Effects of COVID-19 on Cancer Care

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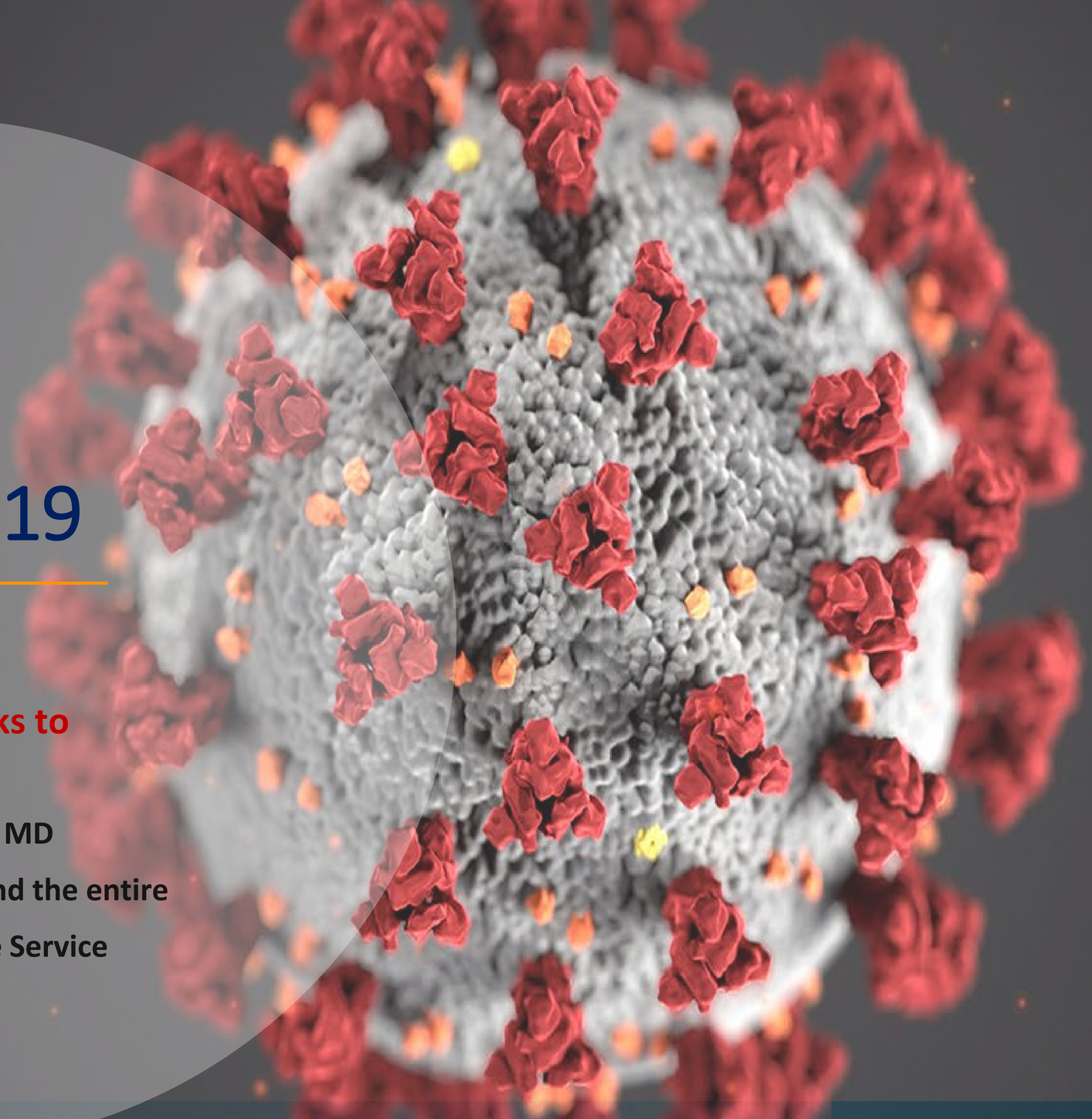
COVID-19



Special thanks to

Monika Shah, MD

Attending Physician and the entire

Infectious Disease Service

NO disclosures to report

Agenda

- Epidemiologic update
- COVID-19 in cancer patient
- Leveraging telemedicine
- Development of a cohort monitoring team
- Emerging Issues

COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins ...

Global Cases
129,174,928

Cases by Country/Region/Sovereignty

- 30,485,635 US
- 12,748,747 Brazil
- 12,221,665 India
- 4,705,284 France
- 4,503,291 Russia
- 4,364,463 United Kingdom
- 3,607,083 Italy
- 3,317,182 Turkey
- 3,291,394 Spain
- 2,852,634 Germany
- 2,406,377 Colombia
- 2,356,970 Poland
- 2,348,821 Argentina

Admin0

Cumulative Cases | Incidence Rate | Case-Fatality Ratio | Testing Rate

192

Lancet Inf Dis Article: Here. Mobile Version: Here. Data sources: Full list. Downloadable database: GitHub, Feature Layer.

