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A Comparative Analysis of Breast and Colon/Rectum Cancer Screening Pre- Pandemic and During the Pandemic

DISCLOSURES



- I have no financial obligations or other conflicts of interest to disclose.

BACKGROUND



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COVID-19 ONSET IN HI

- Statewide shutdown order
- **Cessation of elective procedures**

MARCH
2020

CAUTIOUS REOPENING

- Low-risk facilities and businesses reopen
- **Elective procedures slowly resume**

MAY
2020

VACCINES PHASE 1

- Phase 1a: HCP and long-term care residents
- Phase 1b: frontline workers, adults ≥ 75
- Phase 1c: adults > 65 , high risk population

DECEMBER
2020

VACCINES PHASE 2

- General public adults ≥ 16

APRIL
2021

BACKGROUND



- Significant decrease in STEMI PCIs, longer treatment times at centers in NY
- Significant decrease in stroke code activations and statistically significant increase in severity of stroke symptoms in LAC
- Models predict a 2% increase in cumulative breast cancer mortality due to a 12 month screening delay
- Models predict a 7.6% increase in colorectal tumor control risk and 24.7% increase in distal metastases due to a 6 month screening delay

METHODS



- IRB approved observational, single- center retrospective study conducted at QMC
- Patients who underwent colon/rectal cancer and breast cancer screening from **January 1, 2019 to June 30, 2021**
 - **Pre- pandemic:** January 1, 2019 to February 1, 2020
 - **Pandemic:** March 1, 2020 to December 31, 2020
 - **Pandemic- Vaccine Availability:** January 1, 2021 to June 30, 2021
- Data obtained from the Oncology Data Registry and electronic medical records

METHODS: DATA FIELDS



- Name
- Medical Record Number
- Zip Code
- Age
- Gender/Sex
- Race/Ethnicity
- AJCC Stage
- Tumor Histology
- Date of Cancer Diagnosis
- Date of first contact at medical center for cancer care
- Cancer treatment date
- Cancer status
- Vital status
- Date of last contact
- Insurance status
- Average household income
- Average educational level

METHODS



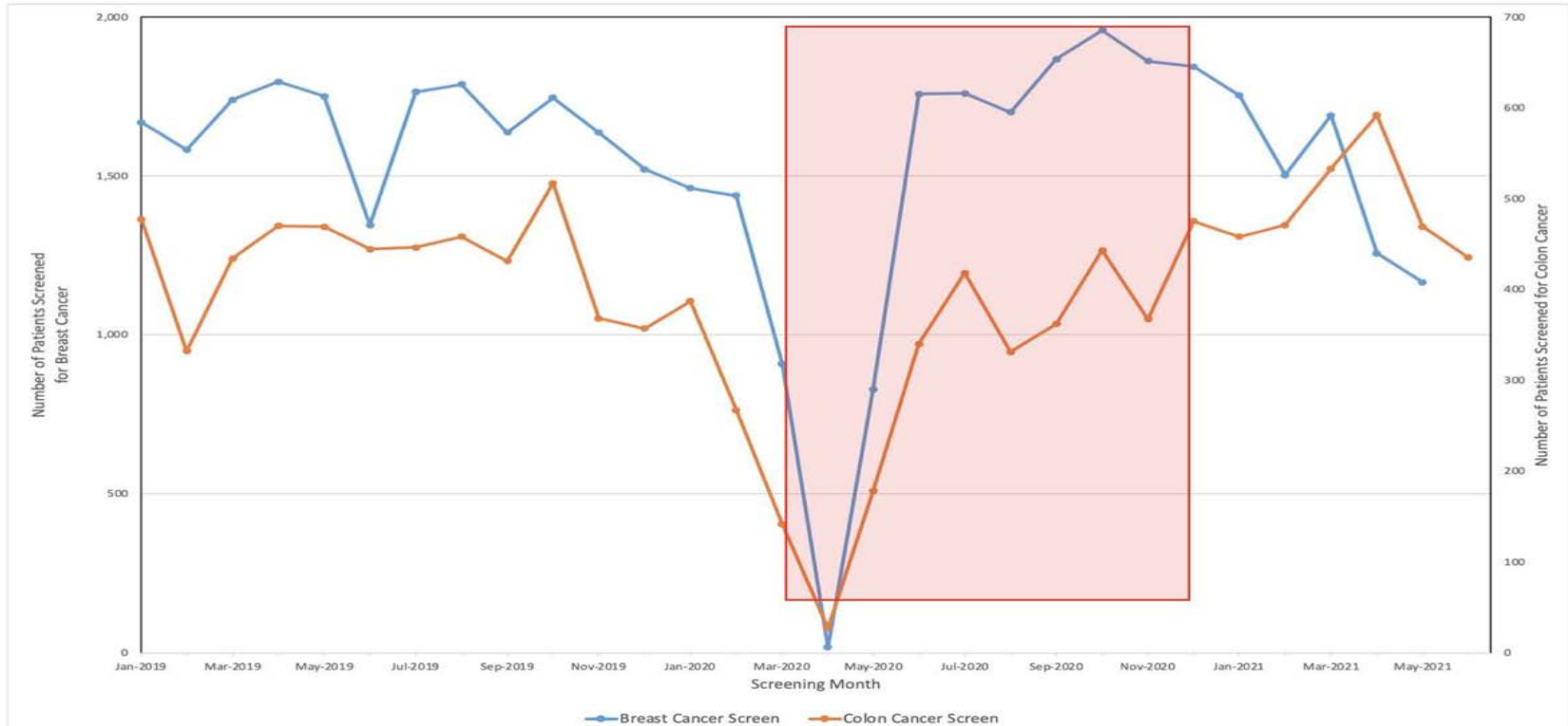
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- Descriptive statistics applied to evaluate demographic data
- Entire QMC patient population for the three periods were evaluated
 - Observations were therefore not a sample
 - Statistical testing was not applied

