Incidence of cachexia and health care resource use (HCRU) in patients with breast, colorectal, lung, pancreatic, and prostate cancers

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Introduction

- Cachexia in patients with cancer is characterized by involuntary weight loss, muscle atrophy, increased lipolysis and energy expenditure, and reduced appetite.[1]
- It can lead to a decreased quality of life, reduced cancer treatment effectiveness, increased susceptibility to cancer treatment side effects, and increased cancer-related mortality.[2,3]
- Based on available scientific literature from clinical studies, cachexia affects ~50–80% of patients with advanced cancer and ~20% of cancer deaths are attributable to cachexia.[3,4]
- Cachexia is likely to be under-diagnosed due to inconsistent application of diagnostic criteria in clinical practice as well as challenges when interpreting changes in bodyweight (for example, due to obesity, edema, and/or ascities).[5,6]
- There are also limited data on how cachexia may impact health care resource use (HCRU) in patients with cancer.[7]

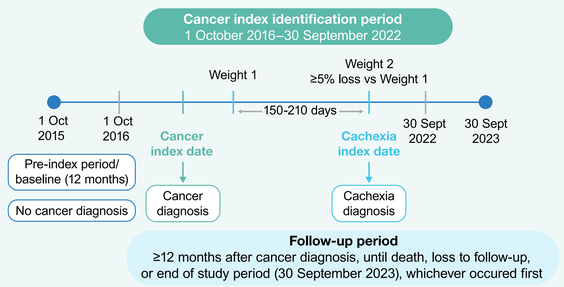
Objectives

- To estimate the incidence of cachexia in patients newly diagnosed with breast, colorectal, lung, pancreatic, and prostate cancer.
- To compare measures of health care resource utilization in patients diagnosed with cancer who do and do not have cachexia.

Methods

- This retrospective, observational, cohort study integrated electronic health record and administrative claims data using the Optum® Market Clarity database (**Figure 1**).

Figure 1: Study design



- Inclusion and exclusion criteria are shown in **Table 1**.
- Cachexia was defined as ≥5% loss in bodyweight calculated from 2 bodyweight measurements ~6 months apart.[8]
- The cachexia index date was the earliest date after the cancer index date on which ≥5% loss of bodyweight was recorded.
- In the control group, the cachexia index date was the date after the cancer index date on which <5% loss of bodyweight was recorded.
- The primary outcome was the number of health care visits per-patient-per-month (PPPM; 30 days) during the 12 months post-cachexia index date.
- Inverse probability of treatment weighting was used to adjust for confounding between cohorts (cachexia vs no cachexia) at the cachexia index date.
- Student's *t*-test was used to compare HCRU between cohorts (cachexia vs no cachexia) by tumor type.

Table 1: Eligibility criteria

Inclusion criteria

- Diagnosed with ≥1 malignant solid tumor of interest between 1 October 2016 and 30 September 2022, as identified by the following ICD-10-CM codes in ≥1 claim or encounter in a hospital inpatient setting, or ≥2 claims or encounters in selected outpatient setting ≥30 days apart:
  - Breast cancer (ICD-10 codes C50.x)
  - Colorectal cancer (ICD-10 codes C18.x-C21.x, C49.x, C7A.x)
  - Lung cancer (ICD-10 codes C34.x, C7A.090)
  - Pancreatic cancer (ICD-10 codes C25.x)
  - Prostate cancer (ICD-10 codes C61.x)
- ≥19 years of age at cancer index date (ie, ≥18 years of age at the beginning of the 12 months before cancer index date)
- EHR enrollment (ie, EHR activity) for 12 months before cancer index date
- ≥2 bodyweight assessments 150–210 days apart in the 12 months before cancer index
- ≥2 bodyweight assessments 150–210 days apart with ≥1 of those assessments occurring in the 12 months after cancer index
- EHR enrollment for 12 months after cancer index date or death, whichever occured first

For analyses related to HCRU:

- Continuous health plan enrollment for 12 months before cachexia index date
- Continuous health plan enrollment for ≥1 month after cachexia index or until death, whichever occured first

Exclusion criteria

- In the 12 months before the cancer index date, ≥1 claim or encounter in any setting with a diagnosis of:
  - Any solid tumor other than the index (incident cancer) diagnosis (ICD-10 codes C00.x-C75.x or C7A.x)
  - Any hematologic malignancy (ICD-10 codes C81.x-C96.x)
  - Any cancer with metastasis (ICD-10 codes C77.x, C78.x, C79.x, C7B.x)
  - Any other cancer type (ICD-10 codes C45.x, C46.x, C76.x, C80.x, C96.x)
- History of cachexia in the pre-index period (ie, patient met criteria for cachexia in the 12 months before the cancer index date, as defined below) but not in the post-index period:
  - 2 bodyweight measurements within 150–210 days of each other
  - 2nd bodyweight was ≤95% of the first bodyweight measurement
- Unknown gender
- Prostate cancer cohort only: Female gender

EHR=electronic health record; HCRU=health care resource use; ICD-10-CM=International Classification of Diseases, 10th Revision, Clinical Modification

Results

INCIDENCE

- A total of 27,428 patients with a malignant solid tumor were included.
- Within 12 months of receiving a cancer diagnosis, cachexia was observed in 38% of patients.