Global Deaths
2,820,503

- 552,604 deaths US
- 321,515 deaths Brazil
- 203,210 deaths Mexico
- 162,927 deaths India
- 127,006 deaths United Kingdom
- 109,847 deaths Italy

Global Dea...

Total Test Results in U
392,363,238

- 53,786,487 tests California US
- 44,936,152 tests New York US
- 21,242,085 tests Texas US
- 20,848,501 tests Florida US
- 20,313,050 tests Illinois US
- 18,821,008 tests Massachusetts US

US Test Re...

COVID-19 in Cancer Patients

- Studies from China and Spain suggested higher risk of COVID-19 diagnosis in cancer patients compared to the general population
- Risk for mortality may be increased (RR 1.66, 95% CI 1.33-2.07), though no increase in risk seen in patients >65 years
- Worse outcomes in certain populations
  - Hematologic malignancies
  - Lung cancer
  - Metastatic disease

Yu J, et al. JAMA Oncol. 2020;6(7):1108
Rogado J, et al., Clin Transl Oncol. 2020
Bertuzzi AF, et al. Cancers (Basel). 2020;12(9)
Giannakoulis VG, et al. JCO Glob Oncol. 2020;6:799

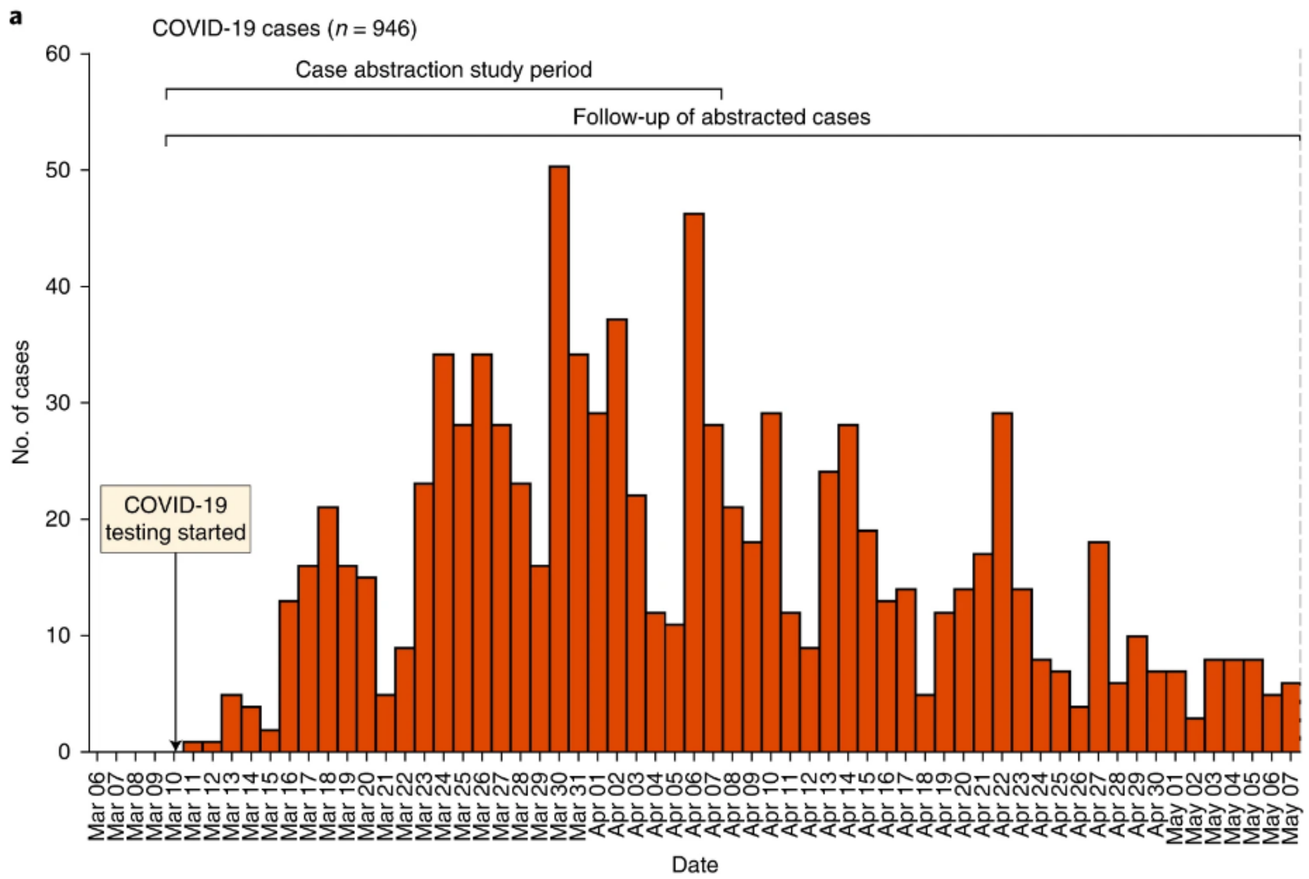
Letter | Published: 24 June 2020

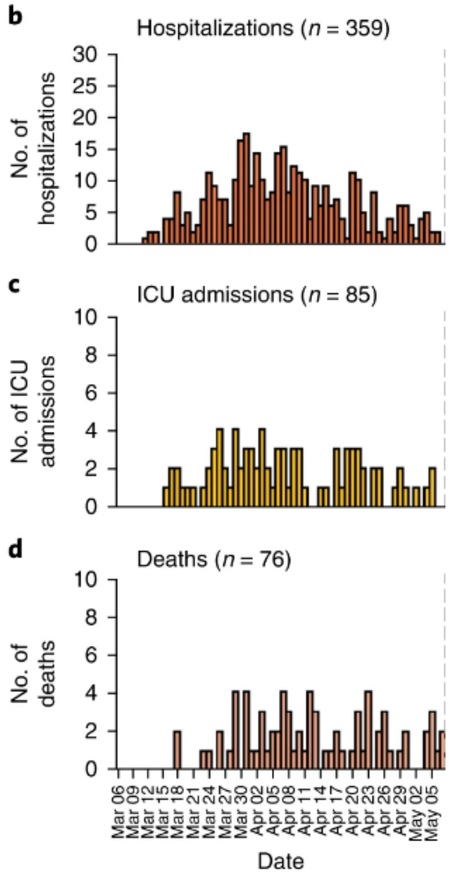
Determinants of COVID-19 disease severity in patients with cancer

