Overview of the breast medical oncology episode of care

State of Ohio

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Overview of the breast medical oncology episode of care

1. CLINICAL OVERVIEW AND RATIONALE FOR DEVELOPMENT OF THE BREAST CANCER EPISODES

There are three episodes of care covering the journey of patients at risk for breast cancer or diagnosed and treated for breast cancer: breast biopsy, breast cancer surgery, and breast medical oncology. Section 1.1 of this document, which lays out the rationale for the development of the breast cancer episodes, is therefore identical for the breast biopsy, breast cancer surgery, and breast medical oncology episodes of care.

1.1 Rationale for development of the breast cancer episodes of care

Breast cancer is the most frequently diagnosed cancer in women worldwide, with an estimated 1.7 million new cases diagnosed in 2012.[1] It is also the second most common cause of cancer death among women worldwide, with an estimated 521,900 deaths in 2012.[2] Guidelines for the diagnosis and treatment of breast cancer patients are well established.[3] Despite these clear guidelines, medical practices vary widely among providers.[4,5] Unique patient needs sometimes necessitate variation in treatment; but practice variation due to reasons not related to the patient and not concordant with clinical guidelines may lead to sub-optimal patient outcomes, higher than necessary costs, or both.

[1] American Cancer Society. Global Cancer Facts & Figures 3rd Edition. Atlanta: American Cancer Society; 2015.d

[2] Ibid

[3] "NCCN Guidelines for Patients® | Stage 1-4 Breast Cancer." NCCN Guidelines for Patients®. N.p., n.d. Web. 10 Aug. 2016.

[4] Zimmerman, C. Time trends and geographic variation in the use of minimally invasive breast biopsy. J Am Coll Surg. 2013 Apr; 216(4): 814–824

[5] Sariego, J. Regional variation in breast cancer treatment throughout the United States. Am J Surg. 2008 Oct;196(4):572-4. doi: 10.1016/j.amjsurg.2008.06.017.

About 1 in 8 women in the U.S. (about 12%) will develop invasive breast cancer during their lifetime. According to American Cancer Society, [6] nearly 250,000 new cases of invasive breast cancer will be diagnosed in the U.S. in 2016, with 9,390 new cases diagnosed in Ohio. An estimated 40,000 women will die of breast cancer in U.S. in 2016, with 1,700 deaths in Ohio.[7]

The incidence and death rates for breast cancer vary by region, race, and ethnicity. The incidence of breast cancer in Ohio is 120.5[6] (the incidence for the U.S. as a whole is 123.5), whereas the death rate for breast cancer in Ohio is 23.5[7] (the death rate for the U.S. is 21.9). Although Ohio has the 36th highest incidence rate for female breast cancer among all states in the U.S., it has the 5th highest death rate for female breast cancer.[8] Breast cancer incidence is highest in non-Hispanic Caucasian women followed by African American women and is lowest among Asian/Pacific Islander women. In contrast, breast cancer death rates are highest for African American women followed by non-Hispanic Caucasian women and are lowest among Asian/Pacific Islander women.[9]

The early stages of breast cancer are usually not symptomatic. The process of diagnosis begins with the detection of an abnormality (such as an abnormal breast mass), whether through self-examination or physical examination by a clinician or through a screening mammography. The 2015 American Cancer Society guidelines[10] recommend an annual screening mammogram for women 45 years or older, and for all women at higher than average risk. An abnormal mammogram may warrant additional workup and imaging (e.g. diagnostic mammogram, breast ultrasound). Lesions that remain suspicious after additional imaging are biopsied for a definitive diagnosis. Patients diagnosed with breast cancer may follow several treatment paths. Depending on factors such as tumor type, cancer stage, and patient preference,

[6] Incidence rates, 2008-2012: per 100,000, age adjusted to the 2000 US standard population.

[7] Death rates, 2008-2012: per 100,000, age adjusted to the 2000 US standard population

[8] Ibid

[9] Ibid

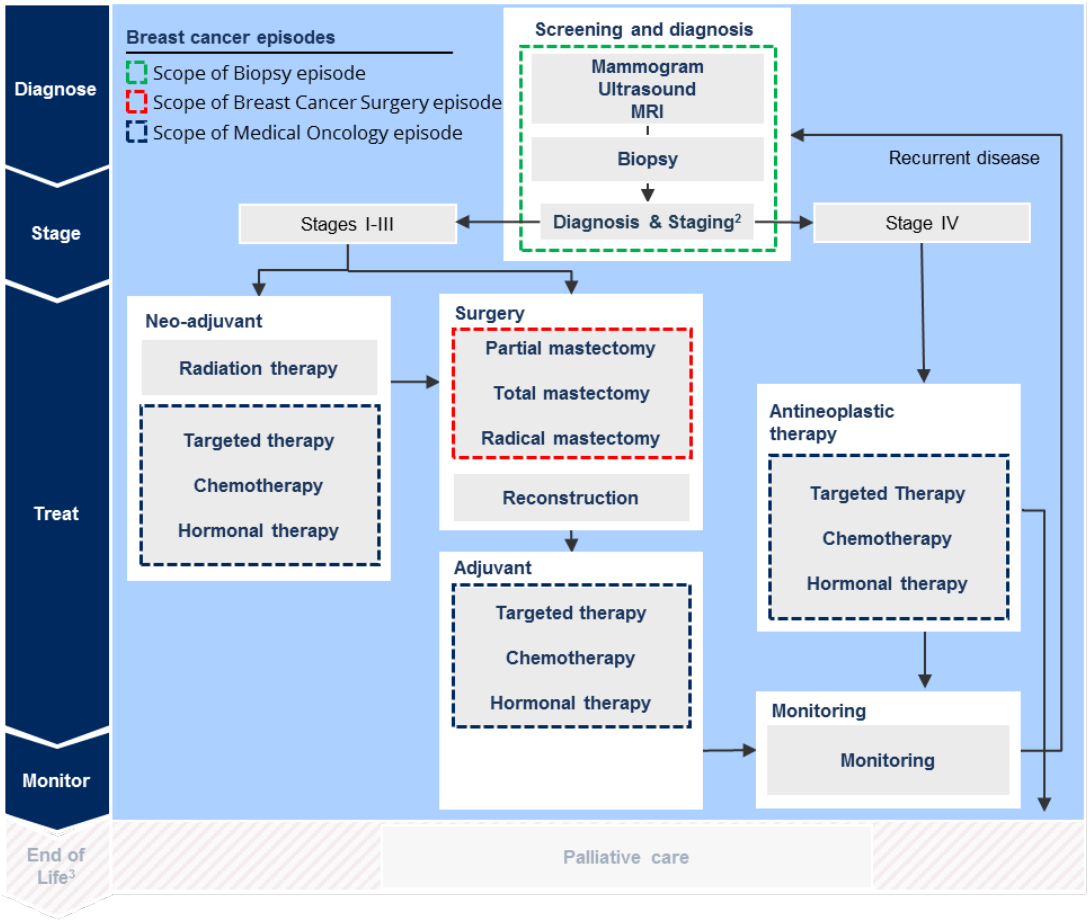
[10] American Cancer Society (2015). American Cancer Society recommendations for early breast cancer detection in women without breast symptoms, last revised 10/20/2015. Available at http://www.cancer.org/cancer/breastcancer/moreinformation/breastcancerearlydetection/breast-cancer-early-detection-acs-recs# Accessed August 08, 2016

treatment usually involves a combination of surgery (breast-conserving surgery or mastectomy), systemic therapy (chemotherapy, targeted therapy, and/or hormonal therapy), and/or radiation therapy. Patients may also elect to undergo breast reconstruction either at the time of surgery or at a later time.

