Supplemental Online Content

Landon BE, Lam MB, Landrum MB, et al. Opportunities for savings in risk arrangements for oncologic care. *JAMA Health Forum*. 2023;4(9):e233124. doi:10.1001/jamahealthforum.2023.3124

This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1: Codes to identify patients admitted with incident or poor prognosis cancer

Incident	
ICD-9-CM diagnosis codes 140.0x-209.36 except 173.xx	ICD-10-CM diagnosis codes C00.xx-C96.xx except C44.xx
Poor Prognosis	
ICD-9-CM diagnosis codes Lung 162.0x,162.2x,162.3x,162.4x,162.5x,162.8x,162.9x Pancreas 157.0x,157.1x,157.2x,157.3x,157.8x,157.9x Esophagus 150.0x,150.1x,150.2x,150.3x,150.4x,150.5.x,150.8x, 150.9x Stomach 151.0x,151.1x,151.2x,151.3x,151.4x,151.5x,151.6x,151.8x, 151.9x Meninges 192.3x,198.4x,192.1x Brain 191.0x,191.1x,191.2x,191.3x,191.4x,191.5x,191.6x,191.7x, 191.8x,191.9x Spinal 192.0x Liver 155.xx Gallbladder 156.xx Brain Uncertain	ICD-10-CM diagnosis codes Lung C34.xx, C39.xx Pancreas C25.xx Esophagus C15.xx Stomach C16.xx Meninges C70.xx Brain C71.xx Spinal C72.xx Liver C22.xx Gallbladder C23.xx, C24.xx Brain Uncertain

237.5x Leukemia 205.00, 205.01, 205.02,208.00,204.0x Non-Hodgkin's Lymphoma 200.48,200.78,200.65,200.60,202.00,202.70,202.80-202.88,200.2x The following cancers require a metastatic code within 30 days: CRC 153.xx, 154.xx Prostate 185.xx Breast 174.xx Bladder 188.xx Ovary 183.xx Kidney 189.xx Melanoma 172.xx Uterine 182.xx Metastatic Codes; 197.0x,1971.x,197.2x,197.3x.197.4x,197.5x, 197.6x,197.7x,197.8x,198.0x,198.1x,198.2x,198.3x 198.4x,198.5x,198.6x,198.7x,198.81,198.82,198.89	D43.2x Leukemia C91.xx, C92.xx, C93.xx, C95.xx Non-Hodgkin's Lymphoma C83.xx-C86.xx The following cancers require a metastatic code within 30 days: CRC C18.xx-C20.xx, C26.xx Prostate C61.xx Breast C50.xx Bladder C67.xx, C68.xx Ovary C56.xx, C57.xx Kidney C64.xx, C65.xx Melanoma C43.xx Uterine C54.xx, C55.xx Metastatic Codes; C78.xx, C79.xx