Elizabeth V. Robilotti, N. Esther Babady, Peter A. Mead, Thierry Rolling, Rocio Perez-Johnston, Marilia Bernardes, Yael Bogler, Mario Caldararo, Cesar J. Figueroa, Michael S. Glickman, Alexa Joanow, Anna Kaltsas, Yeon Joo Lee, Anabella Lucca, Amanda Mariano, Sejal Morjaria, Tamara Nawar, Genovefa A. Papanicolaou, Jacqueline Predmore, Gil Redelman-Sidi, Elizabeth Schmidt, Susan K. Seo, Kent Sepkowitz, Monika K. Shah, Jedd D. Wolchok, Tobias M. Hohl, Ying Taur & Mini Kamboj ✉ -Show fewer authors

Nature Medicine **26**, 1218–1223(2020) | Cite this article

COVID-19 at MSKCC





40% hospitalized

20% severe illness

8% mechanical ventilation

12% mortality

COVID-19: Risk factors for Hospitalization in patients with Cancer

Predictor	Univariate		Multivariate	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Age (>65)	1.81 (1.20 - 2.72)	0.004	1.58 (1.00 - 2.50)	0.05
Race (non-white)	1.36 (0.91 - 2.04)	0.14	1.59 (1.04 - 2.46)	0.03
Asthma/COPD	1.39 (0.81 - 2.37)	0.27	1.14 (0.64 - 2.03)	0.66
Cancer (non-met solid)	1.00 (Ref)	-	1.00 (Ref)	
Cancer (met solid)	0.87 (0.52 - 1.48)	0.60	0.74 (0.42-1.30)	0.29
Cancer (hematologic)	2.15 (1.20 - 3.90)	0.010	2.37 (1.28 - 4.43)	0.006
Cardiac Disorder	1.86 (1.13 - 3.07)	0.02	1.37 (0.79 - 2.40)	0.26
HTN/chronic kidney disease	1.84 (1.24 - 2.75)	0.003	1.53 (0.97 - 2.42)	0.07
Chronic lymphopenia or Corticosteroids	1.86 (1.11 - 3.15)	0.02	1.85 (1.06 - 3.22)	0.03
Immune checkpoint inhibitor	2.53 (1.18 - 5.67)	0.02	3.06 (1.35 - 7.20)	0.007

