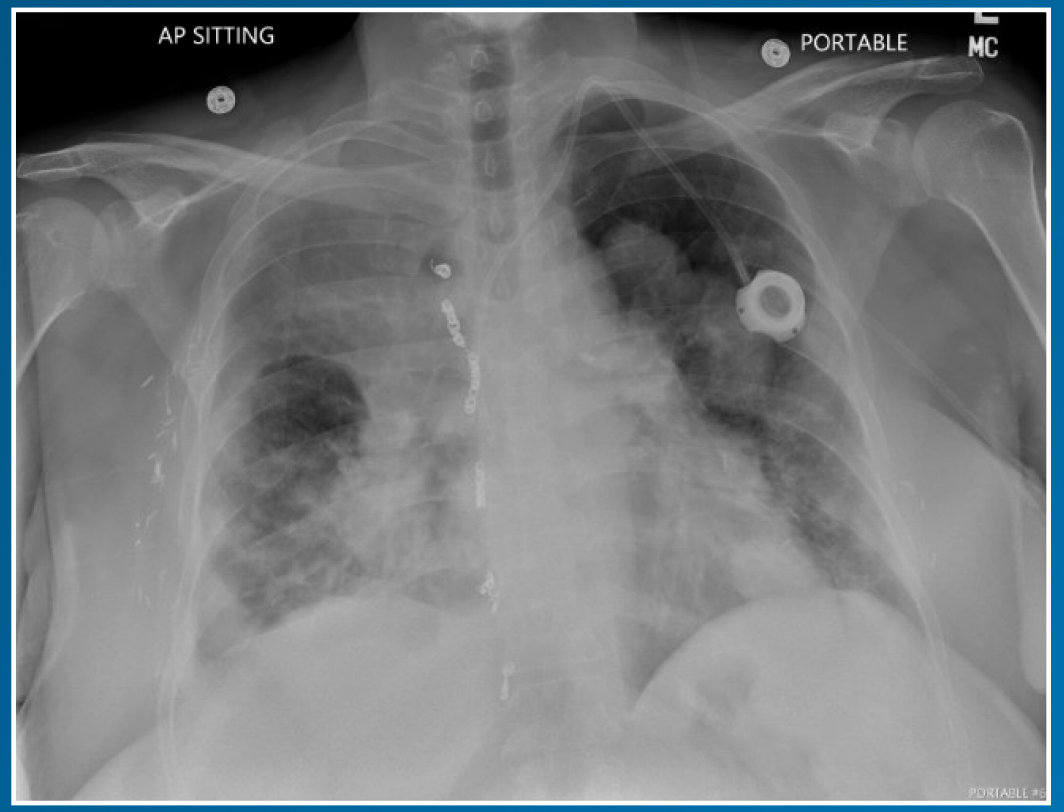
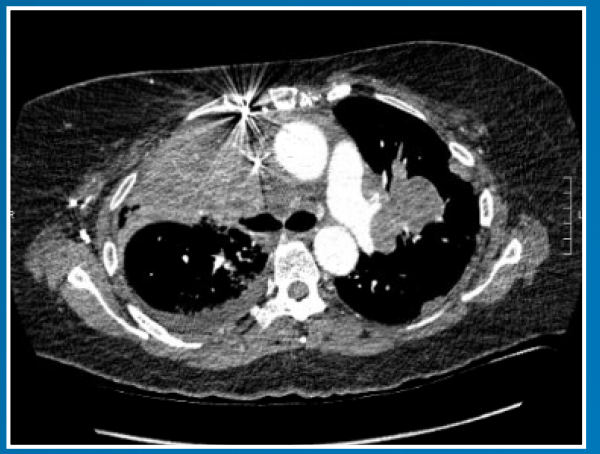
# Case: Key Imaging Findings

## Chest Radiograph




## Chest CT



CT, computed tomography.

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# Case: Additional Care

- Interventional Pulmonology:
  - performed flexible and rigid bronchoscopy with stent placement
- Radiation Oncology:
  - administered 5 fractions of radiation to the right hilar/mediastinal mass
- She was discharged home 21 days after presentation (with medical coverage)

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# Case: Discontinuation of Isolation?

- Can she be seen safely in the Cancer Center for follow-up?
  a) Yes, 20 days have passed since symptom onset and she has had no recurrent fevers
  b) Yes, but full PPE with N95 mask and eye protection needs to be worn by any healthcare worker coming into contact with her
  c) No, she needs COVID-19 PCR testing to confirm that she no longer has the virus
  d) No, she needs to be in isolation for 90 days
  e) Unsure

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# Case: Plans for Systemic Therapy?

- One month after presentation and 1 week following discharge, she was started on chemotherapy

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# Case Example 2

# 70 y/o Man With Dizziness

- Chief complaint: dizziness and palpitations
- Past medical history: atrial fibrillation, obstructive sleep apnea
- Surgical history: appendectomy
- Social history: non-smoker, retired teacher, lives with wife
- Medications: metoprolol, warfarin

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# History of Present Illness

- Today he reported a brief episode of dizziness
- Pulse was 120 beats per min and remained elevated for an hour, just before arrival in emergency department
- Cancelled last few appointments with primary care provider because of the pandemic
- Out of metoprolol but continues to take warfarin
- Has not had his INR checked in 3 weeks
- Denies any chest pain, shortness of breath, or syncope
- To his knowledge, he has not been exposed to COVID-19

INR, international normalized ratio.

