Metastatic Cancer: Progression, Complications, and CDI Opportunities

Beth Wolf, MD, CPC, CCDS
Medical Director, Health Information Management
Roper St. Francis
Charleston, SC

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Learning Objectives

- Review the pathophysiology of cancer spread
- Identify common metastatic sites
- Recognize complications of metastatic cancer
- Discuss common documentation gaps impacting risk adjustment

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Disclaimer

- Practical information about clinical documentation
- Seek counsel on individual legal and compliance questions

Polling Question 1 (show of hands)

Cancer is the leading cause of death in the United States?

a. True

b. False

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Polling Question 1

Cancer is the leading cause of death in the United States?

a. True

b. False

In 2016,

- Heart Disease caused 635,260 deaths (23%)
- Cancer was second at 598,038 deaths (22%)

https://doi.org/10.3322/caac.21551

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Estimated Cancer Deaths, 2019

- 606,880 (1,700 deaths/day)
  Lung cancer (25%)
  - Women (285,210)
    - Lung (23%)
    - Breast (15%)
    - Colorectal (8%)
  - Men (321,670)
    - Lung (24%)
    - Prostate (10%)
    - Colorectal (9%)

5-year survival (all stages combined)

- Prostate (98%)
- Melanoma of the skin (92%)
- Female breast cancer (90%)

- Lung (19%)
- Esophagus (19%)
- Liver (18%)
- Pancreas (9%)

https://doi.org/10.3322/caac.21551

Pathophysiology of cancer spread

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Multistep process of metastasis

NIH - National Cancer Institute

1. Grows into nearby normal tissue
2. Moves through the walls of nearby lymph nodes or blood vessels
3. Travels through the lymphatic system and bloodstream to other parts of the body
4. Stops in small blood vessels at distant locations

http://www.pathophys.org/metastasis/ https://www.cancer.gov/types/metastatic-cancer

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Multistep process of metastasis

5. Invades the blood vessel walls at distant sites and moves into surrounding tissue
6. Grows in this tissue until tiny tumor forms
7. Causes new blood vessels to grow, which creates a blood supply that allows the tumor to continue growing

http://www.pathophys.org/metastasis/ https://www.cancer.gov/types/metastatic-cancer

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Determination of distant site for metastases

- Route of dissemination
  - Hematogenous
  - Lymphatic
- Seed and soil hypothesis

http://www.pathophys.org/metastasis/ https://www.cancer.gov/types/metastatic-cancer

Common sites of metastases

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Primary	Common site of metastasis					
• Lung	→ Brain	Bone	Lung	Liver	Adrenal	
• Breast	→ Brain	Bone	Lung	Liver		
• Gastric • Pancreatic • Colo-rectal • Ovarian	→		Lung	Liver		Peritoneum
• Kidney	→ Brain	Bone	Lung	Liver	Adrenal	
• Bladder	→	Bone	Lung	Liver		
• Prostate	→	Bone	Lung	Liver	Adrenal	
• Melanoma	→ Brain	Bone	Lung	Liver		Skin/Muscle

www.cancer.gov/types/metastatic-cancer

Brain: Signs and Symptoms of Metastasis

- Generalized (increased intracranial pressure)
- Focal (tumor burden)

Documentation Considerations

- ✓ Cerebral edema
- ✓ Delirium (+/- encephalopathy)
- ✓ Seizures
- ✓ Coma, brain herniation, brain death

Common Primary
Lung
Breast
Melanoma
Renal cell
Colorectal

Bone: Signs and symptoms of metastasis

- Hypercalcemia
- Elevated alkaline phosphatase
- Fracture
- Pain

Documentation Considerations

- ✓ Pathologic fractures
- ✓ Hypercalcemia
- ✓ Spinal cord compression
- ✓ Pancytopenia 2/2 to malignancy

Common Primary
Breast
Lung
Prostate
Renal cell
Colorectal
Multiple Myeloma

Lung: Signs and Symptoms of Metastasis

- Dyspnea, hemoptysis
- Cough
- Wheezes, stridor
- Loss of breath sounds

Documentation Considerations

- ✓ Acute Hypoxic Respiratory Failure
- ✓ Pneumonia (+/- aspiration)
- ✓ Malignant Pleural effusion
- ✓ Superior vena cava syndrome
- ✓ Tracheoesophageal fistula

Common Primary
Breast
Colorectal
Melanoma
Sarcoma
Renal cell

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Liver: Signs and symptoms of metastasis

- Albumen (low)
- Transaminases/LDH/ALP/bili (high)
- Nausea, RUQ pain
- Hepatomegaly, jaundice

Common Primary
Colorectal
Pancreatic
Breast
Lung

Documentation Considerations

- ✓ Cirrhosis
- ✓ Hepatic encephalopathy
- ✓ Metabolic encephalopathy
- ✓ Carcinomatosis
- ✓ Malignant ascites
- ✓ Bacterial peritonitis
- ✓ Coagulopathy
- ✓ Hyponatremia