COVID-19: Risk factors for Severe Illness in patients with Cancer

Predictor	Univariate		Multivariate	
	HR (95% CI)	P-value	HR (95% CI)	P-value
Age (>65)	2.18 (1.42 - 3.34)	<0.001	1.80 (1.14 - 2.84)	0.01
Asthma/COPD	1.70 (1.02 - 2.84)	0.04	1.39 (0.82 - 2.36)	0.22
Cancer (non-met solid)	1.00 (Ref)	-	1.00 (Ref)	
Cancer (met solid)	0.83 (0.46-1.51)	0.55	0.69 (0.37-1.31)	0.26
Cancer (hematologic)	1.53 (0.83 - 2.83)	0.17	1.61 (0.86 - 2.99)	0.14
Major Surgery (within 30d)	1.34 (0.65 - 2.78)	0.43		
Cardiac Disorder	2.12 (1.34 - 3.35)	0.001	1.48 (0.89 - 2.44)	0.13
HTN/chronic kidney disease	1.83 (1.17 - 2.86)	0.008	1.27 (0.78 - 2.08)	0.34
Chemotherapy (last 30d)	1.16 (0.76 - 1.78)	0.49		
Chronic lymphopenia/ corticosteroids	1.67 (1.02 - 2.74)	0.04	1.52 (0.92 - 2.50)	0.10
Immune checkpoint inhibitor	2.45 (1.33 - 4.51)	0.004	3.03 (1.53 - 5.98)	0.001

CANCER DISCOVERY

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Research Briefs

Impact of PD-1 Blockade on Severity of COVID-19 in Patients with Lung Cancers

Jia Luo, Hira Rizvi, Jacklynn V. Egger, Isabel R. Preeshagul, Jedd D. Wolchok, and Matthew D. Hellmann

DOI: 10.1158/2159-8290.CD-20-0596 Published August 2020 Check for updates

Comments (1)

COVID-19 infections and outcomes in patients with multiple myeloma in New York City: a cohort study from five academic centers

Malin Hultcrantz, Joshua Richter, Cara Rosenbaum, Dhwani Patel, Eric Smith, Neha Korde, Sydney Lu, Sham Mailankody, Urvi Shah, Alexander Lesokhin, Hani Hassoun, Carlyn Tan, Francesco Maura, Andriy Derkach, Benjamin Diamond, Adriana Rossi, Roger N Pearse, Deppu Madduri, Ajai Chari, David Kaminetzky, Marc Braunstein, Christian Gordillo, Faith Davies, Sundar Jagannath, Ruben Niesvizky, Suzanne Lentzsch, Gareth Morgan, Ola Landgren

doi: https://doi.org/10.1101/2020.06.09.20126516

Now published in *Blood Cancer Discovery* doi: 10.1158/2643-3230.BCD-20-0102

Research Letter FREE

May 13, 2020

COVID-19 in Children With Cancer in New York City

Farid Boulad, MD[1]; Mini Kamboj, MD[2]; Nancy Bouvier, BA[1]; Audrey Mauguen, PhD[3]; Andrew L. Kung, MD, PhD[1]

» Author Affiliations | Article Information

JAMA Oncol. 2020;6(9):1459-1460. doi:10.1001/jamaoncol.2020.2028

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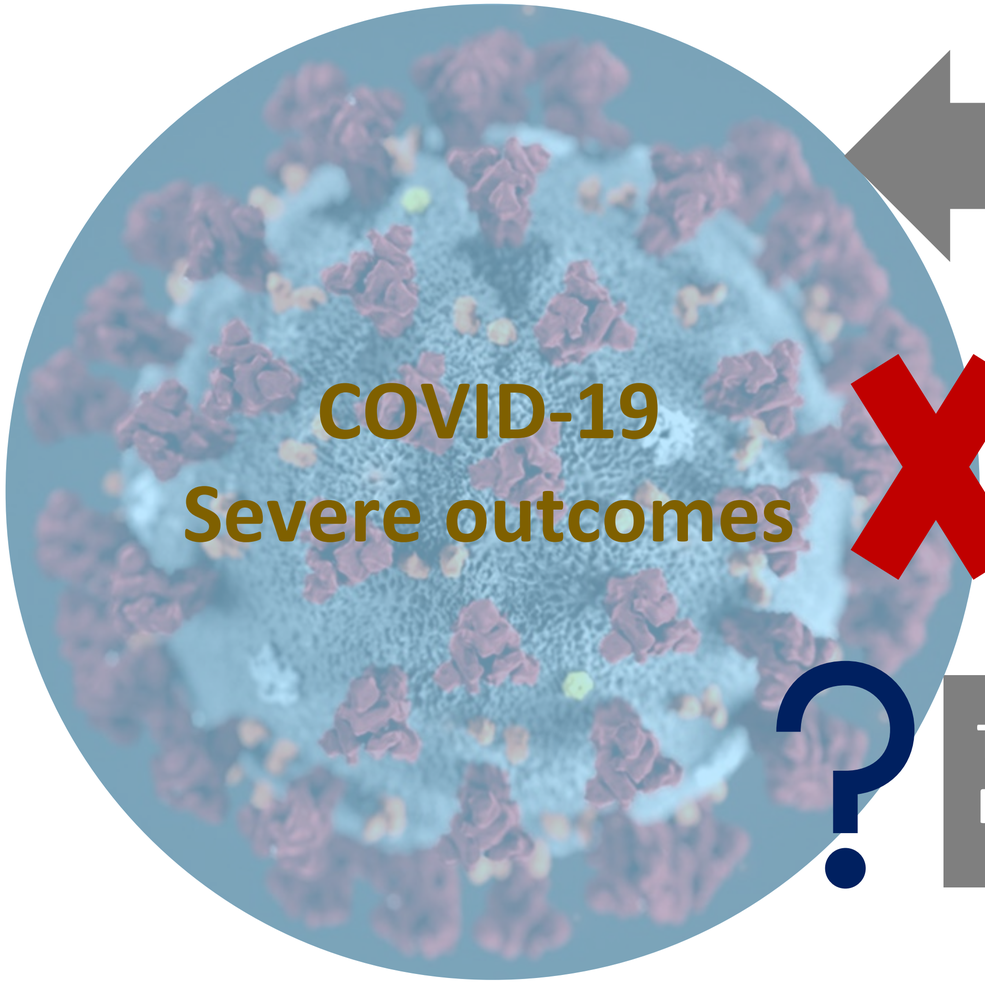
Clinical Medicine In-Press Preview COVID-19 Transplantation Free access | 10.1172/JCI141777

