

Lung Cancer Screening and Care and COVID-19

Expert Panel Recommendations

May 7, 2020

11:00 AM – 12:00 PM Eastern

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Vice-Chair, National Lung Cancer Roundtable

GO₂ Foundation Scientific Leadership Board

Lung Cancer Screening & COVID-19

Debra S. Dyer MD FACR

Chair, ACR LCS 2.0 Committee

Professor and Chair, Department of Radiology, National Jewish Health
Denver, CO



Screening rates have plummeted since Feb 2020

- EPIC White Paper report: 86-94% drop in Cervical, Breast and Colon CA screenings compared to 2017-2019
- Komodo Health report found 68% decrease in cervical cytology screening, 67% decrease in cholesterol/lipid panels, 65% decrease in Hemoglobin A1c tests
- Lung Cancer Screening CT rates have likely decreased similarly
- Not unexpected due to CDC advisement and ACR recommendation to postpone non-urgent imaging until “a later date.”

Concerns

- With postponement of screening, lung cancers could go undetected
- Postponement of lung cancer screening and recommended follow-up may result in diagnosis at later stages and increased lung cancer mortality
- Even when screening resumes, patients may be reluctant to come in for LCS CTs

ACR Statement on Safe Resumption of Routine Radiology Care During COVID-19

- In press, Davenport MS et al, JACR
- No single ideal approach
- Decisions will depend on local COVID-19 statistics, local government mandates, availability of PPE, health care workers and other resources
- Monitor local data and alter strategy if resurgence of COVID

ACR: Enact safety measures

- Screen for COVID symptoms during scheduling and on arrival
- Provide separate areas for non-COVID patients
- Implement universal masking of healthcare workers and patients
- Minimize time in waiting rooms
- Enable social distancing in waiting areas, hallways, work areas

ACR: Develop tiered plan for re-engagement

- Tier 1: Urgent and emergent care
- Tier 2: Non-urgent time-sensitive care
- Tier 3: Elective care and **Screening**
- Tier 4: Research

ACR: Addressing back-log

- Consider extended hours and to improve access and preserve social distancing
- Modify scheduling to space out LCS CT appointments

ACR: Manage fear

- Provide fact-based info to patients and staff
- Acknowledge that anxiety and stress are normal reactions to pandemic
- Advertise/emphasize infection control processes

CMS Recommendations on Re-opening

- In regions with low incidence rate of COVID-19, facilities can provide care to non-COVID patients
- Re-open based on adequacy of facilities, workforce, testing and supplies of PPE
- Screen patients for potential symptoms of COVID-19 on entry to facility
- Provide separate entrance for non-COVID patients, minimize waiting times, keep patient volumes low, maintain social distancing
- Maximize telehealth
- Continuously monitor for any increase in COVID-19 cases

Telehealth

- CMS recently approved Telehealth for Shared Decision Making for LCS (G0296)
- Temporary waiver of need for counseling to be face-to-face
- If patient does not have computer video access, telehealth visit can be done over the phone

What we can do now

- Investigate or implement Telehealth visits for Shared Decision Making
- Identify patients who are overdue for annual LCS and follow-up CTs
- Prioritize overdue follow-up CTs for LungRADS 3 & 4
- Communicate with referring providers and patients and provide reassurance that processes are in place for safe and effective care
- Offer screening appointments evenings and weekends to increase access and minimize contact with other patients
- During scheduling, tell patients what to expect
- Streamline arrival and time in facility so quick “in and out” t

Summary

- Screening rates have plummeted during the pandemic
- Timeline for re-opening facilities for routine care and screening will depend on local circumstances
- Guidelines for resumption of screening are available from the ACR and CMS
- Telehealth is now approved for Shared Decision Making in LCS and is strongly encouraged
- Communication with referring providers and patients will be especially important to ensure safe and effective care

Management of Lung Nodules and Lung Cancer Screening During the COVID-19 Pandemic

Consensus Statement

- **Background:** The risks from potential exposure to COVID-19, and resource reallocation that has occurred to combat the pandemic, have altered the balance of benefits and harms that informed current (pre-COVID-19) guideline recommendations for lung cancer screening and lung nodule evaluation.
- **Methods:** An expert panel of 24 members, including pulmonologists (17), thoracic radiologists (5), and thoracic surgeons (2) was formed.
 - The panel was provided with an overview of current evidence and was convened by video teleconference to discuss then vote on statements related to 12 common clinical scenarios.
- **Results:** Twelve statements related to baseline and annual lung cancer screening (2), surveillance of a previously detected lung nodule (5), evaluation of intermediate and high risk lung nodules (4), and management of clinical stage I non-small cell lung cancer (1) were developed and modified.

Lung Nodule Management

- **Goal:** Expedite the treatment of malignant nodules and minimize the harms to those with benign nodules.
- **Risks of testing versus risks of waiting**
 - Probability of malignancy, nature of the possible malignancy, evaluation options, comorbidities, fitness, patient values
 - Size, morphology, density, location, growth, clinical risk factors (age, smoking history, emphysema)
- **Risks of testing during COVID pandemic**
 - To patient, to healthcare team, to other patients
 - Resource constraints

Lung Nodule Evaluation – Solid Nodules

	CHEST	Fleischner	Lung-RADS	BTS
< 6 mm (100 mm³)	LR - ≤ 4 mm optional follow-up > 4 – 6 mm, 12-month follow-up HR - ≤ 4 mm 12-month follow-up > 4 – 6 mm, 6-12-month follow-up	LR – no follow-up HR – optional 12 months	RTAS (category 2) For new 4-6 mm – 6 months (category 3)	< 5 mm – no follow-up 5-6 mm – 12 months, 24 months if stable on diameter, discharge if stable volume, option for further surveillance or evaluation if > 400 day VDT, evaluate if ≤ 400 day VDT
≥ 6 - < 8 mm (100-250 mm³)	LR – 6-12-month follow-up HR – 3-6-month follow-up	LR – 6-12 months (3-6 months if multiple), then consider at 18-24 months HR – 6-12 months (3-6 months if multiple), then 18-24 months	6 months (category 3) 3 months if new (category 4A)	3 months then 12 months after baseline if VDT > 400 days, then as < 6 mm
≥ 8 mm (250 mm³)	< 5% risk then surveillance in 3 months 5-65% risk then PET/CT scan +/- non-surgical biopsy >65% risk then proceed directly to treatment after staging and physiology testing	Consider CT at 3 months, PET/CT, or tissue sampling	For 8-15 mm 3 months (category 4A) ≥ 15, ≥ 8 and new or growing – further evaluation (category 4B)	Assess using Brock model < 10% risk then surveillance as above > 10% risk then PET/CT and Herder model (< 10% surveillance, > 70% consider resection)

Lung Nodule Evaluation – Subsolid

CHEST	Fleischner	Lung-RADS	BTS
<p>< 6 mm GG – No routine follow-up</p>	<p>< 6 mm GG - No routine follow-up PS – No routine follow-up Multiple – CT at 3-6 months, consider CT at 2 and 4 years if stable</p>	<p>GG < 30 mm or any size and unchanged – RTAS (category 2) PS < 6 mm – baseline RTAS (category 2), new 6-month CT (category 3)</p>	<p>< 5 mm No follow-up</p>
<p>≥ 6 mm GG – 12 months then annual through 3 years PS ≤ 8 mm solid – 3, 12, and 24 months then annual months then annual until 5 years > 8 mm solid – 3 months, further evaluation if persists</p>	<p>≥ 6 mm GG – 6-12 months then q2 years until 5 years PS – 3-6 months then annual until 5 years Multiple – 3-6 months then based on most suspicious nodule</p>	<p>GG - > 30 mm or new – 6-month CT (category 3) PS – solid component < 6 mm – 6-month CT (category 3); solid component ≥ 6-8 mm or new or growing and < 4 mm – 3-month CT (category 4A); solid component ≥ 8mm or new or growing and ≥ 4 mm – further evaluation (category 4B)</p>	<p>≥ 5 mm - 3 month CT growth or altered morphology favors resection, stable – use Brock model, < 10% then CT at 1, 2, 4 years from baseline, > 10% or concerning morphology – surveillance, biopsy or resection</p>

Surveillance of a Previously Detected Lung Nodule

Scenario 3 - A patient is due now for a surveillance CT scan of the chest for an incidentally detected solid nodule, < 8 mm in average diameter.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay the surveillance CT scan for approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest a surveillance CT scan 6-12 months after the nodule was identified based on nodule size, clinical and imaging features.
- Solid nodules < 8 mm in average diameter typically have a probability of malignancy of < 2%.
- Factors that may influence the decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions

Surveillance of a Previously Detected Lung Nodule

Scenario 5 – A patient is due now for a surveillance chest CT scan for an incidentally detected pure ground glass nodule.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay surveillance of any size pure ground glass nodule for approximately 3 to 6 months.