As part of a concerted effort aimed at improving overall breast cancer diagnosis and treatment for Ohio Medicaid patients, three episodes of care related to breast cancer are being deployed to cover the entire patient journey: breast biopsy, breast cancer surgery, and a medical oncology episode specific to breast cancer. The rationale is threefold. First, the complexity of breast cancer care requires multiple types of specialists to assume primary accountability for the patient for different portions of care. Second, at any point in time, the overall patient journey may require a different mix of specialists to be involved; having multiple episodes acknowledges that varied involvement over time. Third, the coordination of care across the patient journey is best enabled by having each key specialist incentivized to collaborate with others, as opposed to having a single type of specialist solely accountable. Creating three separate but related episodes of care enables the "ecosystem" of clinicians critical to breast cancer care to drive value-based outcomes both within and across the relevant specialties.

Despite being a potential part of the breast cancer patient journey, a specific episode targeting radiation therapy is not currently within the scope of these three episodes of care. The variable timing of when radiation therapy is delivered with regard to surgical or medical oncology treatment depends on patient-specific factors (e.g., cancer stage), making it difficult to accurately evaluate value and variation in the context of one of the existing episodes. Instead, coordination of care relating to radiation is addressed through quality metrics that characterize transitions of care in the existing episodes. At some point in the future, the potential exists for the cost and quality of radiation therapy to be addressed through a separate radiation episode. Exhibit 1 illustrates the scope of each of these episodes.

EXHIBIT 1 – OVERVIEW OF BREAST CANCER EPISODES[1]



1 The above exhibit represents the most common patient pathways (specific patient pathways may be different from the pathways shown above based on a patient's clinical condition); In order to capture the full variety of potential patient journeys, some non-standard care may be reflected in the pathways in the exhibit (e.g., use of neo-adjuvant radiation therapy is rarely recommended in the treatment of breast cancer patients)

2 Some staging procedures excluded from the scope of the biopsy episode

3 End of life care is not currently addressed in the suite of episodes

Source: National Cancer Institute, American Cancer Association, NCCN, ASCO, clinical experts

Implementing the breast cancer episodes will provide incentives for evidence-based, guideline-concordant care through an outcomes-based payment model. Alongside the other episodes of care in the breast cancer suite of episodes, other episodes of care outside breast cancer, and patient-centered medical homes, the breast medical oncology episode will contribute to a model of care delivery that benefits patients through improved care quality, improved long-term health outcomes, and lower overall cost of care.

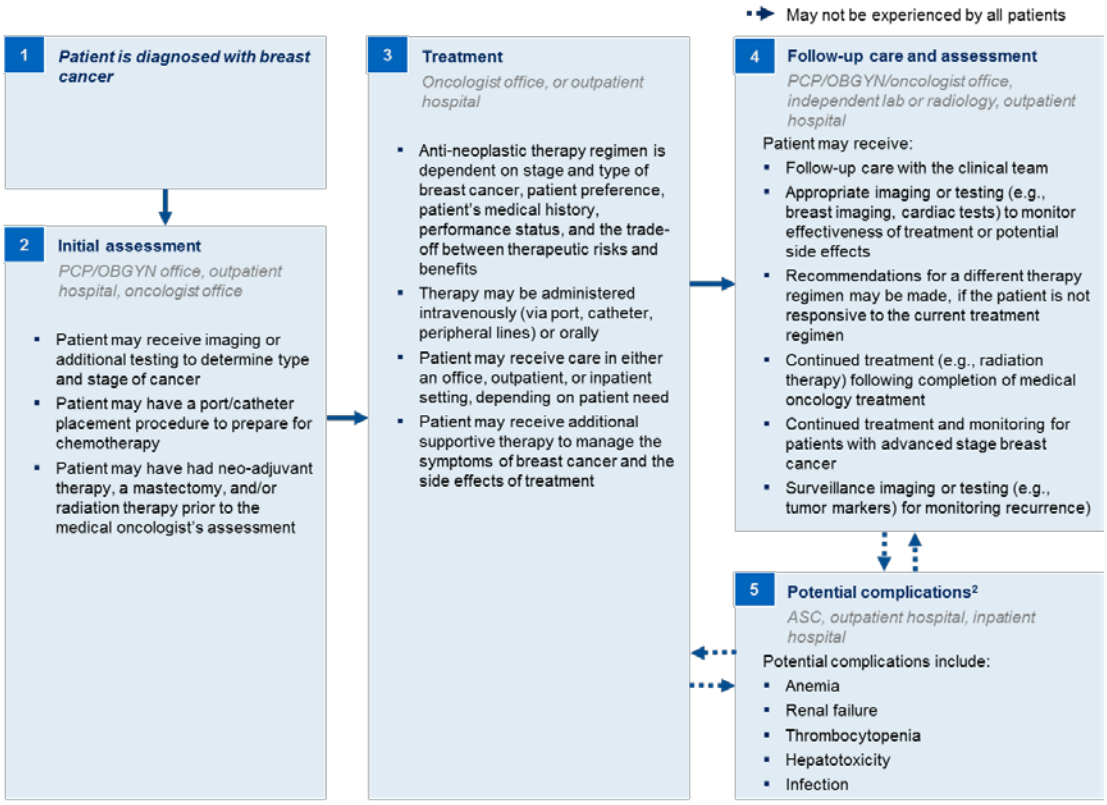
1.2 Clinical overview and typical patient journey for a breast medical oncology episode

Medical oncology (antineoplastic) treatment is a therapy used with the purpose of eliminating malignant cells. For breast cancer patients, antineoplastic therapy can be given before or after surgery to lower the risk of breast cancer recurrence, or to kill cancer cells that have spread to other parts of the body.