Cancer morbidity and mortality

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Cancer related admissions

Urgent/unplanned (nearly 75%)

Due to uncontrolled symptoms

- Dyspnea
- Pain
- Neurologic symptoms
- Fever
- Digestive tract – vomiting, jaundice, etc
- Intestinal obstruction

https://dx.doi.org/10.1371%2Fjournal.pone.0120827

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Healthcare utilization and outcomes

Unplanned admissions in patients with advanced cancer

- Average length of stay: **6.3 days**
- 90-day readmission rate: **43.1%**
- 90-day mortality rate: **41.6%**

https://doi.org/10.1002/cncr.30912

Polling Question 2 (show of hands)

When compared to other developed countries, the United States has the most cancer deaths occurring in hospitals.

a. True
b. False

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Polling Question 2

When compared to other developed countries, the United States has the most cancer deaths occurring in hospitals.

a. True
b. False – The U.S. actually has the LEAST number of cancer deaths occurring in the hospital

JAMA. 2016;315(3):272-283. doi:10.1001/jama.2015.18603

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Healthcare utilization for patients dying with cancer

Retrospective study of decedents with cancer over age 65
Administrative and registry data from 2010 (US, Canada, Belgium, Norway, England, Germany, Netherlands)

- U.S. deaths occurring in acute care hospitals → 22% (range 22-52%)
- U.S. hospitalizations in the 6 months prior to death
  - Admission to acute care hospitals → 75% (range 70-89%)
  - Admission to intensive care units → 40% (range 8-18% . . . 40%)

JAMA. 2016;315(3):272-283. doi:10.1001/jama.2015.18603

New treatments for metastatic cancer

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Targeted cancer therapy

- Specific genes
- Specific proteins
- Tissue environment
- Drugs can . . .
  - Block signals that tell cancer cells to grow and divide
  - Keep cells from living longer than normal
  - Destroy the cancer cells

Cancer.net https://www.cancer.net/navigating-cancer-care/how-cancer-treated/personalized-and-targeted-therapies/understanding-targeted-therapy

Impact on healthcare

- More treatment options for advanced cancer
  - Breast
  - Colon
  - Lung
  - Melanoma
- Expensive medications
- Patients with advanced cancer have less reserve
  - Higher risk for ED visits
  - Higher risk for hospitalization

Cancer.net https://www.cancer.net/navigating-cancer-care/how-cancer-treated/personalized-and-targeted-therapies/understanding-targeted-therapy

Oncology Care Model (OCM)

- 5 Year Project (2016-2021)
- Led by the Centers for Medicare and Medicaid Innovation
- Requires practices to reduce the cost of care while improving quality and patient outcomes
- Payment impacted by comorbidities identified by hierarchical condition categories (HCCs)

https://innovation.cms.gov/initiatives/oncology-care/
https://innovation.cms.gov/Files/slides/ocm-overview-slides.pdf

Oncology Care Model (OCM)

NQS (National Quality Strategy) Core Measure Set

- Practice reported measures
  - Person-and-caregiver experience and outcome
  - Clinical quality of care
- Claims-based measures
  - **Risk-adjusted** all-cause hospital admissions
  - **Risk-adjusted** all-cause ED visits or observations stays
  - Deaths in hospice for 3 days or more

Based on HCCs
Hierarchical Condition Categories

https://innovation.cms.gov/Files/x/ocm-otherpayercoremeasure.pdf

Partnering with Oncology to improve documentation

Risk-adjustment

Hierarchical Condition Categories (HCCs)

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Risk adjustment examples: 68yof living in the community with Medicare (2018)

Code	Description	Score

Low

High

CC - Complication/comorbidity MCC - Major complication/comorbidity

http://www.hccuniversity.com/risk-score-calculator/

Hierarchical Condition Categories (HCCs)

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Risk adjustment examples: 68yof living in the community with Medicare (2018)

Code	Description	Score
N18.4	**Chronic kidney disease, stage IV** (HCC 137) - CC	0.237
E66.01	**Morbid obesity** (HCC 22)	0.273
J96.01	**Acute hypoxic respiratory failure** (HCC 84) - MCC	0.302
I50.31	**Acute diastolic heart failure** (HCC 85) - MCC	0.323
J44.9	**Chronic Obstructive Pulmonary Disease** (HCC 111)	0.328
I27.82	**Chronic pulmonary embolism** (HCC 107) - CC	0.400
N17.9	**Acute kidney failure** (HCC 135) - CC	0.422
E44.1	**Mild malnutrition** (HCC 21) - CC	0.545
J69.0	**Aspiration pneumonia** (HCC 114) - MCC	0.599
C34.11	**Lung cancer** (HCC 9) - CC	0.970
C79.31	**Brain metastasis** (HCC 8) - CC	2.625