Note:

- Current (pre-COVID) recommendations suggest surveillance of most pure ground glass nodules (except for solitary nodules <6 mm in diameter) at varying intervals based on the number of nodules and nodule size.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Surveillance of a Previously Detected Lung Nodule

Scenario 6 – A patient is due now for a surveillance chest CT scan for an incidentally (or screening) detected part-solid lung nodule with the solid component 6 mm to 8 mm in diameter.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay surveillance for approximately 3 to 6 months.

Note:

- Current (pre-COVID) recommendations suggest a surveillance CT scan 3 months after the nodule was identified.
- This scenario corresponds to a Lung-RADS category 4A screening-detected nodule.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Surveillance of a Previously Detected Lung Nodule

Scenario 7 - A patient is due now for a 3-month surveillance CT scan of the chest for an incidentally detected solid nodule, ≥ 8 mm in average diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be $< 10\%$.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay the surveillance CT scan for approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest a surveillance CT scan 3 months after the nodule was identified.
- Factors that may influence the decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Evaluation of Intermediate and High Risk Lung Nodules

Scenario 8 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be 10 - 25%.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to re-evaluate the patient with a chest CT scan in approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest further evaluation with PET/CT imaging and/or a non-surgical biopsy for the patient described.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Evaluation of Intermediate and High Risk Lung Nodules

Scenario 9 – A patient presents for evaluation of an incidentally (or screening-) detected part-solid lung nodule with the solid component ≥ 8 mm in diameter.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to monitor the nodule with a chest CT scan in approximately 3-6 months.

Note:

- Current recommendations vary, suggesting further evaluation with PET/CT imaging, a non-surgical biopsy, or surveillance with a short interval chest CT scan if the nodule is felt to be inflammatory.
- This scenario corresponds to a Lung-RADS category 4B screening-detected nodule.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Evaluation of Intermediate and High Risk Lung Nodules

Scenario 10 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be 65 - 85%.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer procedures and surgery when reasonable, it is acceptable to evaluate the patient with a PET scan and/or non-surgical biopsy to insure there is a need to proceed to treatment (surgical resection or stereotactic radiotherapy).

Note:

- Current (pre-COVID) recommendations suggest that you consider proceeding directly to surgical resection (if medically fit) for the patient described. PET imaging would be suggested as part of an acceptable staging evaluation.
- For solid nodules ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule) with a probability of malignancy 25-65% current (pre-COVID) recommendations suggest further evaluation with a PET scan and/or non-surgical biopsy. We are not suggesting a change for this group.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.
- If the patient happens to have prior imaging, and there is evidence that the nodule is a slow growing potentially indolent cancer, one may consider delaying the evaluation.

Evaluation of Intermediate and High Risk Lung Nodules

Scenario 11 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be $> 85\%$.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to minimize exposure to the healthcare environment, it is acceptable to avoid further diagnostic testing and proceed to an empiric treatment decision (i.e. surgical resection or stereotactic radiotherapy).

Note:

- This statement is in keeping with current (pre-COVID) recommendations for management of the patient described. We are not suggesting a change for this group.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.
- Pre-treatment physiologic testing and an appropriate staging evaluation should be performed.
- If the patient happens to have prior imaging, and there is evidence that the nodule is a slow growing potentially indolent cancer, one may consider delaying treatment.

Individualize Decisions

- The authors of the consensus statement recognize that our statements should not be interpreted as one-size fits all, and that what is appropriate now will change over time.
- Application of a general assessment to an individual patient requires the clinical judgment of the management team.
- In addition to considering patient factors and values, we attempted to highlight that local factors, such as the prevalence of COVID in the community, the availability of rapid COVID testing, the adequacy of resources (personnel, imaging equipment, personal protective equipment), local policies, and the presence of other care delivery sites that are less impacted by COVID, should be considered when making individual decisions.



COVID-19
Lung Cancer Screening
May 7, 2020

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COVID-19 & Lung Cancer Screening

- Performing and managing lung cancer screening results
- ACR LCSR new data fields



COVID-19 & Lung Cancer Screening Guidance



Radiology: Imaging Cancer

Published on line April 23, 2020

Management of Lung Nodules and Lung Cancer Screening During the COVID-19 Pandemic: CHEST Expert Panel Report

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[https://journal.chestnet.org/article/S0012-3692\(20\)30758-3/fulltext](https://journal.chestnet.org/article/S0012-3692(20)30758-3/fulltext)

Lung Cancer Screening: Scenario 1

Lung Cancer Screening – Baseline and Annual

Scenario 1 – An individual who meets eligibility criteria is referred to your lung cancer screening program.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is suggested that the initiation of screening be delayed.

Note:

- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Scenario 2 – An individual who meets eligibility criteria is due for their repeat annual chest CT screening exam (Lung-RADS category 1 or 2 on their prior screening exam).

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is suggested that the annual screening exam be delayed.

Note:

- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Lung Cancer Screening: Scenario 2

Scenario 2 – An individual who meets eligibility criteria is due for their repeat annual chest CT screening exam (Lung-RADS category 1 or 2 on their prior screening exam).

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is suggested that the annual screening exam be delayed.

Note:

- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Lung Cancer Screening: Scenario 4 - LungRADS 3

Scenario 4 – A patient is due now for a surveillance chest CT scan for evaluation of a screening- detected lung nodule, Lung-RADS category 3.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay surveillance for approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest a surveillance chest CT scan 6 months after the nodule was identified. (7)
- Lung-RADS category 3 nodules are considered to have a 1-2% probability of malignancy. (7)
- Lung-RADS category 3 includes solid nodules ≥ 6 mm - < 8 mm in diameter, part-solid nodules with the solid component < 6 mm in diameter, new solid nodules 4 - < 6 mm in diameter, new part-solid nodules < 6 mm in diameter, and pure ground glass nodules ≥ 30 mm. (7)
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Lung Cancer Screening: Scenario 7 - LungRADS 4

Scenario 7 - A patient is due now for a 3-month surveillance CT scan of the chest for an incidentally detected solid nodule, ≥ 8 mm in average diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be $< 10\%$.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to delay the surveillance CT scan for approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest a surveillance CT scan 3 months after the nodule was identified. (4,6,7)
- Factors that may influence the decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Lung Cancer Screening: Scenario 8 - LungRADS 4

Scenario 8 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be 10 - 25%.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer non-urgent care, it is acceptable to re-evaluate the patient with a chest CT scan in approximately 3-6 months.

Note:

- Current (pre-COVID) recommendations suggest further evaluation with PET/CT imaging and/or a non-surgical biopsy for the patient described. (4,6,7)
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.

Lung Cancer Screening: Scenario 10 - LungRADS 4

Scenario 10 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be 65 - 85%.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to defer procedures and surgery when reasonable, it is acceptable to evaluate the patient with a PET scan and/or non-surgical biopsy to insure there is a need to proceed to treatment (surgical resection or stereotactic radiotherapy).