As depicted in Exhibit 2, the patient journey begins when a patient is diagnosed with breast cancer. Upon diagnosis of breast cancer, the patient may receive further imaging or additional testing to evaluate breast cancer stage and histologic type. The medical oncologist, in coordination with a surgeon and/or radiation oncologist in the case of non-metastatic disease, will determine a patient's therapy regimen. Depending on factors (such as stage, histologic type, biological factors such as HER2/ER/PR status, patient preference, clinical guidelines, and appropriate assessment of therapeutic risks and benefits), the patient may separately receive surgery before or after antineoplastic therapy. The patient may potentially also receive radiation therapy after antineoplastic therapy.

Prior to initiating antineoplastic therapy, some patients will undergo a port or catheter placement procedure. Antineoplastic therapy can be administered by a number of routes, including intravenously (via port, other central, or peripheral lines) or orally. Antineoplastic therapy may be administered in either an office, outpatient, or inpatient setting. In addition to the antineoplastic therapy regimen, the patient may receive supportive care to monitor and manage both the symptoms of breast cancer and the potential side effects of treatment (e.g., use of cardiac monitoring services). Depending on cancer stage, the patient may also undergo regular surveillance imaging and testing to monitor for toxicity and/or complications related to the antineoplastic therapy regimen. Potential complications of antineoplastic therapy treatment include anemia, neutropenia, infection, sepsis, dehydration, congestive heart failure, end-organ damage (e.g. renal failure, hepatotoxicity, neurotoxicity, etc.) and susceptibility to infections. If the patient is not responsive to the current treatment regimen, recommendations for a different therapy regimen may be made. Following completion of chemotherapy, depending on the patients' treatment plan and indications, the patient may receive radiation therapy.

EXHIBIT 2 – MEDICAL ONCOLOGY PATIENT JOURNEY[1]



1 The above exhibit represents the most common patient pathways (specific patient pathways may be different from the pathways shown above based on patients clinical condition). In order to capture the full variety of potential patient journeys, some non-standard care may be reflected in the pathways in the exhibit. This exhibit is not intended to be used as a clinical guideline

2 List of potential complications is not exhaustive

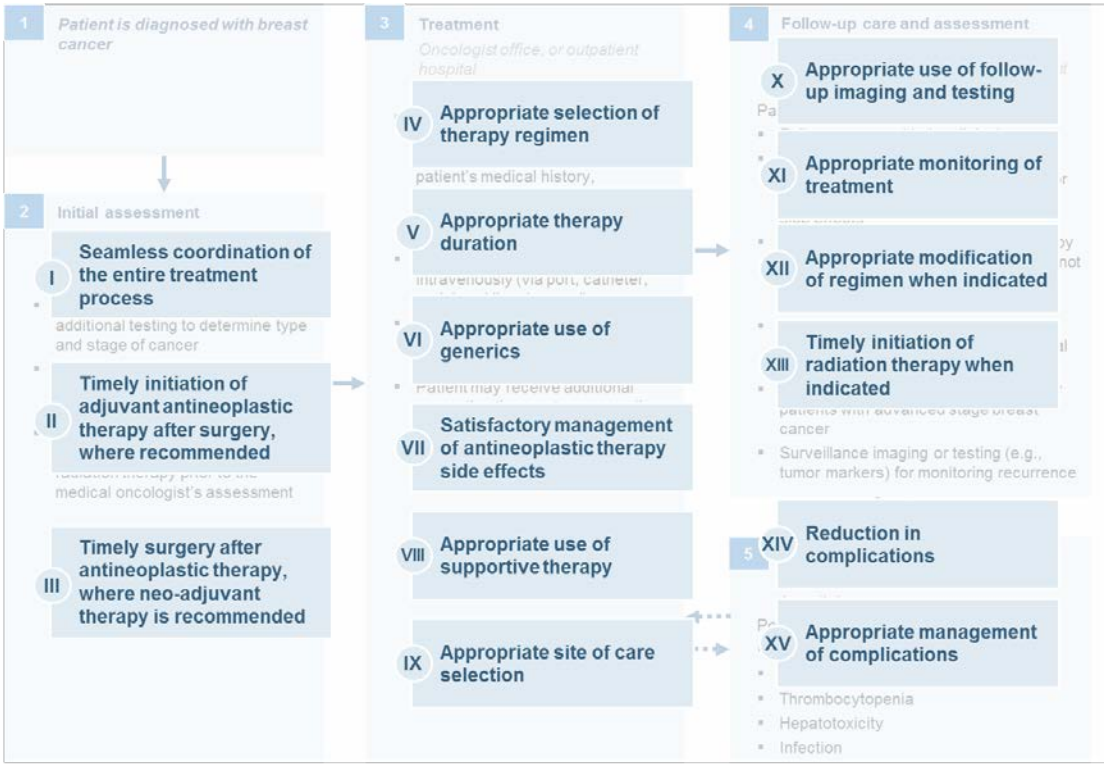
SOURCE: National Cancer Institute, American Cancer Association

1.3 Potential sources of value within the breast medical oncology patient journey

Within the breast medical oncology patient journey, providers have several opportunities to improve the quality of care and reduce unnecessary spend associated with the episode (see Exhibit 3). An important source of value is the selection of antineoplastic therapy regimen (e.g., selection of the initial antineoplastic therapy drugs and the appropriate use of generic vs. branded drugs). Additionally, the provider can ensure the quality of care through appropriate follow-up care, including appropriate monitoring of the response to treatment. Through efficient management of the antineoplastic therapy treatment plan, providers have the opportunity to both reduce the likelihood of complications and manage them properly when they arise. Furthermore, well-coordinated antineoplastic therapy transitions from and to other

therapies (i.e., mastectomy and radiation therapy) result in improved outcomes for the patients.[11]

EXHIBIT 3 – MEDICAL ONCOLOGY SOURCES OF VALUE



2. OVERVIEW OF THE BREAST MEDICAL ONCOLOGY EPISODE DESIGN

2.1 Episode Trigger

The breast medical oncology episode is triggered by either a professional claim with a procedure code for the administration of breast-related antineoplastic therapy in order to capture all infusion-related therapy, or a medication code for breast-related oral antineoplastic therapy for episodes which contain oral-only medications. A diagnosis of a breast cancer is also required on the claim to confirm the antineoplastic

[11] Lohrisch, C et al. Impact on survival of time from definitive surgery to initiation of adjuvant chemotherapy for early-stage breast cancer. JCO October 20, 2006 vol. 24 no. 30 4888-4894

therapy was for breast cancer. A complete list of triggering procedure and medication codes is included in Table 1a and Table 1b in the Appendix, and breast cancer diagnosis codes to confirm breast-related antineoplastic therapy can be found in Table 1c. See Exhibit 4 for an analysis of triggers in the Appendix.

2.2 Principal Accountable Provider

The principal accountable provider (PAP) is the person or entity best positioned to influence the patient journey and the clinical decisions made throughout the course of the episode.