RESULTS



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RESULTS



- Demographics:
 - For breast and colon cancer there were no differences in age at diagnosis and race
 - No differences in gender for colon cancer
 - Compared throughout all three periods of evaluation

RESULTS



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Number of Patients Diagnosed by Time Period

	Total Number of Patients Diagnosed	Breast Cancer (N)	Breast Cancer (%)	Colorectal Cancer (N)	Colorectal Cancer (%)
Pre-Pandemic	700	459	48.6%	241	49.2%
Pandemic	427	286	30.3%	141	28.8%
Vaccine Available	307	199	21.1%	108	22.0%

RESULTS



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Pre-Pandemic and Vaccine Available: January through June of Each Period (i.e. similar 6 month periods)

	Total Number of Patients Diagnosed	Breast Cancer (N)	Breast Cancer (%)	Colorectal Cancer (N)	Colorectal Cancer (%)
Pre-Pandemic (Jan 2019 - Jun 2019)	289	195	49.5%	94	46.5%
Vaccine Available (Jan 2021 - Jun 2021)	307	199	50.5%	108	53.5%

	Proportion Diagnosed Pre-Pandemic Jan-Jun 2019	95% Confidence Interval
Breast Cancer	0.49	(0.46 - 0.54)
Colorectal Cancer	0.47	(0.40 - 0.53)

RESULTS



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Number of Diagnosis By Stage and Period

Breast Cancer

	Pre-Pandemic N (%)	Pandemic N (%)	Vaccine Available N (%)
Stage 0	59 (14.8%)	51 (19.7%)	35 (17.6%)
Stage 1	192 (48.2%)	102 (39.4%)	111 (55.8%)
Stage 2	19 (4.8%)	11 (4.2%)	22 (11.1%)
Stage 3	3 (.8%)	10 (3.9%)	5 (2.5%)
Stage 4	7 (1.8%)	3 (1.2%)	8 (4.0%)
Unknown	118 (29.6%)	82 (31.7%)	18 (9.0%)

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Colorectal Cancer

	Pre-Pandemic N (%)	Pandemic N (%)	Vaccine Available N (%)
Stage 0	3 (1.3%)	1 (.7%)	1 (.9%)
Stage 1	35 (15.%)	15 (11.1%)	11 (10.2%)
Stage 2	52 (22.2%)	32 (23.7%)	23 (21.3%)
Stage 3	55 (23.5%)	23 (17.%)	30 (27.8%)
Stage 4	20 (8.5%)	24 (17.8%)	17 (15.7%)
Unknown	69 (29.5%)	40 (29.6%)	26 (24.1%)

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Stage 0,1 vs Stage 2-4

January-June of Vaccine Available Period compared to January-June of Pre-Pandemic

Breast Cancer

	Pre-Pandemic N (%)	Vaccine Available N (%)
Stage 0 , 1	122 (69.7%)	146 (73.4%)
Stage 2-4	12 (6.9%)	35 (17.6%)
Unknown	41 (23.4%)	18 (9.1%)

Colorectal Cancer

	Pre-Pandemic N (%)	Vaccine Available N (%)
Stage 0 , 1	15 (16.3%)	12 (11.1%)
Stage 2-4	50 (54.4%)	70 (64.8%)
Unknown	27 (29.4%)	26 (24.1%)