eTable 2. Characteristics of Study Population by Cohort

Appendix Table 2: Characteristics of study population by cohort									
		Incident (2009-2010)		Incident (2016-2017)		Poor Prognosis (2009-2010)		Poor Prognosis (2016-2017)	
		N=247,801		N=333,320		N=258,710		N=369,389	
		%	Adjusted SD	%	Adjusted SD	%	Adjusted SD	%	Adjusted SD
Age	Mean*	73.8	1.53	74.1	1.29	72.6	1.97	72.9	1.70
	<65	12.1	0.05	9.5	0.04	14.8	0.06	12.1	0.05
	65-69	19.2	0.02	20.8	0.03	22.7	0.03	26.5	0.04
	70-74	22.7	0.02	24.9	0.02	20.1	0.01	21.1	0.02
	75-79	19.3	0.01	20.2	0.01	17.5	0.01	17.6	0.02
	80-84	15.4	0.02	13.5	0.02	14.4	0.03	12.3	0.02
	85+	11.3	0.03	11.1	0.03	10.4	0.03	10.4	0.03
Sex	Male	35.6	0.08	38.3	0.09	45.0	0.05	48.8	0.06
Race	White	82.4	0.14	84.0	0.14	80.9	0.15	82.4	0.14
	Black	9.2	0.11	7.9	0.10	9.9	0.11	8.3	0.10
	Hispanic	5.2	0.07	4.1	0.07	5.7	0.07	4.6	0.07
	Other	3.2	0.07	4.0	0.06	3.5	0.07	4.6	0.06
Medicaid status	Full	25.9	0.13	17.0	0.12	27.0	0.13	18.4	0.13
	Partial	9.7	0.03	7.7	0.04	9.9	0.03	7.9	0.04
	Low-income subsidy	38.8	0.14	26.4	0.14	40.1	0.15	28.1	0.15
Cancer type	Breast	21.2	0.08	21.5	0.08	6.5	0.02	6.2	0.02
	Lung	17.9	0.05	15.6	0.05	30.3	0.06	23.9	0.06
	CRC/intestinal	11.0	0.03	9.2	0.03	6.0	0.01	5.2	0.01
	Lymphoma	7.1	0.02	7.2	0.03	13.2	0.04	10.5	0.03
	Leukemia	4.1	0.02	4.0	0.01	3.8	0.03	10.1	0.04
	Pancreatic	3.2	0.01	3.6	0.02	5.2	0.02	5.6	0.02
	Prostate	2.6	0.04	3.5	0.04	3.6	0.02	4.5	0.04
	Other	32.9	0.14	35.4	0.14	31.4	0.08	34.0	0.09

* age in years

s.d. is Variation in Patient Characteristics Across TINs Net of Sampling Error

eTable 3. Adjusted Correlations Between Spending Categories

Appendix Table 3. Adjusted Correlations Between Spending Categories

Period	Cost category	Incident Cohort					Poor Prognosis Cohort				
		Acute Hospital	Chemo	Outpatient Physician	Imaging	Radiation Therapy	Acute Hospital	Chemo	Outpatient Physician	Imaging	Radiation Therapy
2009 - 2010	Chemotherapy	-0.15					-0.35				
	Outpatient Physician	-0.74	0.55				-0.32	0.96			
	Imaging	-0.77	0.63	0.99			-0.63	0.92	0.94		
	Radiation Therapy	-0.77	0.07	0.86	0.80		-0.92	0.47	0.53	0.76	
	Part B Medications	-0.67	0.40	0.75	0.75	0.62	-0.60	0.54	0.55	0.65	0.77
2016 - 2017	Chemotherapy	-0.22					-0.33				
	Outpatient Physician	-0.78	0.44				-0.12	0.89			
	Imaging	-0.83	0.63	0.94			-0.78	0.80	0.72		
	Radiation Therapy	-0.82	0.17	0.95	0.83		-0.99	0.35	0.20	0.82	
	Part B Medications	-0.55	0.05	0.48	0.53	0.45	-0.53	0.17	0.36	0.59	0.62

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	1
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	5
Objectives	3	State specific objectives, including any prespecified hypotheses	6
Methods			
Study design	4	Present key elements of study design early in the paper	7
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	7
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up	7-8
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed	NA
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	9
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	7-9
Bias	9	Describe any efforts to address potential sources of bias	NA
Study size	10	Explain how the study size was arrived at	7-8
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	9-10
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	10-11
		(*b*) Describe any methods used to examine subgroups and interactions	NA
		(*c*) Explain how missing data were addressed	NA
		(*d*) If applicable, explain how loss to follow-up was addressed	NA
		(*e*) Describe any sensitivity analyses	NA
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	11
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	11
		(b) Indicate number of participants with missing data for each variable of interest	NA
		(c) Summarise follow-up time (eg, average and total amount)	7-8
Outcome data	15*	Report numbers of outcome events or summary measures over time	11-13

Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included (*b*) Report category boundaries when continuous variables were categorized (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	12 12-13 NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	disclosure

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.