Favorable outcomes of COVID-19 in recipients of hematopoietic cell transplantation

Gunjan L. Shah,[1] Susan DeWolf,[1] Yeon Joo Lee,[2] Roni Tamari,[1] Parastoo B. Dahi,[1] Jessica A. Lavery,[3] Josel D. Ruiz,[1] Sean M. Devlin,[3] Christina Cho,[1] Jonathan U. Peled,[1] Ioannis Politikos,[1] Michael Scordo,[1] N. Esther Babady,[4] Tania Jain,[1] Santosha Vardhana,[5] Anthony F. Daniyan,[6] Craig S. Sauter,[1] Juliet N. Barker,[1] Sergio A. Giralt,[1] Cheryl Goss,[7] Peter Maslak,[8] Tobias M. Hohl,[2] Mini Kamboj,[2] Lakshmi Ramanathan,[9] Marcel R.M. van den Brink,[1] Esperanza B. Papadopoulos,[1] Genovefa A. Papanicolaou,[2] and Miguel-Angel Perales[1]

First published September 8, 2020 - More info

Conclusion: stay vigilant but don’t delay cancer treatment



Age, race and comorbidities

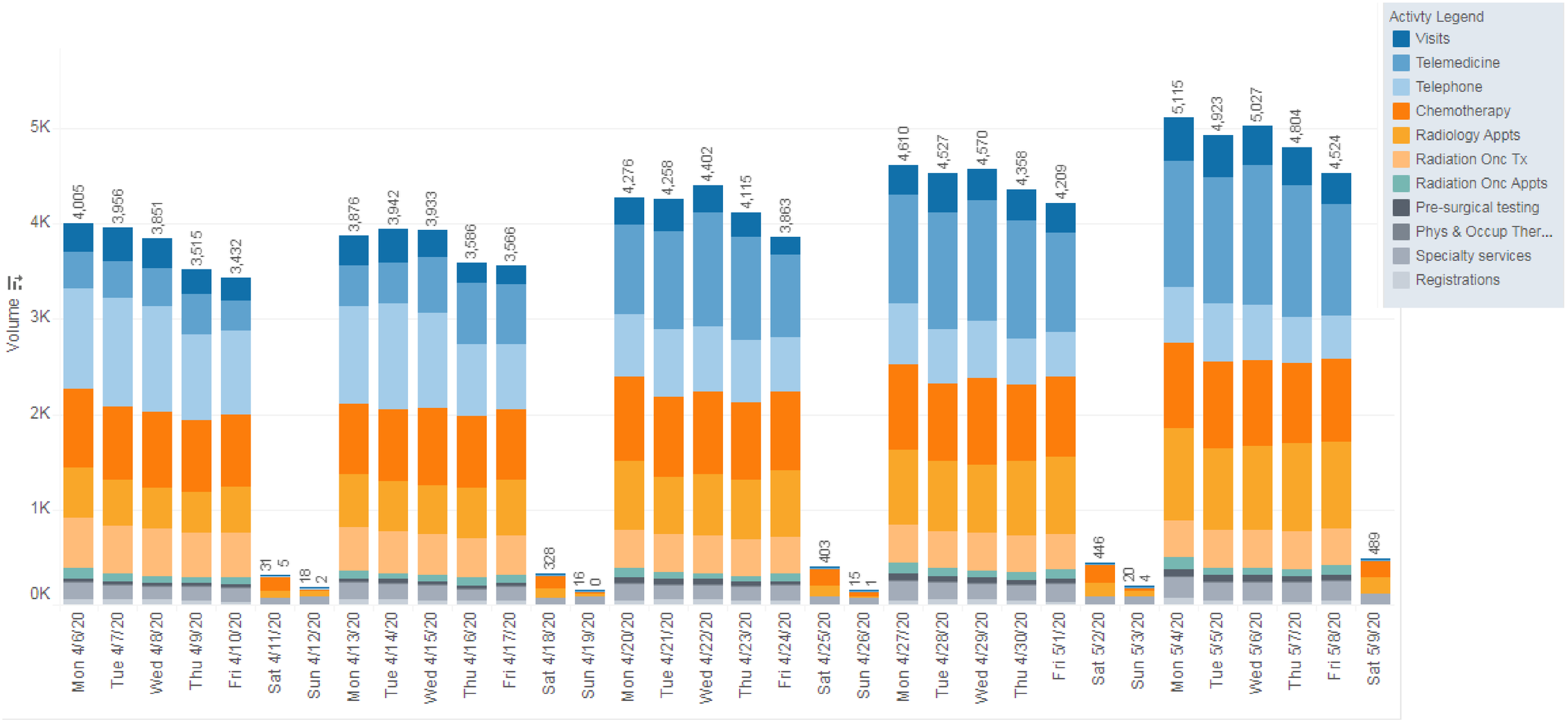
Major surgery
Chemotherapy
Metastatic disease