Note:

- Current (pre-COVID) recommendations suggest that you consider proceeding directly to surgical resection (if medically fit) for the patient described. PET imaging would be suggested as part of an acceptable staging evaluation. (4,6)
- For solid nodules ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule) with a probability of malignancy 25-65% current (pre-COVID) recommendations suggest further evaluation with a PET scan and/or non-surgical biopsy. We are not suggesting a change for this group. (4,6,7)
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.
- If the patient happens to have prior imaging, and there is evidence that the nodule is a slow growing potentially indolent cancer, one may consider delaying the evaluation.

Lung Cancer Screening: Scenario 11- LungRADS 4

Scenario 11 – A patient presents for evaluation of an incidentally detected solid nodule ≥ 8 mm in diameter (or a Lung-RADS category 4 screening-detected lung nodule). You estimate the probability of malignancy to be $> 85\%$.

Consensus statement: During the COVID pandemic, consistent with CDC guidance to minimize exposure to the healthcare environment, it is acceptable to avoid further diagnostic testing and proceed to an empiric treatment decision (i.e. surgical resection or stereotactic radiotherapy).

Note:

- This statement is in keeping with current (pre-COVID) recommendations for management of the patient described. (4,6) We are not suggesting a change for this group.
- Factors that may influence this decision include COVID penetrance in the community and hospital, availability of rapid COVID testing, availability of resources, patient values, and comorbid conditions.
- Pre-treatment physiologic testing and an appropriate staging evaluation should be performed.
- If the patient happens to have prior imaging, and there is evidence that the nodule is a slow growing potentially indolent cancer, one may consider delaying treatment.

New ACR LCSR Voluntary Data Fields

- Voluntary elements were added to three of the ACR registries (CTC, NMD, LCSR) to identify the impact COVID may/may not be having on screening due to postponing non-essential procedure to indicate if the exam was delayed, when was it originally scheduled, what was the delay reason and if the patient was diagnosed with COVID
- The fields are all optional and may provide an opportunity to identify any direct or indirect impact COVID may be having on screening and long-term cancer detection

LUNG CANCER EARLY DETECTION AND MANAGEMENT DURING THE CORONAVIRUS PANDEMIC

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Guidelines and Consensus Statements

Management of Lung Nodules and Lung Cancer Screening During the COVID-19 Pandemic: CHEST Expert Panel Report

There was consensus that during the COVID-19 pandemic it is appropriate to defer enrollment in lung cancer screening and modify the evaluation of lung nodules due to the added risks from potential exposure and the need for resource reallocation. There are multiple local, regional, and patient related factors that should be considered when applying these statements to individual patient care.

Guidelines and Consensus Statements

Management of Lung Nodules and Lung Cancer Screening During the COVID-19 Pandemic: CHEST Expert Panel Report

Screening initiation and continuation – “delay”
Lung nodule management – “acceptable to delay”

“Acceptable to delay” ≠ should delay

Interpretation of payers?

Interpretation of hospital administrators?

Interpretation of PCPs and patients?

Highly variable Covid-19 impact on health care resources

Uncertainty about length of pandemic

Delayed care still needs to occur...sometime

World

Covid-19 Pandemic Likely to Last Two Years, Report Says

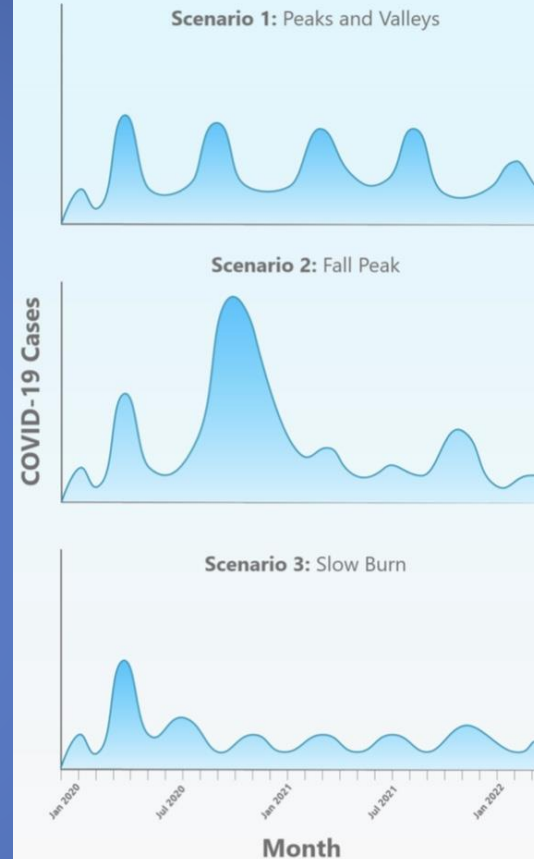
By [John Lauerman](#)

May 1, 2020, 1:11 AM PDT

Pressing Issues

1. Because of a longer incubation period, more asymptomatic spread, and a higher R_0 , COVID-19 appears to spread more easily than flu.
2. A higher R_0 means more people will need to get infected and become immune before the pandemic can end.
3. Based on the most recent flu pandemics, this outbreak will likely last 18 to 24 months.
4. It likely won't be halted until 60% to 70% of the population is immune.
5. Depending on control measures and other factors, cases may come in waves of different heights (with high waves signaling major impact) and in different intervals. We present 3 possibilities.

Possible Pandemic Wave Scenarios for COVID-19

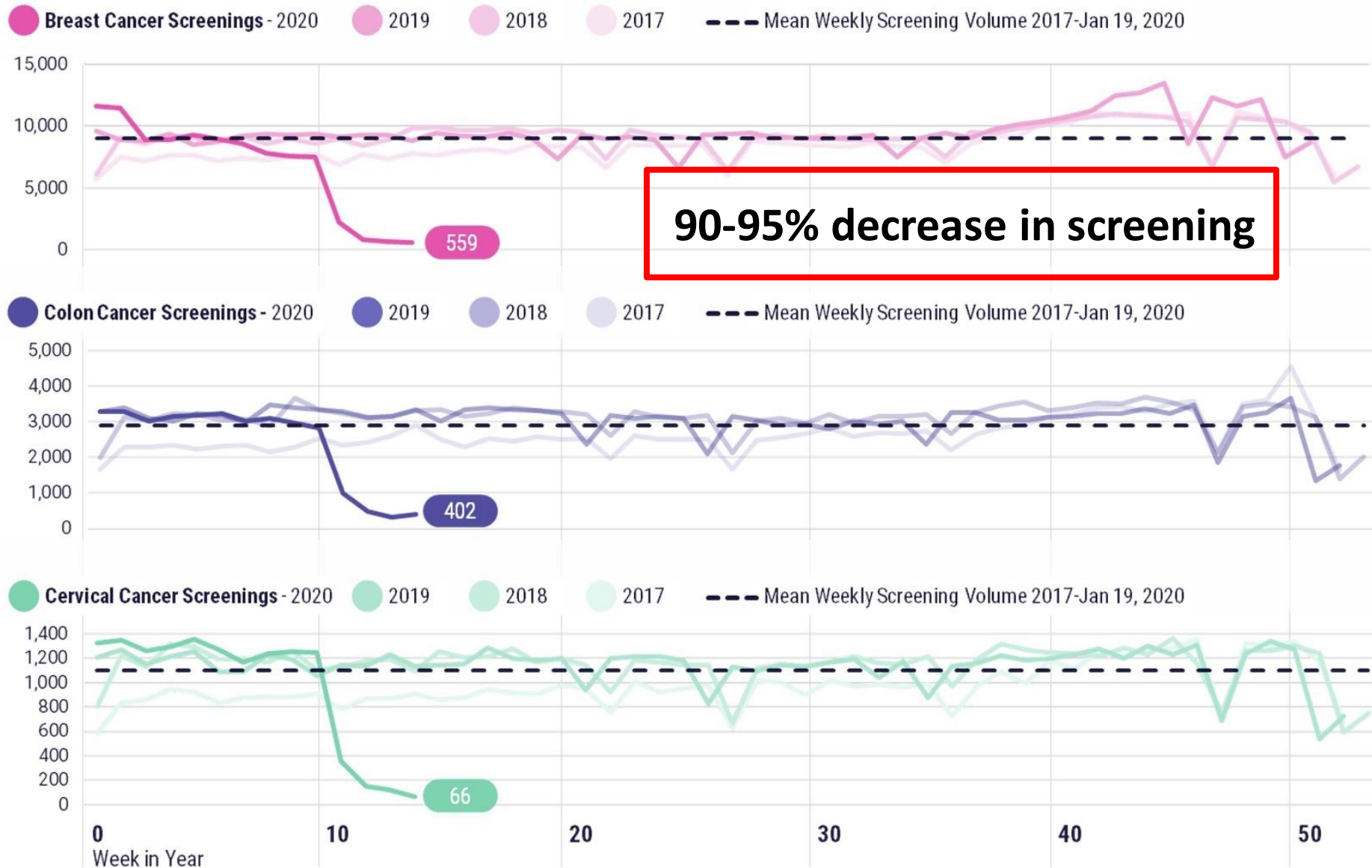


CIDRAP

Center for Infectious Disease Research and Policy

UNIVERSITY OF MINNESOTA

Cancer Screenings in the U.S.