Low

High

CC - Complication/comorbidity MCC - Major complication/comorbidity

http://www.hccuniversity.com/risk-score-calculator/

Hierarchical Condition Impact: lung cancer patient

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Diagnoses		Risk score	Risk score
C34.11	Malignancy of upper lobe, right bronchus or lung (HCC 9) - CC	~~0.970~~	
C79.51	Secondary malignant neoplasm of bone (HCC 8) - CC	2.625	2.625
C79.31	Secondary malignant neoplasm of brain (HCC 8) - CC	~~2.625~~	
G83.21	Monoplegia of upper limb affecting right dominant side (HCC 104)	0.395	0.395
	G93.5 Compression of brain (HCC 80) - MCC		**0.584**
D63.8	Anemia in other chronic diseases	no HCC	no HCC
D70.8	Other neutropenia (HCC 47)	0.625	0.625
D69.6	Thrombocytopenia, unspecified (HCC 48)	0.221	~~0.221~~
	D61.810 Pancytopenia due to chemo (HCC 47) - MCC		~~0.625~~
	D61.82 Pancytopenia due to cancer in bone marrow (HCC 46) - CC		**1.388**
	→ Interaction: Immune Disorders*Cancer Group	0.893	0.893
	→ 2018 Demographic Risk Factor	0.312	0.312
	2018 TOTAL RISK ADJUSTMENT FACTOR (RAF) SCORE	5.071	**6.822**

Translating SEVERITY and RISK

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Advanced Cancer Symptoms

Best Predictor of Prognosis

PERFORMANCE STATUS →

Symptoms with independent predictive value

- **cognitive failure** → *(Altered Mental Status)*
  - **Delirium**
  - **Encephalopathy**
  - **Coma**
  - **Glasgow coma scale**
- **weight loss**, **anorexia** → **Malnutrition**, **Cachexia**
- **dysphagia** → **Aspiration**
- **dyspnea** → **Acute respiratory distress, acute respiratory failure**

= HCC (Hierarchical Condition Category)

https://journals.sagepub.com/doi/abs/10.1191/026921600701536192

Translating SEVERITY and RISK

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Other Common Symptoms

Sign/Symptom	Look for . . .
Dehydration	**Acute Kidney Injury**
Fever	**Due to . . . ; is there Sepsis**
Anemia	**Blood loss – acute or chronic**
Blood clot	**Deep venous thrombosis**
Constipation	**Opioid dependence**

= HCC (Hierarchical Condition Category)

Translating SEVERITY and RISK

Other Common Symptoms

Sign/Symptom	Look for . . .
Low blood pressure	Hypotension, lactic acidosis, shock ⚑
HCAP	Gram-negative/MRSA pneumonia ⚑
Neutropenic fever	'Suspected' bacterial infection
Bicarb low	Metabolic acidosis
Low Na	Hyponatremia
Electrolyte protocols	Hypomagnesemia/hypophosphatemia

⚑ = HCC (Hierarchical Condition Category)

Chemotherapy for metastatic breast cancer

Impact of documentation on risk adjustment

59yof with metastatic breast cancer was admitted for chemotherapy

Weight loss noted in the Review of Systems

MD documents sacral redness (stage 2)

846-848 Encounter for chemotherapy	Breast cancer	+ Bone mets* (2/2) + Brain mets* (2/2)	+ Weight loss (1/1)	+ Sacral decubitus stage 2 (3/3)
Medicare GLOS	2.8 days →	**3.5 days**	3.5 days	3.5 days
Severity of illness	1 - Minor →	**2 - Moderate**	2 - Moderate	2 - Moderate
Risk of mortality	2 – Moderate	2 - Moderate	2 - Moderate →	**3 - Major**
HCC (score)		HCC 8 (+2.625)		(stage 3 & 4 are HCCs)

GLOS (geometric length of stay) HCC (hierarchical condition category) *Complication/comorbidity **Major complication/comorbidity

Chemotherapy for metastatic breast cancer

Impact of documentation on risk adjustment

Registered dietitian consultation.

846-848 Encounter for chemotherapy	Breast cancer Mult metastatic sites* Weight loss Sacral pressure ulcer	→ Malnutrition, unspecified* (3/1)	→ Severe Malnutrition** (4/2)
Medicare GLOS	3.5 days	3.5 days →	**5.8 days**
Severity of illness	2 - Moderate →	**3 - Major**	3 - Major
Risk of mortality	3 - Major	3 - Major	3 - Major
HCC (score)		HCC 21 (+0.545)	HCC 21 (+0.545)

GLOS (geometric length of stay) HCC (hierarchical condition category) *Complication/comorbidity **Major complication/comorbidity

Summary

- Get comfortable discussing metastatic cancer and recognizing the manifestations
- Identify what motivates your Oncologists
- Use your knowledge to close the gap between implied risk and documented (codable) risk

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Thank you. Questions?

Beth Wolf
bwolf.cw@mmm.com

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