Treatment specific risks
Primary disease of a target organ

Outpatient Response: The Plan

- Leverage telemedicine technology to convert in-patient appointments to a virtual setting to enable continued care
- Develop and deploy a system for centralized outpatient follow-up of COVID+ patients
- Limit inadvertent entry of COVID+ patients into outpatient care path

Outpatient Activity + Conversion to Telemedicine



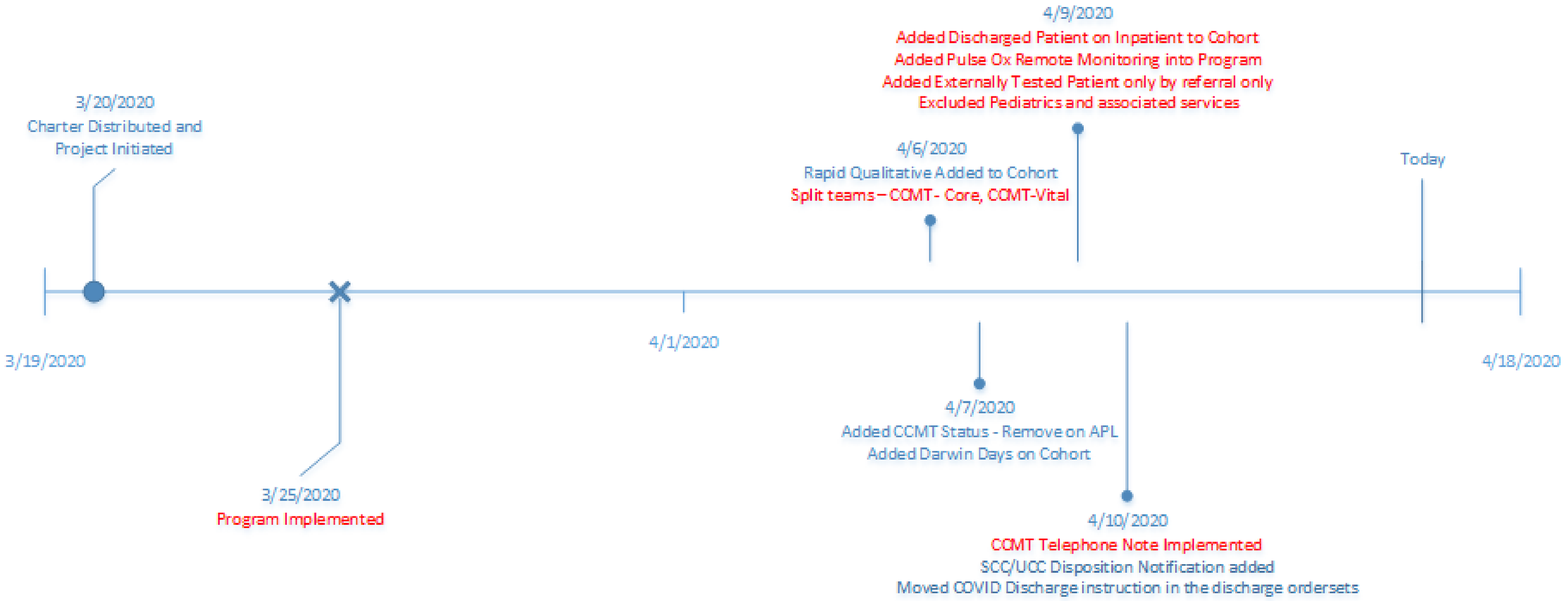
COVID-19 Cohort Management Program

- Follow up with patients that are confirmed COVID-19 positive outpatient
- Ensure patients are continuing to recover post-discharge
- To proactively monitor and direct patient that require immediate response/treatment