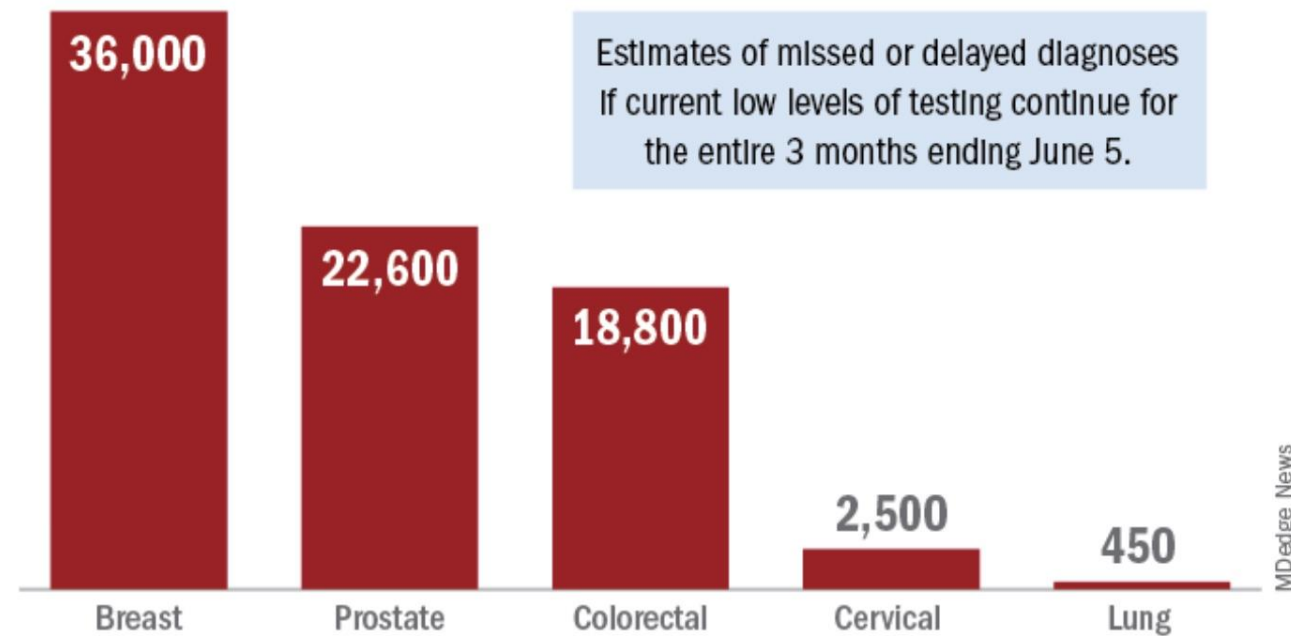
Three months of COVID-19 may mean 80,000 missed cancer diagnoses

Publish date: May 4, 2020

By [Richard Franki](#)



Pandemic effect: Missed cancer diagnoses



Note: Estimates of diagnostics modeled from relevant tumor epidemiology sources. Three-month period ending June 5 compared with baseline month of February 2020.