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# Physical Exam and Emergency Department Course

- Physical Exam
  - VS: BP 112/60 mmHg; HR 79 beats per min; RR 14 breaths per min; body temperature 97.9ºF
  - No acute distress
  - Cardivascular: irregularly regular
  - Neuro: normal
- Course:
  - Labs: normal complete blood cell count, normal CHEM-7, INR: 2.1
  - ECG: Afib, no evidence of acute ischemia

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# Things to Consider

- Patient desire to limit in-person healthcare contact
- Vulnerable family member
- Transportation access
- Internet access
- Comfort with telehealth technology
- Affordability of medications

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# Shared Decision Making With Patient and Primary Care Physician

- Transition from warfarin to DOAC, edoxaban
  - Consider financial burden
- In-home INR testing
- Mobile technology assistance
- Home health visits

DOAC, direct oral anticoagulants; INR, international normalized ratio.

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# Lessons Learned From the COVID-19 Pandemic

# Changes in the Practice of Oncology

- Communication and transparency are key
- Technology can be adapted quickly
  - Telehealth
  - Digital tools to screen for symptoms
- We can deliver care more efficiently
  - Remote visits with providers, supportive care
  - Clinical trial: remote consenting, mailing of study drugs, fewer in-person visits

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# Changes in the Practice of Emergency Medicine

- The emergency department will remain the safety net for anyone who comes through its doors
- Driven by national attention on heath inequities and COVID-19, discussions about healthcare inequities will remain a part of the conversation
- Telehealth is here to stay, especially for follow-up after receiving emergency care

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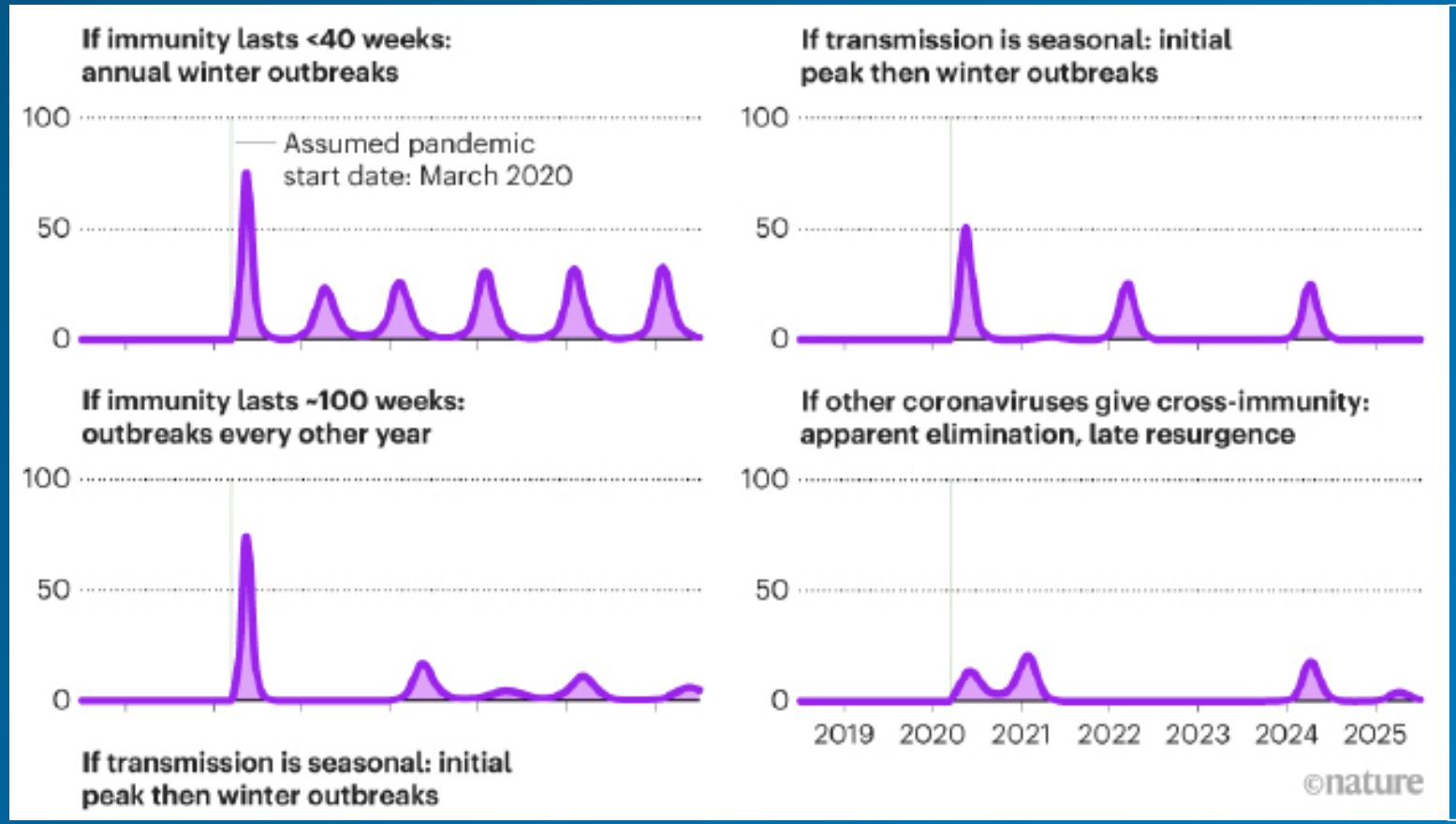
# Most Commonly Asked Question by Patients:

*“When Will This Be Over?”*

# What Happens Next …




Everything depends on finding a successful vaccine, and the duration of immunity following infection or vaccination

Adapted from Kissler SM, et al. *Science*. 2020;368:860-868; Scudellari M. Nature. 2020;584(7819):22-25.

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