- To guide clinical teams as to when patients are ready to come off isolation and potentially re-enter the care pathway

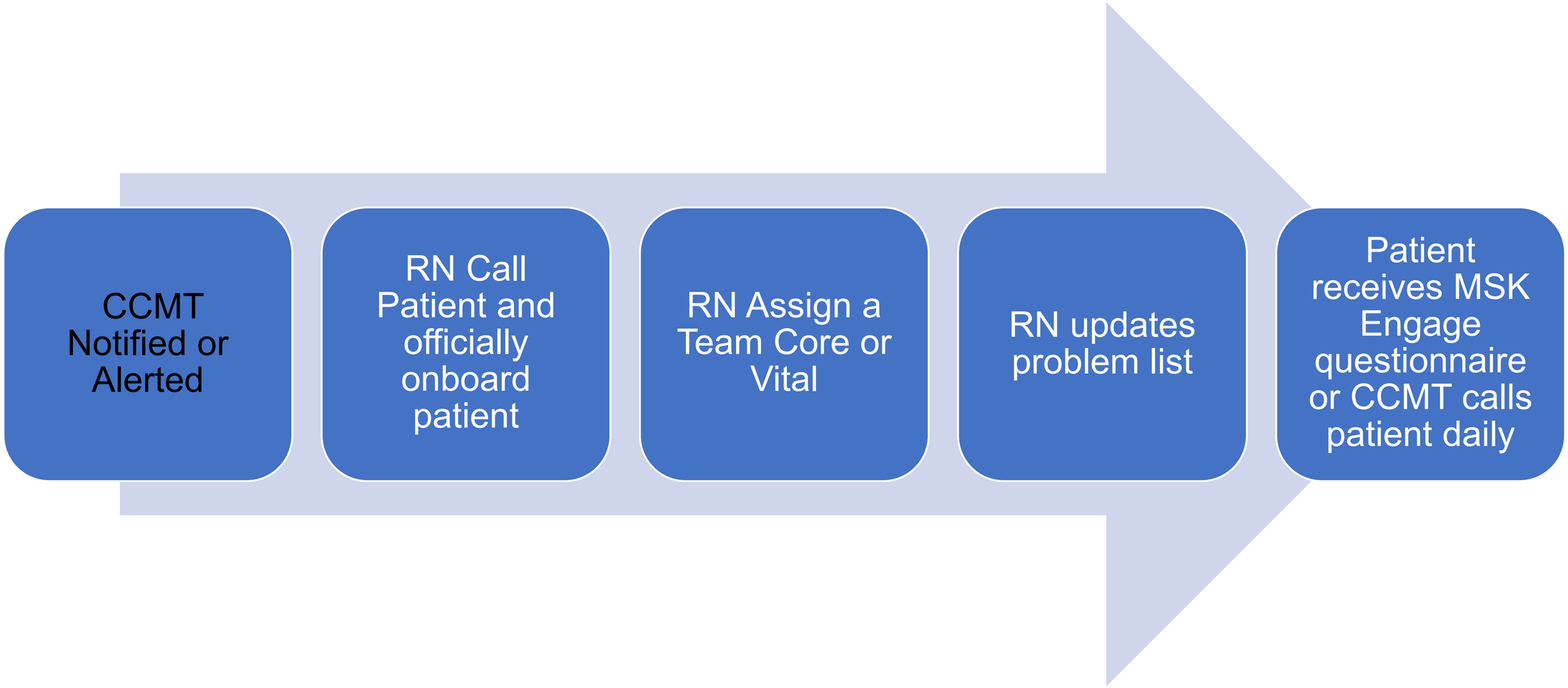
COVID-19 Cohort Management Program

- Allows for follow-up with patients confirmed COVID-19 positive in an outpatient setting
- Ensures continued recovery post-discharge
- Leverages existing technology to proactively monitor and direct patients requiring immediate response
- Guides clinical teams as to when patients are ready to come off isolation and potentially re-enter the care pathway

COVID-19 Cohort Management Program



COVID-19 Cohort Management Program



Video for patients - https://www.mskcc.org/cancer-care/patient-education/covid-19-management-program
CCMT Resources Page - https://one.mskcc.org/sites/pub/pe/Pages/covid-19.aspx#TabH2Group6

