

## Supplemental Material

### Filson et al. Patterns of Care for Medicare Beneficiaries with Metastatic Prostate Cancer.

Supplementary Table 1: Codes used to identify beneficiaries with metastatic disease

ICD-9		ICD-10		Description
Code	Claim count	Code	Claim count	
198	1,892,190	C79	1,273,009	Secondary malignant neoplasm of other and unspecified sites
197	338,001	C78	183,595	Secondary malignant neoplasm of respiratory and digestive organs
199	237,447	C80	54,327	Secondary and unspecified malignant neoplasm of lymph nodes
196	187,807	C77	178,154	Malignant neoplasm, without specification of site
209	8,253	C7B	11,305	Secondary neuroendocrine tumors

ICD: International classification of diseases.

Supplemental Table 2: Construction of the sample of beneficiaries with prostate cancer, observations at the person level

	Sample	Excluded
Developed metastatic disease in 2007-2017 <sup>a</sup>	108,027	
Diagnosis is not based on death certificate or autopsy	107,130	897
Valid diagnosis date and date of birth	105,045	2,085
Adenocarcinoma histology <sup>b</sup>	97,360	7,685
No metastatic claims before diagnosis	94,018	3,342
Age $\geq 66$ at index date	83,210	10,808
Continuous Part A/B coverage	75,676	7,534
No Medicare Advantage enrollment	58,264	17,412
Enrolled in Part D	29,800	28,464

<sup>a</sup>Diagnosed with metastatic disease or had a claim with a diagnosis code for metastases.

<sup>b</sup>Adenocarcinoma code is 814X.

Supplemental Table 3: Characteristics of Medicare beneficiaries included in the sample

	All	Metastases at diagnosis	
		Yes	No
	Mean (SD)/N (%)		
Age	77 (6.9)	78 (7.4)	77 (6.8)
Non-Hispanic white	23,218 (77.9)	3,564 (75.5)	19,654 (78.4)
Non-Hispanic black	3,014 (10.1)	533 (11.3)	2,481 (9.9)
Hispanic	1,901 (6.4)	311 (6.6)	1,590 (6.3)
Other race/ethnicity <sup>a</sup>	1,667 (5.6)	313 (6.6)	1,354 (5.4)
On Medicaid	6,197 (20.8)	1,260 (26.7)	4,937 (19.7)
Gleason 6	3,566 (12.0)	147 (3.1)	3,419 (13.6)
Gleason 7	12,391 (41.6)	3,059 (64.8)	9,332 (37.2)
Gleason unknown	13,843 (46.5)	1,515 (32.1)	12,328 (49.2)
N	29,800	4,721	25,079

Medicare beneficiaries who were diagnosed with late-stage prostate cancer in a SEER catchment area between 2007 and 2017 or beneficiaries diagnosed with early-stage disease who had a claim listing a diagnosis code for metastatic disease between 2007 and 2017.

<sup>a</sup>Non-Hispanic, All other races or unknown

Supplementary Table 4: Results displayed in Figure 1, Treatment and service combinations within the first three years after the index date of diagnosis. SEER prostate cancer cases 2007–2017, linked to Medicare claims through December 31, 2019.

	All patients	Metastases at diagnosis
Other/none		
2015-2018	26.3 (25.5-27.1)	8.6 (7.3-9.9)
2011-2014	25.6 (24.8-26.4)	8.8 (7.4-10.1)
2007-2010	27.4 (26.4-28.5)	9.0 (7.3-10.6)
Hospice only		
2015-2018	8.1 (7.6-8.6)	4.7 (3.7-5.6)
2011-2014	8.3 (7.8-8.8)	5.4 (4.3-6.5)
2007-2010	7.7 (7.1-8.3)	4.7 (3.5-5.9)
ADT only		
2015-2018	36.2 (35.3-37.0)	45.3 (43.0-47.6)
2011-2014	40.9 (39.9-41.8)	56.3 (53.9-58.6)
2007-2010	46.1 (44.9-47.2)	65.5 (62.8-68.2)
ADT/hospice		
2015-2018	6.6 (6.2-7.1)	8.8 (7.5-10.1)
2011-2014	8.2 (7.7-8.7)	12.0 (10.4-13.5)
2007-2010	10.0 (9.3-10.6)	14.2 (12.3-16.2)
Drug/ADT		
2015-2018	19.7 (18.9-20.4)	28.8 (26.8-30.9)
2011-2014	14.2 (13.5-14.8)	15.0 (13.3-16.7)
2007-2010	6.8 (6.2-7.3)	5.5 (4.2-6.8)
Drug/ADT/Hospice		
2015-2018	3.1 (2.8-3.5)	3.8 (2.9-4.7)
2011-2014	2.8 (2.5-3.1)	2.6 (1.9-3.4)
2007-2010	2.1 (1.8-2.4)	1.1 (0.5-1.7)

Supplementary Table 5: Results displayed in Figures 2 and 3, Receipt of antineoplastic drugs and opioids following diagnosis of metastatic prostate cancer for all patients, SEER prostate cancer cases 2007–2017, linked to Medicare claims through December 21, 2019.

	Antineoplastic			Opioids		
	drugs		1 Year 3 Years		1 Year 3 Years	
2007	9.7	15.5	59.2	73.1		
2008	9.9	16.4	61.3	73.5		
2009	9.4	16.9	59.7	73.5		
2010	10.9	20.0	59.7	73.2		
2011	13.9	24.9	61.7	73.8		
2012	15.6	27.7	58.1	72.6		
2013	18.1	28.7	59.5	73.4		
2014	22.0	32.3	58.1	71.6		
2015	23.1	33.0	56.8	70.3		
2016	22.7	33.4	55.1	69.9		
2017	25.9	33.4	51.9	63.5		