For breast medical oncology episodes that have at least one claim with an antineoplastic therapy administration procedure, the PAP is the clinician with the plurality of visits for therapy infusion during the episode window. For breast medical oncology episodes that have oral-only antineoplastic therapy regimens, the PAP is the provider with a plurality of related visits during the episode window.

Because this provider is directly involved in the care for the patient, he or she is in the best position to promote adherence to guidelines, prevent complications, and influence other sources of value (see Exhibit 5 in the Appendix for the distribution of average non-risk adjusted spend by PAP).

Although there are some services rendered during the patient journey that may not be performed directly by the PAP, the PAP is selected as the person or entity best positioned to influence the patient journey and clinical decisions made throughout the course of the episode. The episode is designed to reward providers for coordinating care with high-quality, efficient providers in their medical neighborhood, including some relevant services that may occur before the PAP sees the patient for the first time as well as those occurring after the triggering procedure.

2.3 Episode Duration

The breast medical oncology episode begins on the day of the trigger claim and ends 179 days later. There is no pre-trigger, or post-trigger window in this episode. Some patients may have medical oncology treatment that may extend beyond 180 days. In such cases, multiple, sequential episodes will be triggered to cover the entire duration of the medical oncology treatment.

2.4 Included Services

The episode model is designed to address spend for care and services directly related to antineoplastic therapy, throughout the patient journey. Therefore, claims included are those for care and services directly or indirectly influenced by the PAP (refer to section 2.2 for more details) during the episode.

The total spend of the episode includes all spend associated with antineoplastic therapy (including hormonal therapy), monitoring and evaluation of antineoplastic therapy and potential complications (e.g., monitoring for cardiac dysfunction for patients on targeted therapy), ancillary care (e.g. nutrition, PT, etc.), and management of complications, if any. Spend not included in the total spend of the episode includes care associated with select conditions or procedures related to breast cancer management (e.g., mastectomy, lymph node dissection, breast reconstruction, and radiation therapy).

The total episode spend is calculated by adding up the spend amounts on all of the individual claims that were included in each of the episode windows.

2.5 Episode Exclusions and Risk Factors

To ensure that episodes are comparable across patient panels select risk factors and exclusions are applied before assessing PAP performance. In the context of episode design, risk factors are attributes (e.g., age) or underlying clinical conditions (e.g., history of anemia, congestive heart failure) that are likely to impact a patient's course of care and the spend associated with a given episode.

Risk factors are selected via a standardized and iterative risk-adjustment process based on Ohio-specific regression analysis that gives due consideration to clinical relevance, statistical significance, and other contextual factors.[12] Based on the selected risk factors, each episode is assigned a risk score. The total episode spend and the risk score are used to arrive at an adjusted episode spend, which is the spend on which providers are compared to each other. A detailed list of risk factors for the breast cancer medical oncology episode is included in Table 2, and analysis of these risk factors is in Exhibit 6 in the Appendix.

By contrast, an episode is excluded from a patient panel when the patient has clinical factors that suggest the patient has experienced a distinct or different and/or which

[12] Garrett B., et al. (2014). Risk adjustment for retrospective episode-based payment: Guiding principles and proposed methodology. McKinsey Healthcare Systems and Services Practice. Available at http://healthcare.mckinsey.com/risk-adjustment-retrospective-episode-based-payment Accessed July 21, 2016

drive significant increases in spend relative to the average patient. In addition, there are several "business-related" exclusions relating to reimbursement policy (e.g., whether a patient sought care out of state), the completeness of spend data for that patient (e.g., third-party liability or dual eligibility), and other topics relating to episode design and implementation, such as overlapping episodes, during the comparison period. Episodes with no exclusions are known as "valid" and used for provider comparisons. Episodes that have one of any of the exclusions are known as "invalid" episodes.

For the breast medical oncology episode, both clinical and business exclusions apply. Several of the business and clinical exclusions (e.g., dual Medicare and Medicaid eligibility, patient left against medical advice) are standard across most episodes while others relate to the specific scope of the episode design. There are no breast medical oncology episode-specific clinical exclusions at this time. A detailed list of business and clinical exclusions is included in Table 3, and analysis of these exclusions can be found in Exhibit 7 in the Appendix.

2.6 Quality and Utilization Metrics

To ensure the episode model incentivizes quality care, the breast cancer medical oncology episode has select quality and utilization metrics. These are calculated for each PAP meeting the minimum threshold for valid episodes.

The breast medical oncology episode has five quality and utilization metrics. One quality and utilization metric is linked to performance assessment, meaning that performance thresholds on these metrics must be met for the episodes to be eligible for positive incentive payments within the episode model. The specific threshold amount will be determined during the informational reporting period. Four of the metrics are for informational purposes only. The metric tied to positive incentive payments is rate of hospitalizations due to adverse events. Informational metrics include monitoring of bone loss for patients on aromatase therapy, antineoplastic therapy within 30 days before death, timely transition to antineoplastic therapy, and timely clinical registry reporting. Please note that registry data is currently unavailable for the calculation of this metric. When registry data becomes available, a value for this metric will be displayed in the episode provider reports. A complete list of quality metrics is provided in Table 4 in the Appendix, and Exhibit 8 presents an analysis of these quality and utilization metrics in the Appendix.

3. APPENDIX: SUPPORTING INFORMATION AND ANALYSES

Table 1a – Episode triggers: Infusion therapy administration[13]

Trigger codes (CPT codes)	Description
96401	Chemotherapy Administration, Subcutaneous Or Intramuscular; Non-Hormonal Anti-Neoplastic
96402	Chemotherapy Administration, Subcutaneous Or Intramuscular; Hormonal Anti-Neoplastic
96405	Chemotherapy Administration; Intralesional, Up To And Including 7 Lesions
96406	Chemotherapy Administration; Intralesional, More Than 7 Lesions
96409	Chemotherapy Administration; Intravenous, Push Technique, Single Or Initial Substance/Drug
96411	Chemotherapy Administration; Intravenous, Push Technique, Each Additional Substance/Drug (List Separately In Addition To Code For Primary Procedure)
96413	Chemotherapy Administration, Intravenous Infusion Technique; Up To 1 Hour, Single Or Initial Substance/Drug
96415	Chemotherapy Administration, Intravenous Infusion Technique; Each Additional Hour (List Separately In Addition To Code For Primary Procedure)
96416	Chemotherapy Administration, Intravenous Infusion Technique; Initiation Of Prolonged Chemotherapy Infusion (More Than 8 Hours), Requiring Use Of A Portable Or Implantable Pump
96417	Chemotherapy Administration, Intravenous Infusion Technique; Each Additional Sequential Infusion (Different Substance/Drug), Up To 1 Hour (List Separately In Addition To Code For Primary Procedure)
96420	Chemotherapy Administration, Intra-Arterial; Push Technique
96422	Chemotherapy Administration, Intra-Arterial; Infusion Technique, Up To 1 Hour
96423	Chemotherapy Administration, Intra-Arterial; Infusion Technique, Each Additional Hour (List Separately In Addition To Code For Primary Procedure)
96425	Chemotherapy Administration, Intra-Arterial; Infusion Technique, Initiation Of Prolonged Infusion (More Than 8 Hours), Requiring The Use Of A Portable Or Implantable Pump
96440	Chemotherapy Administration Into Pleural Cavity, Requiring And Including Thoracentesis