BREAST CANCER

Population size: 10,500
Incidence of cachexia: 34%

Demographics	With cachexia n=3595	Without cachexia n=6905	P value
Female, %	99	99	0.31
Age, mean (SD), y	65 (12)	65 (12)	0.74
Race, %			0.87
African American	13	12	
Asian	2	2	
White	81	82	
Other/Unknown	4	4	

HCRU	With cachexia n=3595	Without cachexia n=6905	P value
Inpatient	0.98	0.80	**0.05**
Outpatient	5.11	3.46	**<0.0001**
Office	3.69	3.44	**0.02**
Home	0.67	0.83	**0.05**
Telehealth	0.03	0.03	0.51
Other	4.75	3.85	**<0.0001**
Overall	15.22	12.41	**<0.0001**

COLORECTAL CANCER

Population size: 3304
Incidence of cachexia: 51%

Demographics	With cachexia n=1683	Without cachexia n=1621	P value
Female, %	52	52	0.92
Age, mean (SD), y	66 (13)	66 (13)	0.83
Race, %			0.98
African American	11	11	
Asian	1	1	
White	83	83	
Other/Unknown	5	5	

HCRU	With cachexia n=1683	Without cachexia n=1621	P value
Inpatient	2.72	2.32	0.21
Outpatient	5.36	3.93	**<0.0001**
Office	4.38	3.55	**<0.001**
Home	1.51	0.84	**<0.0001**
Telehealth	0.02	0.02	0.37
Other	6.49	5.63	0.07
Overall	20.48	16.30	**<0.0001**

LUNG CANCER

Population size: 3345
Incidence of cachexia: 55%

Demographics	With cachexia n=1845	Without cachexia n=1500	P value
Female, %	57	56	0.55
Age, mean (SD), y	69 (10)	69 (10)	0.94
Race, %			0.93
African American	10	10	
Asian	1	1	
White	86	86	
Other/Unknown	3	3	

HCRU	With cachexia n=1845	Without cachexia n=1500	P value
Inpatient	6.92	5.45	**0.03**
Outpatient	6.89	6.14	0.07
Office	4.36	4.29	0.78
Home	1.89	1.89	1.00
Telehealth	0.02	0.02	0.74
Other	9.52	7.53	**<0.001**
Overall	29.59	25.32	**<0.001**

HEALTH CARE RESOURCE USE

- Across all tumor types, hospital outpatient and office visits PPPM were numerically greater in patients with vs without cachexia, with statistical significance varying by tumor type.
- Other differences in hospital inpatient, home, telehealth, and other visits were also observed.

PANCREATIC CANCER

Population size: 475
Incidence of cachexia: 74%

Demographics	With cachexia n=350	Without cachexia n=125	P value
Female, %	52	54	0.72
Age, mean (SD), y	67 (12)	67 (13)	0.90
Race, %			0.95
African American	15	17	
Asian	1	1	
White	79	79	
Other/Unknown	5	4	

HCRU	With cachexia n=350	Without cachexia n=125	P value
Inpatient	8.25	12.50	0.13
Outpatient	10.80	8.72	0.18
Office	6.41	2.66	**<0.0001**
Home	2.49	1.47	0.09
Telehealth	0.05	0.02	0.21
Other	12.60	14.08	0.58
Overall	40.59	39.45	0.83

PROSTATE CANCER

Population size: 9804
Incidence of cachexia: 29%

Demographics	With cachexia n=2865	Without cachexia n=6939	P value
Male, %	100	100	–
Age, mean (SD), y	69 (9)	69 (9)	0.25
Race, %			0.94
African American	15	15	
Asian	1	1	
White	79	80	
Other/Unknown	4	4	

HCRU	With cachexia n=2865	Without cachexia n=6939	P value
Inpatient	1.46	0.69	**<0.0001**
Outpatient	3.14	2.50	**<0.0001**
Office	3.27	3.06	**0.03**
Home	0.64	0.43	**<0.01**
Telehealth	0.02	0.01	0.15
Other	4.53	3.20	**<0.0001**
Overall	13.04	9.89	**<0.0001**

CONCLUSIONS

- Incidence of cachexia was highest in patients with pancreatic cancer followed by lung and colorectal cancer, and lowest in breast and prostate cancers.
- Patients with cachexia used more health care resources, highlighting a high clinical and economic burden in this population.

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DISCLOSURES

IA: honoraria and speakers' bureau: Pfizer; stock and other ownership interests: Eli Lilly, Merck, Novo Nordisk. **SD:** employment: Pfizer Inc; shares: Pfizer Inc. **IJ:** employment: Pfizer Inc; shares: Pfizer Inc. **SC**: Precision AQ™. **TA**: employment: Precision AQ™. **FD**: employment: Pfizer Inc; shares: Pfizer Inc. **OD**: employment: Pfizer Inc; shares: Pfizer Inc.

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