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Time in Days between Screen and Treatment

Breast Cancer

		N	Mean	Std Dev	Minimum	Maximum	Lower Quartile	Median	Upper Quartile	IQR (Inter Quartile Range)
Diagnosis Period	Pre-Pandemic	132	37.5	54.4	1	388	12	21	40.5	12 - 40.5
	Pandemic	92	129.3	171	1	631	14	28	267.5	14 - 268
	Vaccine Available	58	122.1	197.3	7	848	20	39.5	80	20 - 80

Colorectal Cancer

		N	Mean	Std Dev	Minimum	Maximum	Lower Quartile	Median	Upper Quartile	IQR (Inter Quartile Range)
Diagnosis Period	Pre-Pandemic	26	40.1	38.7	3	148	7	23	69	7 - 69
	Pandemic	14	81.4	132.2	3	512	10	34	83	10 - 83
	Vaccine Available	13	70.7	87.2	15	341	27	35	79	27 - 79

DISCUSSION



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- The onset of the pandemic negatively affected screening for both breast and colorectal cancer.
- Delayed screening appears to have translated into more advanced stages of cancer at the time of diagnosis
- System factors that affected screening may have affected time to treatment

- **Limitations:**
 - Retrospective analysis that was obtained through administrative databases
 - Unknown stages
 - Lag time associated with data entry into Oncology Data Registry
 - Causality cannot be determined

FUTURE RESEARCH



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- Obtain additional data through and beyond 2022 to determine if trends in late stage diagnosis and delayed treatment continue
- Compare QMC data to National Cancer Database once updated with 2021 cases

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SUPPLEMENTARY



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Additional Demographic Data

RESULTS



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Race of Patients Diagnosed with Breast Cancer

Race	Pre-pandemic	Pre-pandemic	Pandemic	Pandemic	Pandemic – Vaccine Available	Pandemic – Vaccine Available
	n	%	n	%	n	%
American Indian or Alaska Native	3	75.0%	1	25.0%	0	0.0%
Asian	265	48.5%	170	31.1%	112	20.5%
Black or African American	6	60/0%	4	40.0%	0	0.0%
Native Hawaiian or Other Pacific Islander	114	48.3%	67	28.4%	55	23.3%
White	70	48.6%	43	29.9%	31	21.5%
Not Reported	1	33.3%	1	33.3%	1	33.3%
Total	459		286		199	

RESULTS



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Race of Patients Diagnosed with Colorectal Cancer

Race	Pre-pandemic	Pre-pandemic	Pandemic	Pandemic	Pandemic – Vaccine Available	Pandemic – Vaccine Available
	n	%	n	%	n	%
American Indian or Alaska Native	0	0.0%	0	0.0%	1	100.0%
Asian	139	50.7%	81	29.6%	54	19.7%
Black or African American	4	80.0%	0	0.0%	1	20.0%
Native Hawaiian or Other Pacific Islander	46	43.4%	33	23.4%	27	25.5%
White	52	50.5%	26	25.2%	25	24.3%
Not Reported	0	0.0%	1	100.0%	0	0.0%
Total	241		141		108	

Age at Time of Diagnosis for Breast Cancer

Time Period	n	Mean	SD	Minimum	Maximum	Lower Quartile	Median	Upper Quartile	IQR
Pre-Pandemic	459	62.4	13.0	29.0	>89	53.0	63.0	71.0	53 - 63
Pandemic	286	61.2	13.7	28.0	>89	51.0	62.5	71.0	51 - 71
Pandemic-Vaccine Available	199	62.7	14.2	27.0	>89	54.0	64.0	72.0	54 - 72

Age at Time of Diagnosis for Colorectal Cancer

Time Period	n	Mean	SD	Minimum	Maximum	Lower Quartile	Median	Upper Quartile	IQR
Pre-Pandemic	241	65.5	13.3	19.0	> 89	57.0	64.0	74.0	57 - 74
Pandemic	141	63.6	13.9	22.0	> 89	54.0	64.0	73.0	54 - 73
Pandemic-Vaccine Available	108	62.6	14.0	19.0	> 89	53.5	62.5	72.5	53 - 73

Gender of Patients Diagnosed with Colorectal Cancer

Time Period	Total Number of Patients	Female (n)	Female (%)	Male (n)	Male (%)
Pre-pandemic	241	110	45.6%	131	54.4%
Pandemic	141	69	48.9%	72	51.1%
Pandemic – Vaccine Available	108	45	41.7%	63	58.3%