[13] A professional claim with an antineoplastic therapy infusion administration procedure code where a) a primary diagnosis of breast cancer appears on the same claim, or b) a primary diagnosis of an encounter for antineoplastic therapy appears on the same claim AND an inpatient, outpatient, or professional claim with a primary diagnosis of breast cancer appears on a different claim within six months before or after the triggering claim

Trigger codes (CPT codes)	Description
96446	Chemotherapy Administration Into The Peritoneal Cavity Via Indwelling Port Or Catheter
96450	Chemotherapy Administration, Into Cns (Eg, Intrathecal), Requiring And Including Spinal Puncture
Q0083	Chemotherapy Administration By Other Than Infusion Technique Only (Eg Subcutaneous, Intramuscular, Push), Per Visit
Q0084	Chemotherapy Administration By Infusion Technique Only, Per Visit
Q0085	Chemotherapy Administration By Both Infusion Technique And Other Technique(S) (Eg Subcutaneous, Intramuscular, Push), Per Visit
V5811	Encounter For Antineoplastic Chemotherapy
V5812	Encounter For Antineoplastic Immunotherapy

Table 1b – Episode triggers: Medications[14]

Trigger codes (HIC3 codes)	Description
V1A	Antineoplastic - Alkylating Agents
V1B	Antineoplastic - Antimetabolites
V1C	Antineoplastic - Vinca Alkaloids
V1D	Antibiotic Antineoplastics
V1F	Antineoplastics, Miscellaneous
V1G	Radioactive Therapeutic Agents
V1I	Chemotherapy Rescue/Antidote Agents
V1K	Antineoplastics Antibody/Antibody-Drug Complexes
V1M	Antineoplastic Immunomodulator Agents
V1N	Anp - Selective Retinoid X Receptor Agonists (Rxr)
V1Q	Antineoplastic Systemic Enzyme Inhibitors
V1R	Photoactivated, Antineoplastic Agents (Systemic)
V1U	Antineoplastic Antibody/Radioactive-Drug Complexes
V1W	Antineoplastic Egf Receptor Blocker Mclon Antibody
V1X	Antineoplastic Hum VEGF Inhibitor Recomb Mc Antibody
V3A	Antineoplastics, Histone Deacetylase (Hdac) Inhibitors
V3C	Antineoplastic - mTOR Kinase Inhibitors
V3D	Antineoplastic - Epothilones And Analogs
V3E	Antineoplastic - Topoisomerase I Inhibitors

[14] A pharmacy claim with a medication code for oral antineoplastic therapy and an inpatient, outpatient, or professional claim with a primary diagnosis of breast cancer either six months before or after the triggering claim.

Trigger codes (HIC3 codes)	Description
V3H	Antineoplastic - Immunotherapy, Therapeutic Vac
V3I	Antineoplastic - Halichondrin B Analogs
V3J	Cytotoxic T-Lymphocyte Antigen(Ctla-4)Rmc Antibody
V3L	Antineoplastic - Janus Kinase (Jak) Inhibitors
V3M	Antineoplastic - Hedgehog Pathway Inhibitor
V3N	Antineoplastic - Vegf-A,B & Plgf Inhibitor
V3O	Antineoplastic-Interleukin-6(Il-6)Inhib,Antibody
V3P	Antineoplastic - Vegfr Antagonist
V3R	Antineoplastic, Anti-Programmed Death-1 (Pd-1) Mab

Table 1c – Episode triggers – Diagnosis codes for breast cancer

Trigger codes	Code Type	Description
1740	ICD-9 diagnosis	Malignant Neoplasm Of Nipple And Areola Of Female Breast
1741	ICD-9 diagnosis	Malignant Neoplasm Of Central Portion Of Female Breast
1742	ICD-9 diagnosis	Malignant Neoplasm Of Upper-Inner Quadrant Of Female Breast
1743	ICD-9 diagnosis	Malignant Neoplasm Of Lower-Inner Quadrant Of Female Breast
1744	ICD-9 diagnosis	Malignant Neoplasm Of Upper-Outer Quadrant Of Female Breast
1745	ICD-9 diagnosis	Malignant Neoplasm Of Lower-Outer Quadrant Of Female Breast
1746	ICD-9 diagnosis	Malignant Neoplasm Of Axillary Tail Of Female Breast
1748	ICD-9 diagnosis	Malignant Neoplasm Of Other Specified Sites Of Female Breast
1749	ICD-9 diagnosis	Malignant Neoplasm Of Breast (Female) Unspecified Site
1750	ICD-9 diagnosis	Malignant Neoplasm Of Nipple And Areola Of Male Breast
1759	ICD-9 diagnosis	Malignant Neoplasm Of Other And Unspecified Sites Of Male Breast
2330	ICD-9 diagnosis	Carcinoma In Situ Of Breast
V103	ICD-9 diagnosis	Personal History Of Malignant Neoplasm Of Breast
C50011	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, right female breast
C50012	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, left female breast

Trigger codes	Code Type	Description
C50019	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, unspecified female breast
C50021	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, right male breast
C50022	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, left male breast
C50029	ICD-10 diagnosis	Malignant neoplasm of nipple and areola, unspecified male breast
C50111	ICD-10 diagnosis	Malignant neoplasm of central portion of right female breast
C50112	ICD-10 diagnosis	Malignant neoplasm of central portion of left female breast
C50119	ICD-10 diagnosis	Malignant neoplasm of central portion of unspecified female breast
C50121	ICD-10 diagnosis	Malignant neoplasm of central portion of right male breast
C50122	ICD-10 diagnosis	Malignant neoplasm of central portion of left male breast
C50129	ICD-10 diagnosis	Malignant neoplasm of central portion of unspecified male breast
C50211	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of right female breast
C50212	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of left female breast
C50219	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of unspecified female breast
C50221	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of right male breast
C50222	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of left male breast
C50229	ICD-10 diagnosis	Malignant neoplasm of upper-inner quadrant of unspecified male breast
C50311	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of right female breast
C50312	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of left female breast
C50319	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of unspecified female breast
C50321	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of right male breast
C50322	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of left male breast
C50329	ICD-10 diagnosis	Malignant neoplasm of lower-inner quadrant of unspecified male breast
C50411	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of right female breast