Source: IQVIA Institute for Human Data Science

Institute for Health Metrics and Evaluation United States

April 5

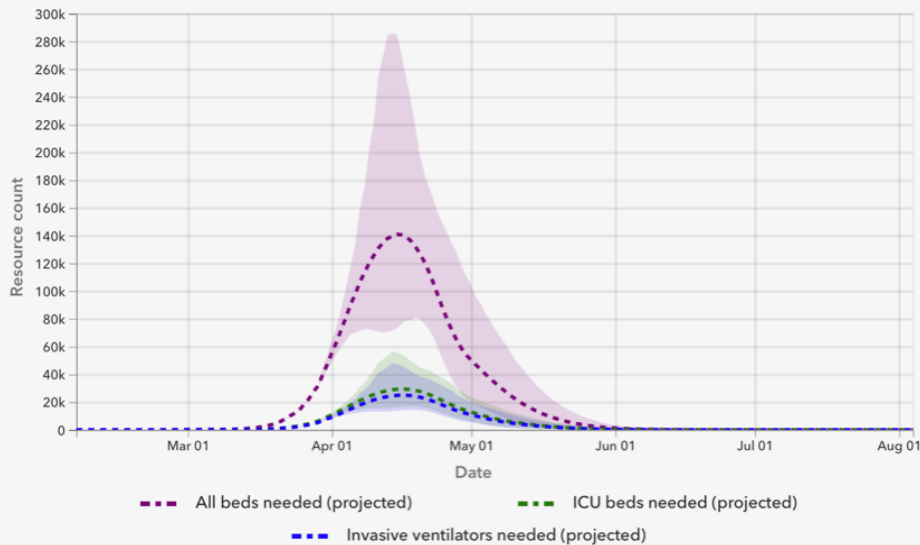
May 2

Resources needed for COVID-19 patients on peak date

All beds needed → Bed shortage
140,823 beds → **36,654 beds**

ICU beds needed → ICU bed shortage
29,210 beds → **16,323 beds**

Invasive ventilators needed
24,828 ventilators

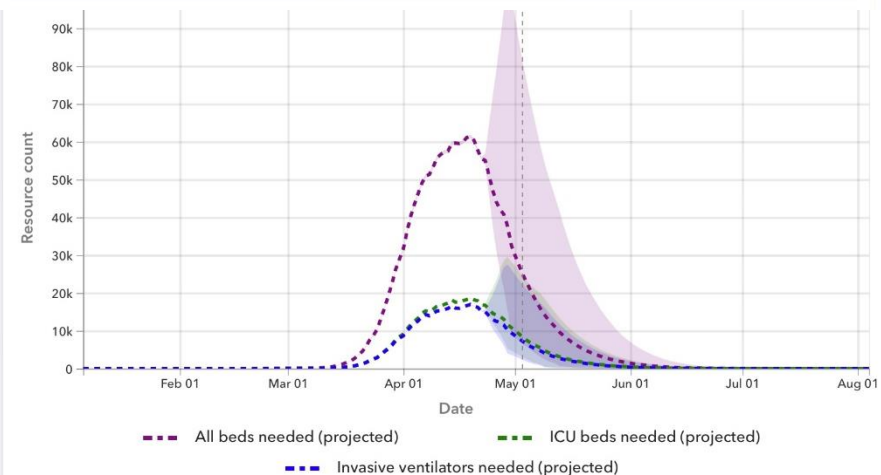


Resources needed for COVID-19 patients on April 19

All beds needed ⓘ → Bed shortage
61,373 beds → **2,877 beds**

ICU beds needed ⓘ → ICU bed shortage
18,618 beds → **8,778 beds**

Invasive ventilators needed ⓘ
16,966 ventilators



Institute for Health Metrics and Evaluation New York

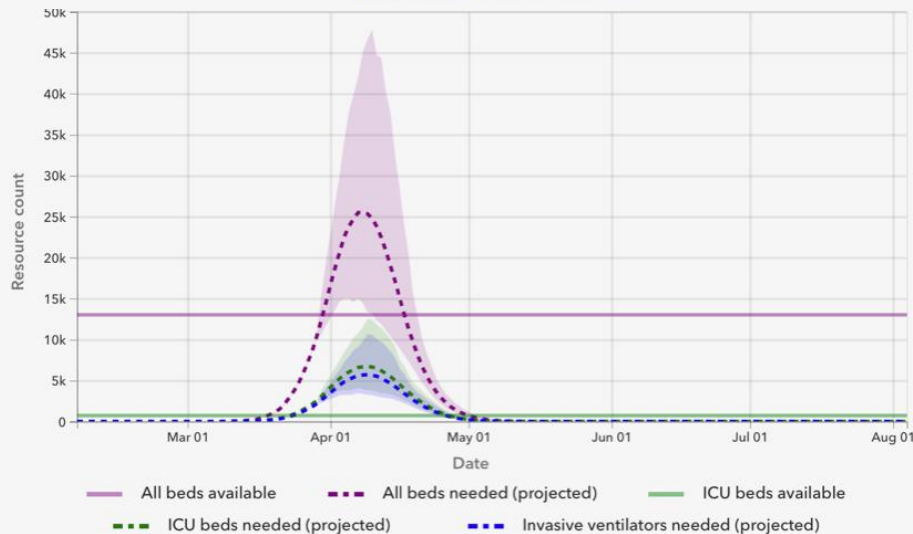
April 5

Resources needed for COVID-19 patients on peak date

All beds needed **25,486 beds** → All beds available **13,010 beds** → Bed shortage **12,476 beds**

ICU beds needed **6,664 beds** → ICU beds available **718 beds** → ICU bed shortage **5,946 beds**

Invasive ventilators needed
5,664 ventilators



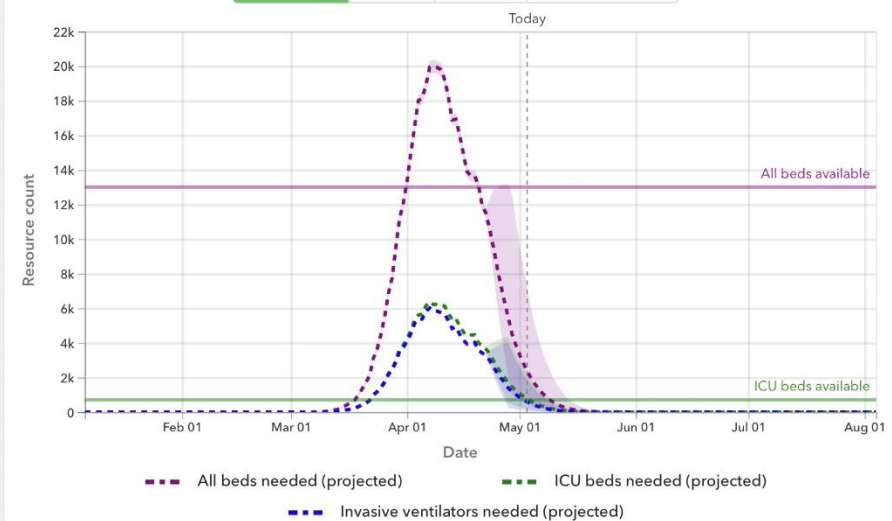
May 2

Resources needed for COVID-19 patients on April 8

All beds needed ⓘ **19,952 beds** → All beds available ⓘ **13,011 beds** → Bed shortage **6,941 beds**

ICU beds needed ⓘ **6,225 beds** → ICU beds available ⓘ **718 beds** → ICU bed shortage **5,507 beds**

Invasive ventilators needed ⓘ
5,853 ventilators



Institute for Health Metrics and Evaluation Washington

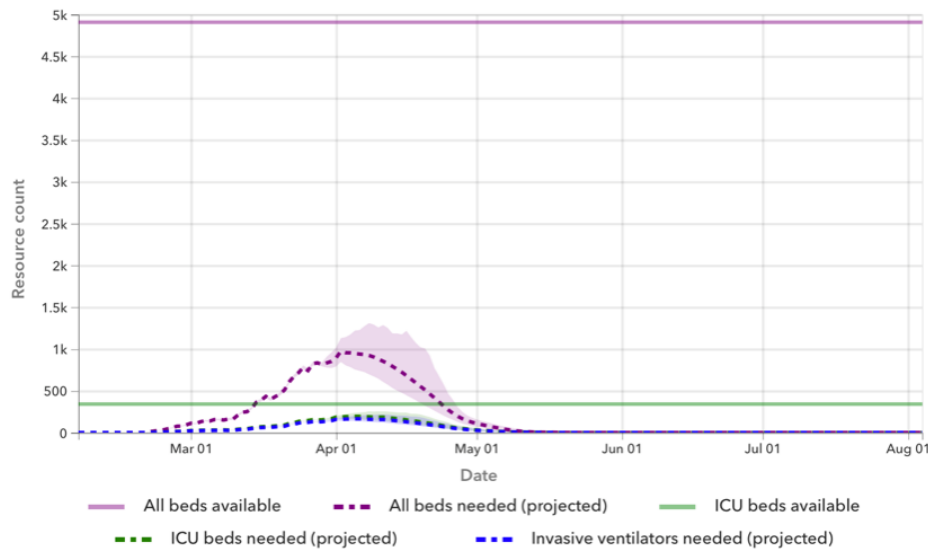
April 5

Resources needed for COVID-19 patients on peak date

All beds needed **972 beds** → All beds available **4,907 beds** → Bed shortage **0 beds**

ICU beds needed **185 beds** → ICU beds available **341 beds** → ICU bed shortage **0 beds**

Invasive ventilators needed
157 ventilators



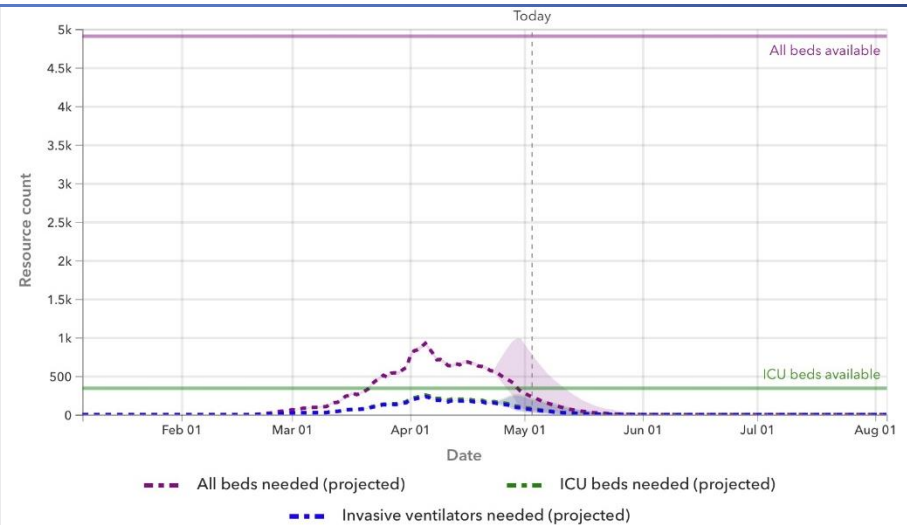
May 2

Resources needed for COVID-19 patients on April 5

All beds needed ⓘ **924 beds** → All beds available ⓘ **4,907 beds** → Bed shortage **0 beds**

ICU beds needed ⓘ **254 beds** → ICU beds available ⓘ **341 beds** → ICU bed shortage **0 beds**

Invasive ventilators needed ⓘ
232 ventilators



Covid-19 Deferral of Elective Surgery

- March 13 – American College of Surgeons
- March 14 – Surgeon General
- March 16 – Washington State
- March 18 – CMS

