

Temporal Trends in Stage at Diagnosis for Screening-Amenable Cancers in the Houston Methodist Neal Cancer Center Catchment Area

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1. Background

Screening-amenable cancers are defined as those in which patient outcomes can be improved through early stage and/or presymptomatic detection. Female breast cancer, lung and bronchus cancer, colorectal cancer, and cervical cancer can be detected during routine recommended screening. Early onset (E.O.) cancers in adults are also of increasing concern in the cancer community, and screening recommendations currently restricted to certain age groups may not be optimal for early detection in younger adults.

2. Goals

Our goal is to estimate the proportion of screening-amenable cancers diagnosed at an early vs. late stage in the Houston Methodist Neal Cancer Center catchment area (HMNCC-CA). We will compare these proportions to those at the national level. In addition to metrics for all adults, we also examine stage at diagnosis among E.O. screening-amenable cancers.

3. Solutions and Methods

Definitions: We categorized four screening-amenable cancers into early (*in situ* and localized tumors) and late stage (regional and distant tumors). Tumors of unknown stage were excluded. We examined two different age groups: all adults (diagnosed at 20 years and older) and E.O. adults (diagnosed at 20-49 years).

Timeframe: We compared grouped diagnosis years 2015-2019 to 2018-2022 to ascertain any change over time, considering the well-documented decrease in cancer diagnoses in 2020 due to delays in screening and decreased access to health care during the COVID-19 pandemic.

Metrics: We used SEER*Stat software to collate tumor counts in each category and then calculated proportions.

Data Sources: For HMNCC-CA metrics, we used the *SEER Research Plus Limited-Field Database (2000-2022)*, and for U.S. metrics, we used the *U.S. Cancer Statistics Public Use Research Database, 2024 Submission (2001-2022)*.

4. Outcomes

Among all adult screening-amenable cancer cases in diagnosis years 2018-2022, there is a higher proportion of late-stage diagnoses in HMNCC-CA than in the U.S. overall (see Figure: Table 1, Section 1). Among cancers diagnosed between 2018-2022 in HMNCC-CA, excepting cervical cancer, E.O. cancers were more often diagnosed at a late stage than diagnoses among all adults (Table 1, Sections 1 and 3).

When compared to diagnosis years 2015-2019, excepting lung cancer, a higher proportion of screening-amenable cancers in HMNCC-CA were diagnosed at a late stage in 2018-2022, suggesting a possible impact of the COVID-19 pandemic on the stage of diagnosis of these cancers (Table 1, Sections 1 and 2).

This pattern was the same for the U.S., except a slightly higher proportion of female breast cancers was diagnosed at a late stage in 2015-2019 in the U.S (Table 1, Sections 1 and 2).

5. Lessons Learned and Future Directions

The HMNCC Cancer Prevention and Control program will continue to evaluate temporal trends in the coming years as new data are available to further assess any possible effects of the COVID-19 pandemic on cancer diagnoses. We will also conduct these analyses at the census-tract level using the customized dataset we have received directly from the Texas Cancer Registry for strategic planning and goal setting. We will identify regions of our catchment area that are geographical “hot spots” for late-stage diagnoses and use this information for cancer prevention and control interventions and community-engaged planning efforts.

Figure: Proportion of Screening Amenable Cancers Diagnosed Early vs. Late Stage, HMNCC-CA and U.S.

Table 1. Proportion of Screening Amenable Cancers Diagnosed Early vs. Late Stage, HMNCC-CA and US								
1. All Adult (20+) Cancers, 2018-2022								
	Female Breast		Lung & Bronchus		Colon & Rectum		Cervix Uteri	
	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US
Early Stage %	70.3%	74.0%	25.8%	30.6%	33.7%	36.8%	43.5%	43.9%
Late Stage %	29.7%	26.0%	74.2%	69.4%	66.3%	63.2%	56.5%	56.1%
2. All Adult (20+) Cancers, 2015-2019								
	Female Breast		Lung & Bronchus		Colon & Rectum		Cervix Uteri	
	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US
Early Stage %	71.3%	73.4%	25.3%	27.8%	36.7%	39.7%	46.0%	47.0%
Late Stage %	28.7%	26.6%	74.7%	72.2%	63.3%	60.3%	54.0%	53.0%
3. Early Onset (20-49) Adult Cancers, 2018-2022								
	Female Breast		Lung & Bronchus		Colon & Rectum		Cervix Uteri	
	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US	HMNCC-CA	US
Early Stage %	61.9%	65.8%	20.7%	21.0%	28.4%	33.0%	52.6%	55.0%
Late Stage %	38.1%	34.2%	79.3%	79.0%	71.6%	67.0%	47.4%	45.0%