Trigger codes	Code Type	Description
C50412	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of left female breast
C50419	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of unspecified female breast
C50421	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of right male breast
C50422	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of left male breast
C50429	ICD-10 diagnosis	Malignant neoplasm of upper-outer quadrant of unspecified male breast
C50511	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of right female breast
C50512	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of left female breast
C50519	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of unspecified female breast
C50521	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of right male breast
C50522	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of left male breast
C50529	ICD-10 diagnosis	Malignant neoplasm of lower-outer quadrant of unspecified male breast
C50611	ICD-10 diagnosis	Malignant neoplasm of axillary tail of right female breast
C50612	ICD-10 diagnosis	Malignant neoplasm of axillary tail of left female breast
C50619	ICD-10 diagnosis	Malignant neoplasm of axillary tail of unspecified female breast
C50621	ICD-10 diagnosis	Malignant neoplasm of axillary tail of right male breast
C50622	ICD-10 diagnosis	Malignant neoplasm of axillary tail of left male breast
C50629	ICD-10 diagnosis	Malignant neoplasm of axillary tail of unspecified male breast
C50811	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of right female breast
C50812	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of left female breast
C50819	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of unspecified female breast
C50821	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of right male breast
C50822	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of left male breast
C50829	ICD-10 diagnosis	Malignant neoplasm of overlapping sites of unspecified male breast

Trigger codes	Code Type	Description
C50911	ICD-10 diagnosis	Malignant neoplasm of unspecified site of right female breast
C50912	ICD-10 diagnosis	Malignant neoplasm of unspecified site of left female breast
C50919	ICD-10 diagnosis	Malignant neoplasm of unspecified site of unspecified female breast
C50921	ICD-10 diagnosis	Malignant neoplasm of unspecified site of right male breast
C50922	ICD-10 diagnosis	Malignant neoplasm of unspecified site of left male breast
C50929	ICD-10 diagnosis	Malignant neoplasm of unspecified site of unspecified male breast
D0500	ICD-10 diagnosis	Lobular carcinoma in situ of unspecified breast
D0501	ICD-10 diagnosis	Lobular carcinoma in situ of right breast
D0502	ICD-10 diagnosis	Lobular carcinoma in situ of left breast
D0510	ICD-10 diagnosis	Intraductal carcinoma in situ of unspecified breast
D0511	ICD-10 diagnosis	Intraductal carcinoma in situ of right breast
D0512	ICD-10 diagnosis	Intraductal carcinoma in situ of left breast
D0580	ICD-10 diagnosis	Other specified type of carcinoma in situ of unspecified breast
D0581	ICD-10 diagnosis	Other specified type of carcinoma in situ of right breast
D0582	ICD-10 diagnosis	Other specified type of carcinoma in situ of left breast
D0590	ICD-10 diagnosis	Unspecified type of carcinoma in situ of unspecified breast
D0591	ICD-10 diagnosis	Unspecified type of carcinoma in situ of right breast
D0592	ICD-10 diagnosis	Unspecified type of carcinoma in situ of left breast
Z853	ICD-10 diagnosis	Personal history of malignant neoplasm of breast

Table 2 – Episode risk factors

Risk factor	Timeframe
Targeted therapy for HER2-positive breast cancer	During the episode window
Secondary malignancy (except axially lymph nodes, breast)	During the episode window or during the 365 days before the episode trigger
Family history of breast cancer	During the episode window or during the 365 days before the episode trigger

Table 3 – Potential episode exclusions

Exclusion type	Episode exclusion	Description	Relevant time period
Business exclusion	Dual	An episode is excluded if the patient had dual coverage by Medicare and Medicaid	During the episode window
	FQHC/RHC	An episode is excluded if the PAP is classified as a federally qualified health center or rural health center	During the episode window
	Incomplete	An episode is excluded if the non-risk adjusted episode spend (not the risk-adjusted episode spend) is less than the incomplete episode threshold	During the episode window
	Enrollment	Patient is not enrolled in Medicaid	During the episode window
	Long Hospitalization	An episode is excluded if the patient has one or more hospital admissions for a duration greater than 30 days	During the episode window
	Long Term Care	An episode is excluded if the patient has one or more long-term care claim detail lines which overlap the episode window	During the episode window
	Multi-Payer	An episode is excluded if a patient changes enrollment between FFS and an MCP or between MCPs	During the episode window
	No DRG	An episode is excluded if a DRG-paid inpatient claim is missing the APR-DRG and severity of illness	During the episode window
	No PAP	An episode is excluded if the PAP cannot be identified	During the episode window
	Out of state	PAP operates out of state	N/A

Exclusion type	Episode exclusion	Description	Relevant time period
	Third party liability	An episode is excluded if third-party liability charges are present on any claim or claim detail line or if the patient has relevant third-party coverage at any time	During the episode window
Standard clinical exclusion[15]	Cardiac arrest	Patient has diagnosis of cardiac arrest	During the episode or up to 365 days before the start of the episode
	Coma	Patient has diagnosis of coma during the episode	During the episode or up to 365 days before the start of the episode
	Cystic Fibrosis	Patient has diagnosis of cystic fibrosis during the episode	During the episode or up to 365 days before the start of the episode
	End stage renal disease (ESRD)	Patient has diagnosis or procedure for end-stage renal disease	During the episode or up to 365 days before the start of the episode
	HIV	Patient has diagnosis of HIV	During the episode or up to 365 days before the start of the episode
	Meningitis or encephalitis	Patient has diagnosis of meningitis or encephalitis	During the episode window or during 365 days before the start of the episode
	Multiple Sclerosis	Patient has diagnosis of multiple sclerosis	During the episode window or during 365 days before the start of the episode

[15] Active cancer treatment is not included as a clinical exclusion for the Breast cancer medical oncology episode