Create acute and ICU capacity

Preserve HCW workforce

Preserve PPE

Covid-19 Deferral of Elective Surgery

“Elective” surgery ≠ non-essential surgery

Surgery indications to preserve life, prevent disability, alleviate pain, restore function, improve QOL

Emergent surgery – within hours

Urgent surgery – within days to weeks

Elective surgery (medically necessary)

Elective surgery (medically non essential)

[J Am Coll Surg.](#) 2020 Apr 9

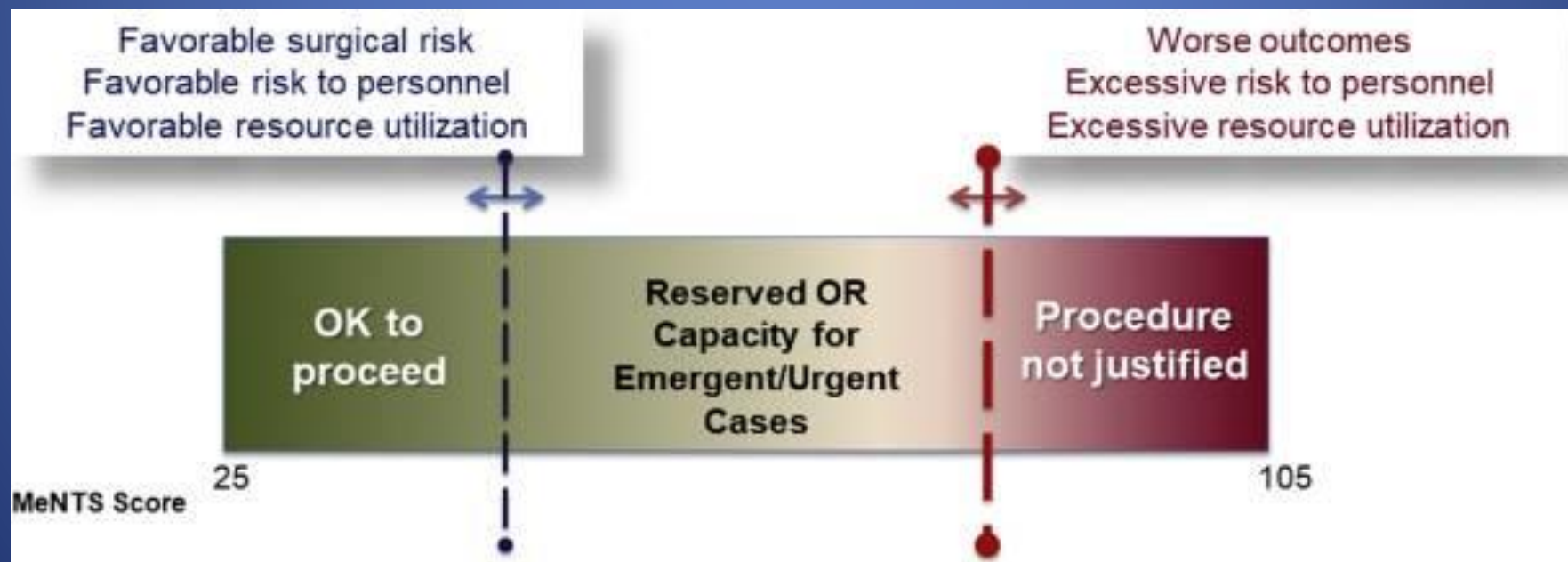
PMCID: PMC7195575

doi: [10.1016/j.jamcollsurg.2020.04.011](https://doi.org/10.1016/j.jamcollsurg.2020.04.011) [Epub ahead of print]

PMID: [32278725](https://pubmed.ncbi.nlm.nih.gov/32278725/)

Medically Necessary, Time-Sensitive Procedures: Scoring System to Ethically and Efficiently Manage Resource Scarcity and Provider Risk During the COVID-19 Pandemic

[Vivek N. Prachand](#), MD, FACS,* [Ross Milner](#), MD, FACS, [Peter Angelos](#), MD, FACS, [Mitchell C. Posner](#), MD, FACS, [John J. Fung](#), MD, FACS, [Nishant Agrawal](#), MD, FACS, [Valluvan Jeevanandam](#), MD, FACS, and [Jeffrey B. Matthews](#), MD, FACS



From: [Continuum of Surge Capacity and Standards of Care](#)



Crisis Standards of Care: Summary of a Workshop Series.
Institute of Medicine (US) Forum on Medical and Public Health Preparedness for Catastrophic Events.
Washington (DC): [National Academies Press \(US\)](#); 2010.

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Continuum of Conventional, Contingency, and Crisis Capacity

Conventional capacity: The spaces, staff, and supplies used are consistent with daily practices within the institution.

Contingency capacity: The spaces, staff, and supplies used are not consistent with daily practices, but maintain or have minimal impact on usual patient care practices

Crisis capacity: Adaptive spaces, staff, and supplies are not consistent with usual standards of care, but provide sufficiency of care in the setting of a catastrophic disaster (i.e., provide the best possible care to patients given the circumstances and resources available)

Surge Definitions

Phase 0	Phase 1	Phase 2	Phase 3
Plenty of capacity. Lower than the pre-Covid days	90% full	Surging in contingency space (boarding)	Crisis capacity

Beds



Staff

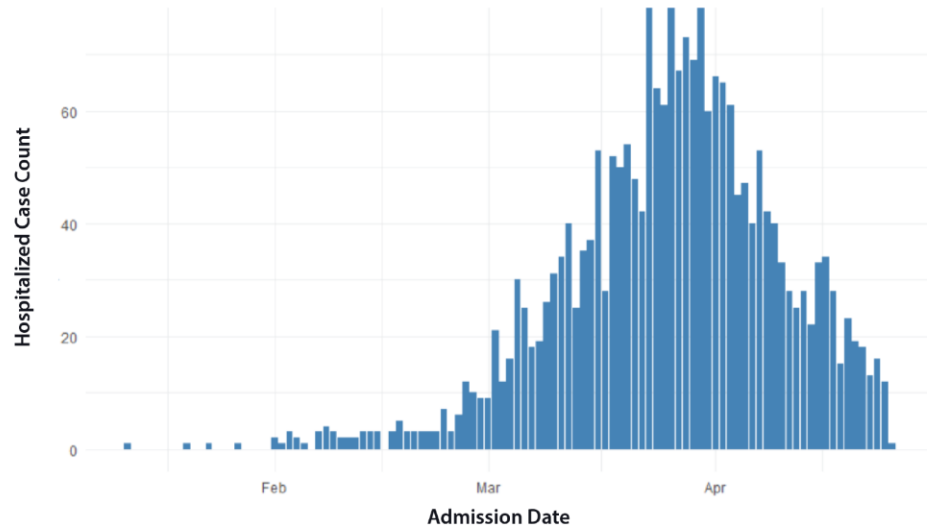
Phase 0	Phase 1	Phase 2	Phase 3
Too much staff; not enough work	All staffing needs met; may need OT or floating	Entity resources exhausted; may need Labor Pool	Resources insufficient. Crisis standards

Anticipated Recovery Criteria

- Decline in new cases, hospitalizations, and deaths
- Testing capacity
- Contact tracing
- Sufficient PPE
- Maintain ability to respond to resurgence

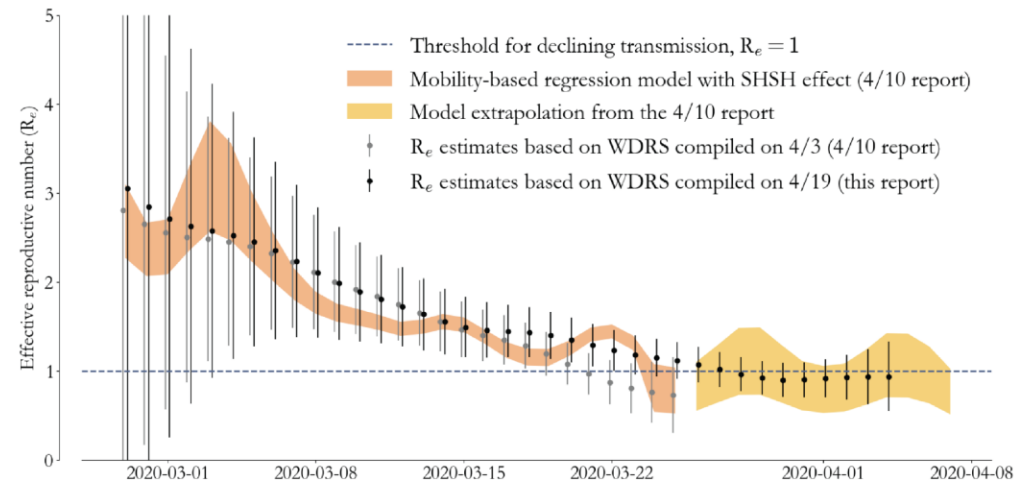
When will patients feel safe re-entering healthcare?