COVID-19 Cohort Management Program

Patient questionnaire sends Red/Yellow Alert

CCMT will call patient

Instruct patient on management or escalate care (as needed)

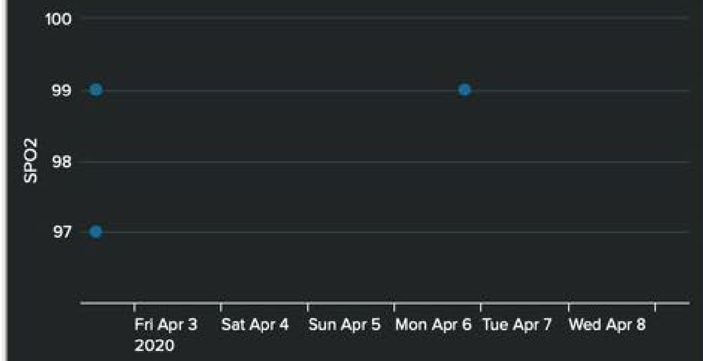
If no alert

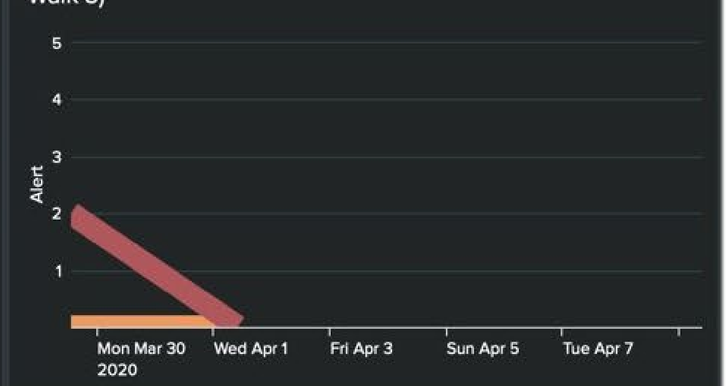
CCMT checks MSKEngage to ensure patient did not fill it out

If patient did not fill it out, CCMT will call patient

COVID-19 Cohort Management Program

iHealth Data for MRN: [redacted]





	Time	Heart Rate	SPO2	DeltaSPO2	AlertTriggered
1	2020-04-06T19:16:54-04:00	68.0	99.0	2.0	No
2	2020-04-02T13:24:42-04:00	76.0	97.0	-2.0	No
3	2020-04-02T13:14:05-04:00	71.0	99.0	0.0	No
4	2020-04-02T13:12:20-04:00	83.0	99.0		No

1m ago

MSKEngage Data for MRN: [redacted]

SubmissionDate	What was the highest temperature you've had?	Temp Alert	Have you been coughing?	Cough Alert	Do you feel like you've had a fever?	Fever Alert	Difficulty breathing while not moving?	Breating Alert	Difficulty breathing while walking short distances?	Walking short dist Alert
2020-04-01 09:51:44.963	100 to 101.9° F (37.8 to 38.8° C)	No	Yes	No	n/a	n/a	No	No	No	No
2020-03-29 12:54:32.153	102° F or higher (38.9° C or higher)	Yes	Yes	No	n/a	n/a	No	No	No	No

Results and Outcomes- 3/26-6/17/2020

- **963** patients enrolled and filled out 10,044 questionnaires.
- Response rate for the daily questionnaire was 53%; the other 47% underwent telephone assessment.
- 13% survey results triggered a high-risk alert that required immediate intervention by the CCMT
- Of the 2,816 phone calls made, 3% resulted in a referral to an acute care setting for further assessment.

Results and Outcomes

- In a patient satisfaction survey (n=239)
  - 92% would recommend this program to similar patients.
  - 92% felt the time and effort to report symptoms was worth it.
  - 93% of those with a pulse oximeter agreed that it made them feel more comfortable being at home.
  - 90% felt connected and safe with the Covid-19 Cohort Management team (despite only interacting with them remotely).
  - 89% felt participating in this program helped them feel more connected to MSK.

Next steps – Building on our Success

- Awarded $50,000 Patient and Family-Centered Care Grant- $50,000
  - Next Generation Cancer Care Delivery at MSK- Caring for Patients at Home with Digital Technology
  - Plan is to expand the use of digital technology tools and use stethoscopes and BP monitoring to test the efficacy and clinical utility in the COVID CMT

Emerging Issues

- Delay in cancer diagnosis and potential for stage migration
- Local treatments decreasing number of patients willing to travel for cancer care

Conclusions

- Rapid iteration was required during this critical time
- Took a team approach
- Thank you!