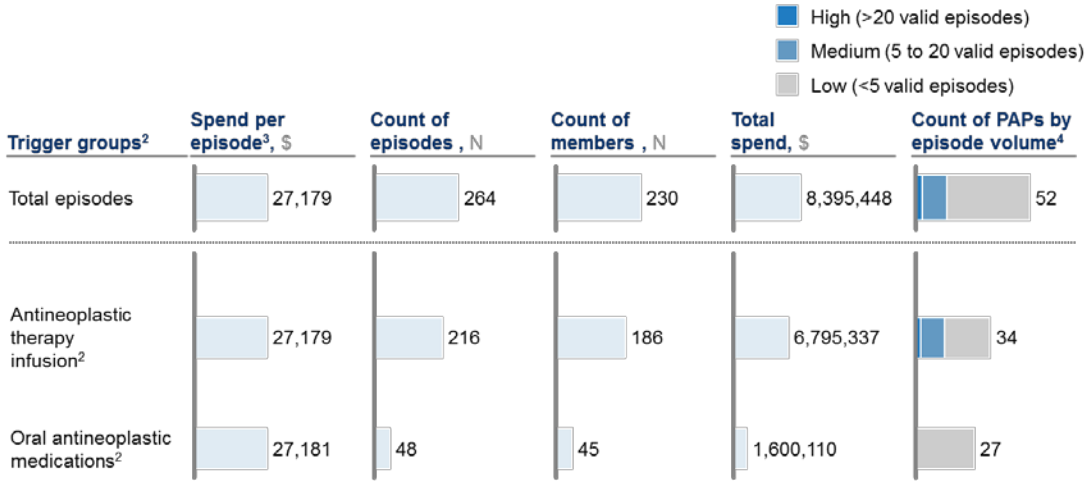
Exclusion type	Episode exclusion	Description	Relevant time period
	Transplant	An episode is excluded if a patient has an organ transplant	During the episode or up to 365 days before the start of the episode
	Paralysis	Patient has diagnosis of paralysis	During the episode or up to 365 days before the start of the episode
	Tuberculosis	Patient has diagnosis of tuberculosis	During the episode or up to 365 days before the start of the episode
	Death	An episode is excluded if the patient has a discharge status of "expired" on any inpatient or outpatient claim	During the episode window
	Left Against Medical Advice	Patient has discharge status of "left against medical advice"	During the episode window
Episode-specific exclusions	Age	Patient is younger than 13 years or older than 64 years	As of episode start date
	Aortic and peripheral artery embolism	Patient has diagnosis of aortic and peripheral artery embolism	During the 365 days before the start of the episode
	Male	Patient is male	N/A
	Other CNS infection and poliomyelitis	Patient has diagnosis of other CNS infection or poliomyelitis	During the episode or up to 365 days before the start of the episode
	Parkinson's disease	Patient has diagnosis of Parkinson's disease	During the episode or up to 365 days before the start of the episode
	Pregnancy	Patient has diagnosis of pregnancy	During the episode or up to 365 days before the start of the episode
	Respiratory distress syndrome	Patient has diagnosis of respiratory distress syndrome	During the episode or up to 365 days before

Exclusion type	Episode exclusion	Description	Relevant time period
			the start of the episode
	Sickle cell anemia	Patient has diagnosis of sickle cell anemia	During the 365 days before the start of the episode
	Spinal cord injury	Patient has diagnosis of spinal cord injury	During the episode or up to 365 days before the start of the episode
Outlier	High outlier	An episode is excluded if the risk-adjusted episode spend (not the non-risk adjusted episode spend) is greater than the high outlier threshold	During the episode or up to 365 days before the start of the triggering event

Table 4 – Episode quality and utilization metrics (PAP level)

Metric type	Quality metric	Description	Relevant time period
Tied to incentive payments	Hospitalizations due to adverse events	Percent of valid episodes with hospitalizations for related adverse events (e.g. anemia, neutropenia, thrombocytopenia)	During the episode window
Informational	Monitoring of bone loss for patients on aromatase therapy	Percentage of valid episodes on aromatase therapy for breast cancer who had a central dual energy X-ray absorptiometry (DXA) or are on pharmacologic therapy (e.g. bone resorption inhibitors)	During the episode window or during the six months prior to the episode
Informational	Antineoplastic therapy before death	Percent of episodes that receive antineoplastic therapy within 30 days before death	During the episode window
Informational	Timely transition to antineoplastic therapy	Percent of valid episodes that have evidence of either breast biopsy or mastectomy before the initiation of antineoplastic therapy	During the 60 days before the start of the episode
Informational	Timely clinical registry reporting	Percent of total episodes (valid and invalid) with complete patient-level clinical factor reporting to the Cancer Registry for patients	Within six months of episode end date
		Please note that registry data is currently unavailable for the calculation of this metric. When registry data becomes available, a value for this metric will be displayed in the episode provider reports.	

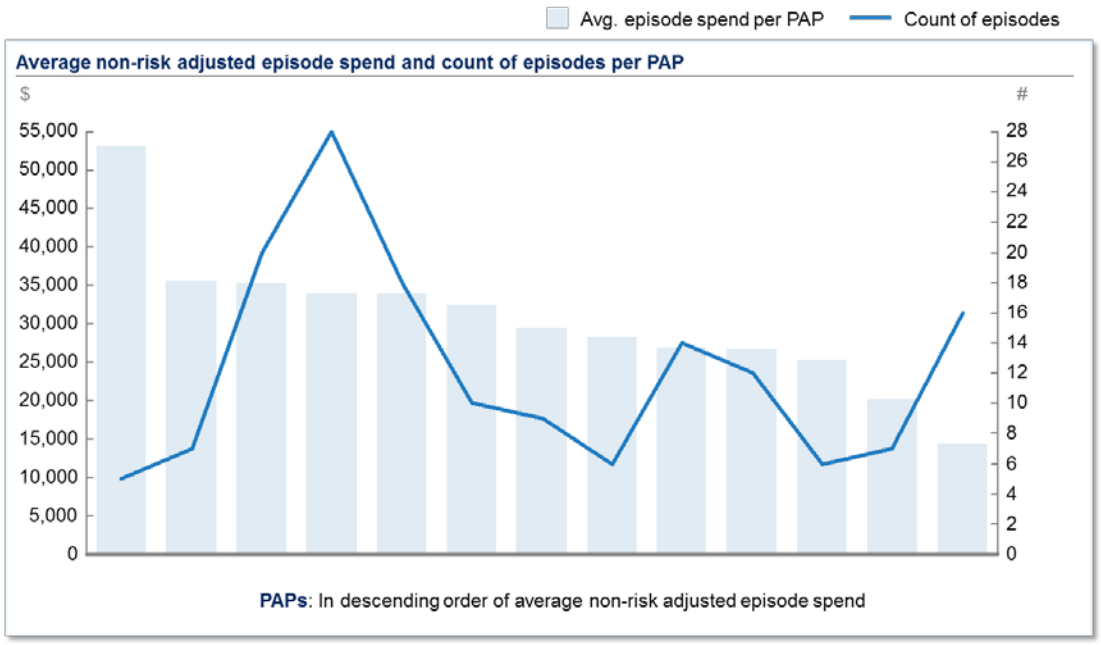
EXHIBIT 4 – MEDICAL ONCOLOGY EPISODE TRIGGER GROUPS[1]



1. For valid episodes (264 episodes) across 52 PAPs; valid episodes do not include episodes with business (e.g., third-party liability, dual eligibility) or clinical exclusions (e.g., ESRD); count of PAPs includes valid PAPs (e.g. ≥ 5 valid episodes) and invalid PAPs (e.g. < 5 valid episodes)
2. Indicated trigger group based on the first relevant claim appearing in the reporting period. Episode may contain antineoplastic therapy infusion, oral antineoplastic medications, or both.
3. Median spend based on the current episode algorithm
4. Low volume is defined as PAPs with less than five valid episodes, Medium volume as PAPs with five to 20 valid episodes and High volume as PAPs with more than 20 valid episodes