Cases of COVID-19 Hospitalization by Date of First Admission

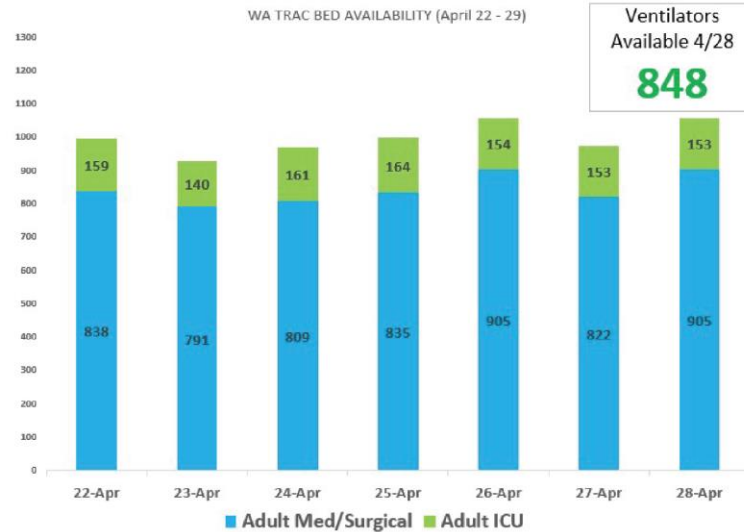


Washington State

Effective Reproductive Rate for King Co.

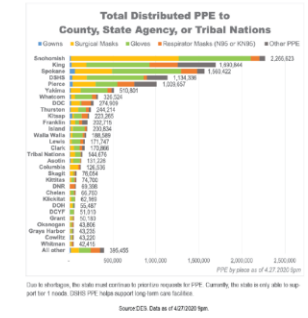
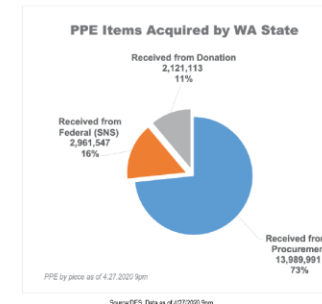


Health Care System Capacity

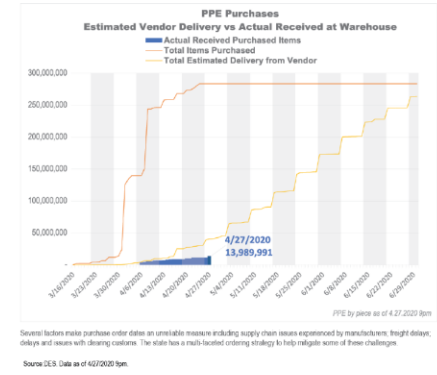
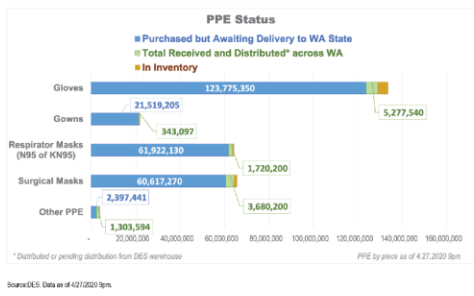


Washington State

State PPE Procurement




Total Items Ordered	Total Items Received	Total Items Distributed
# of items 284,221,107	# of items 19,072,651	11,651,507
\$ cost \$341,861,970	\$ cost \$8,390,065	



PBS NEWS HOUR WEEKEND

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How the coronavirus is delaying life-altering surgeries

Apr 26, 2020 5:09 PM EDT

<https://www.pbs.org/newshour/show/how-the-coronavirus-is-delaying-life-altering-surgeries>

WSJ | OPINION

OPINION | COMMENTARY

'Elective' Surgery Saves Lives

Temporary bans prevent treatment for cancer, heart disease, cataracts and other serious ailments.

<https://www.wsj.com/articles/elective-surgery-saves-lives-11587400926>

Cardiothoracic Surgery in the COVID Crisis: Stratification of Thoracic Oncology Surgery



<https://www.sts.org/publications/videos/cardiathoracic-surgery-covid-crisis-stratification-thoracic-oncology-surgery>

<https://www.onclive.com/inside-oncology/managing-lung-cancer-patients-through-the-covid-19-pandemic/weekly-webinar-series-part-6-managing-lung-cancer-patients-through-the-covid19-pandemic>

Weekly Webinar Series Part 6: Managing Lung Cancer Patients Through the COVID-19 Pandemic

Published: Thursday, Apr 30, 2020



RESEARCH ARTICLE

Time to initial cancer treatment in the United States and association with survival over time: An observational study

Alok A. Khorana^{1*}, Katherine Tullio¹, Paul Elson¹, Nathan A. Pennell¹, Stephen R. Grobmyer², Matthew F. Kalady², Daniel Raymond³, Jame Abraham¹, Eric A. Klein⁴, R. Matthew Walsh², Emily E. Monteleone¹, Wei Wei¹, Brian Hobbs¹, Brian J. Bolwell¹

The largest association was seen in pancreas and non-small cell lung cancer. Every week of increased TTI was associated with increased risk of death by an estimated 3.2% and 1.6% in stage I and II non-small cell lung cancer, respectively.

The most substantial associations with worsened mortality were seen in patients with lung and pancreas cancers. Five-year overall survival for stage I NSCLC was 56% (± 0.2) for TTI ≤ 6 wks compared to 43% (± 0.2) for TTI > 6 wks

When analysis was restricted to patients receiving surgery as first-line therapy in patients with lung cancer, the statistical estimators demonstrated stronger effect sizes

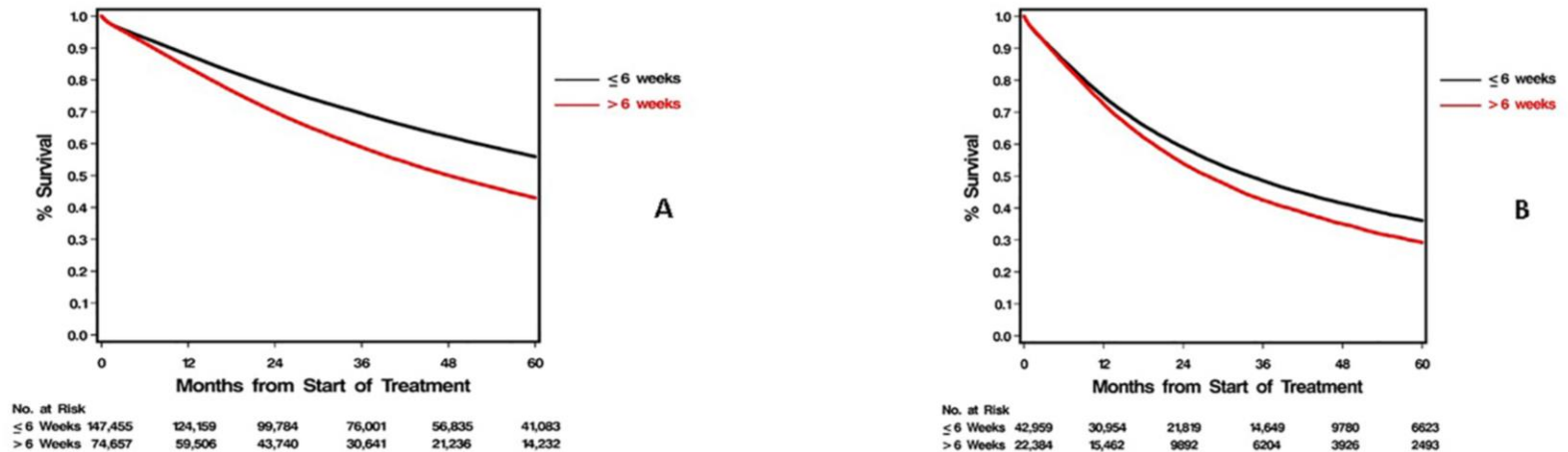
< Back to Article

Time to initial cancer treatment in the United States and association with survival over time: An observational study

Fig 2

Overall survival by prolonged treatment delay in stages I and II non-small cell lung and pancreas cancers.

Five-year overall survival for National Cancer Database patients with time to treatment initiation of six weeks or less was substantially higher when compared to patients with time to treatment initiation greater than six weeks for stage I (A) and stage II (B) non-small cell lung cancer and stage I (C) and stage II (D) pancreas cancers (P<0.001 for each).



Prolonged TTI of over 6 weeks was associated with a 13% absolute increase in 5-year mortality in stage I NSCLC

Aug
29
2018

Each week's delay in lung cancer surgery risks tumor's spread

Lung Cancer

Add a Comment



Each week that a patient with a new diagnosis of early lung cancer awaits surgery significantly increases the risk for tumor growth, spread and "upstaging," according to an analysis of thousands of patients.

Patients with stage I non-small cell lung cancer (NSCLC) had a 4% increased risk of upstaging generally (to stage II, III, or IV) each week until their surgery. Their risk of upstaging to IIIA disease was 1.3% per week of surgery delay. The findings were reported at the American Association for Thoracic Surgery meeting.

Among 52,000 stage I NSCLC patients analyzed, about a quarter underwent resection within one week of lung cancer diagnosis. However, more than 20% waited longer than eight weeks for surgery, and about one in 11 waited longer than 12 weeks.

AATS 2018 Abstracts: Soukiasian KJ. Effects of time from completed clinical staging to surgery: does it make a difference in stage I NSCLC?

<https://pulmccm.org/lung-cancer-review/each-weeks-delay-in-lung-cancer-surgery-risks-tumors-spread/>



Short-Term Recommendations for Non-Small Cell Lung Cancer Management During the COVID-19 Pandemic

Curative Intent Setting

- If institutional resources (ie, ventilators, staff, rooms) are available, curative-intent procedures should continue as planned.
- Preoperative testing of patients for COVID-19 should be performed if available.

Thoracic Surgery

Stage I – Stage II

- Patients with a pure ground-glass opacity (no solid component) can usually be deferred for 6 months or more.
- Patients with a clinical stage I lepidic adenocarcinoma (ground-glass opacity with small solid component) can usually be deferred for 3–6 months.
- Patients with clinical stage IA1 solid tumors can usually be deferred for 2–3 months.



Short-Term Recommendations for Non-Small Cell Lung Cancer Management During the COVID-19 Pandemic

- Patients with clinical stage IA2 to stage IIB should be considered urgent for purposes of surgical planning, proceed with surgical evaluation and planning, and proceed to surgery within 1 month if feasible with local hospital resources.
- For patients with surgery recommended as guideline-concordant care, surgery continues to be preferred over non-surgical therapy unless resource restrictions are severe and of indeterminate duration.
- In the context of minimizing procedures and potential viral exposure in patients with no evidence of nodal involvement on recent PET and CT, it is acceptable to omit invasive mediastinal staging. Mediastinoscopy can be considered as an alternative to endobronchial ultrasound (EBUS).
- Patients with strong clinical evidence or biopsy-proven N1 disease can have consideration of primary surgery (invasive mediastinal staging recommended) followed by adjuvant chemotherapy versus induction chemotherapy followed by surgery as dictated by local resources, multidisciplinary planning, and patient preference.

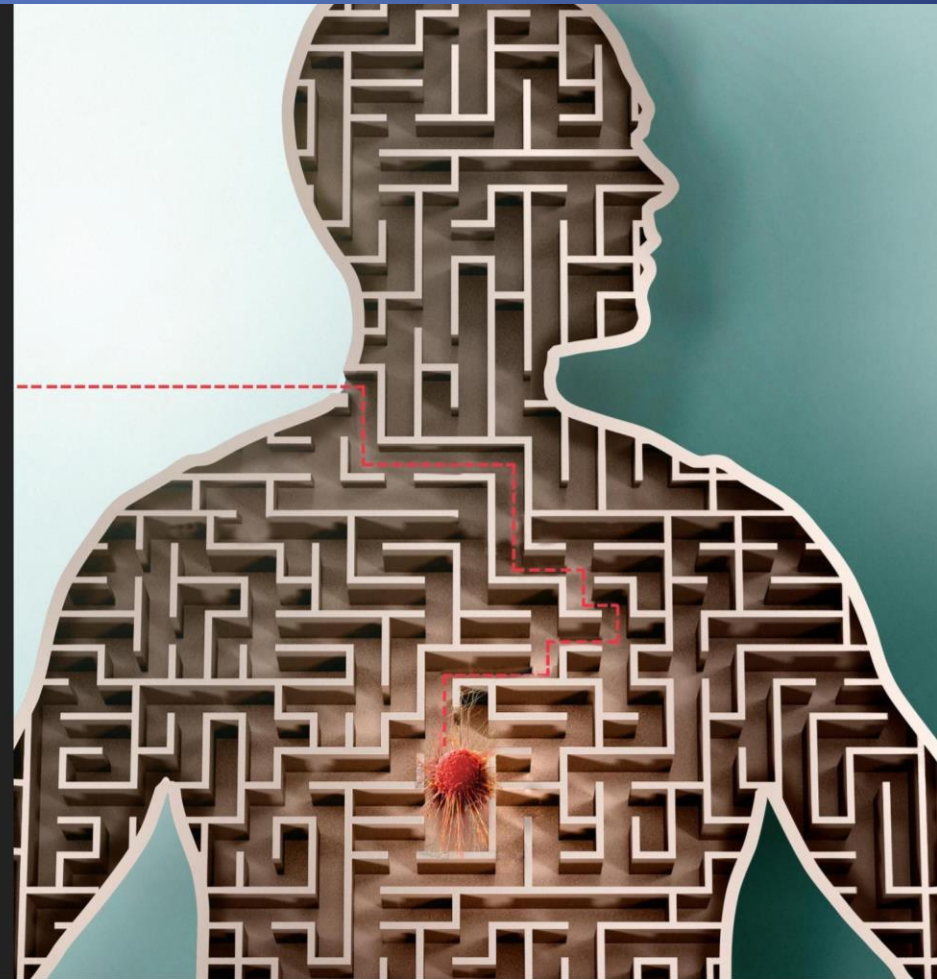
THE WALL STREET JOURNAL.

English Edition ▼ | October 7, 2019 | Print Edition | Video

THE SATURDAY ESSAY

Cancer Is Still Beating Us —We Need a New Start

Most patients continue to face excruciating, costly and ineffective treatments. It's time to shift our focus from fighting the disease in its last stages to finding the very first cells.



GO₂ Foundation—Your “Go To” Resource!



Patient Education



UNDERSTANDING NODULES

WHAT ARE LUNG NODULES? Abnormal spots that may show up on your lung cancer screening scan or other imaging test. Nodules are also called lesions, coin lesions, growths or solitary pulmonary nodules.

AT LEAST 50% OF PEOPLE HAVE LUNG NODULES BY AGE 50.
95% OF LUNG NODULES ARE NOT CANCER.

Screening and Care—Centers of Excellence Virtual Summit: Stay Tuned!

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June 15-16, 2020

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