SOURCE: OH claims data, episodes ending between 1/1/2014 and 12/31/2014

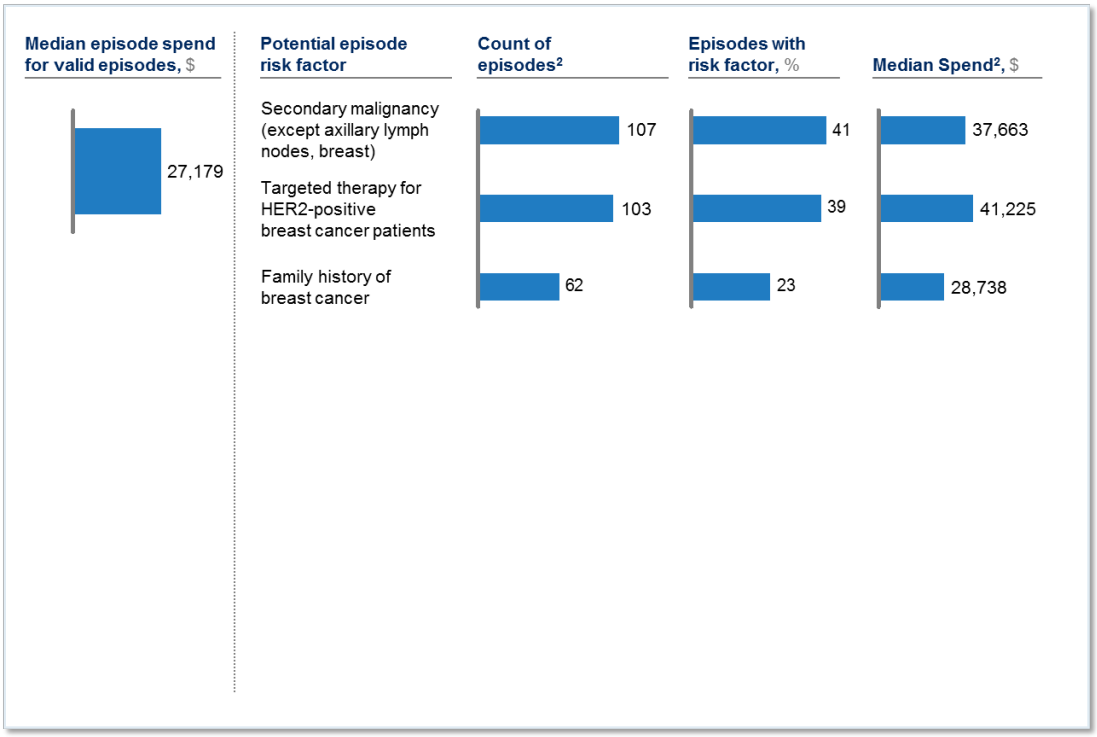
EXHIBIT 5 – DISTRIBUTION OF NON-RISK ADJUSTED AVERAGE EPISODE SPEND AND COUNT BY PAP[1]



1. For valid episodes (198) across valid PAPs (14); valid episodes do not include episodes with business (e.g., third-party liability, dual eligibility) or clinical exclusions (e.g., ESRD); valid PAPs are physicians with five or more episodes during 1/1/2014 to 12/31/2014 period. Valid episodes for invalid PAPs (those with less than five valid episodes) are not included in this analysis.

SOURCE: OH claims data, episodes ending between 1/1/2014 and 12/31/2014

EXHIBIT 6 – EPISODE COUNT AND SPEND BY POTENTIAL EPISODE RISK FACTOR[1]

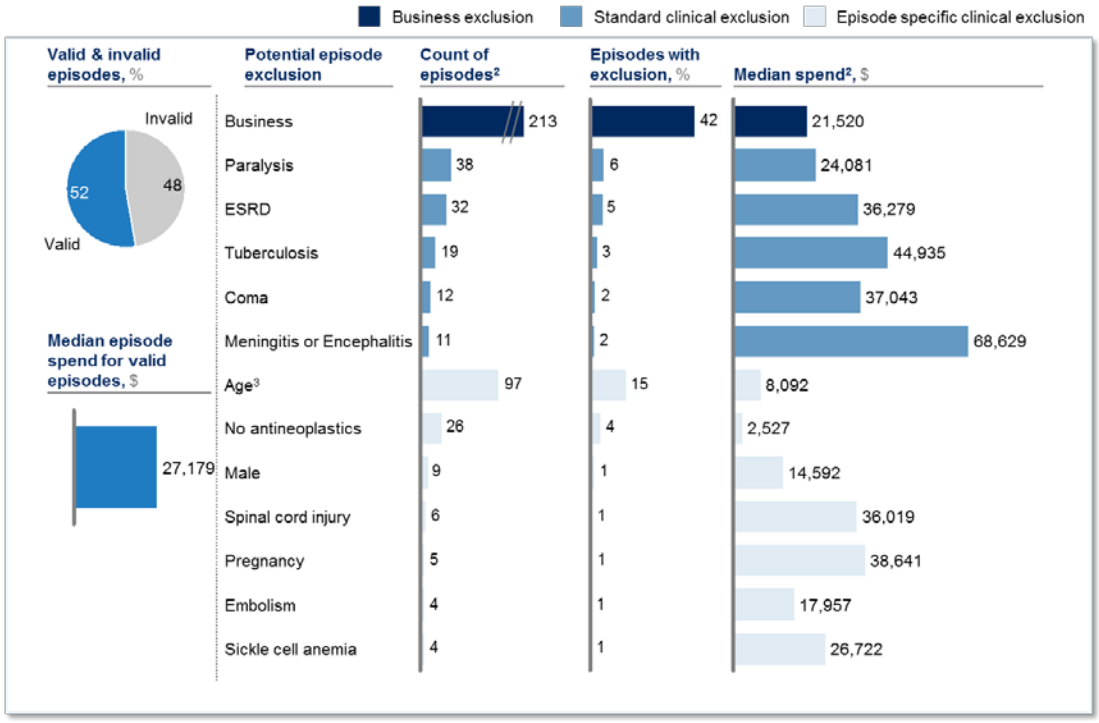


1 Showing the 3 factors that were statistically significant in the risk model for this episode; 264 valid episodes across all PAPs; valid episodes do not include those with business (e.g., third-party liability, dual eligibility) or clinical exclusions (e.g., HIV)

2 For episodes with this potential risk factor; one episode can have multiple risk factors

SOURCE: OH claims data with episodes ending between 1/1/2014 and 12/31/2014

EXHIBIT 7 – EPISODE COUNT AND SPEND BY POTENTIAL EPISODE EXCLUSION[1]



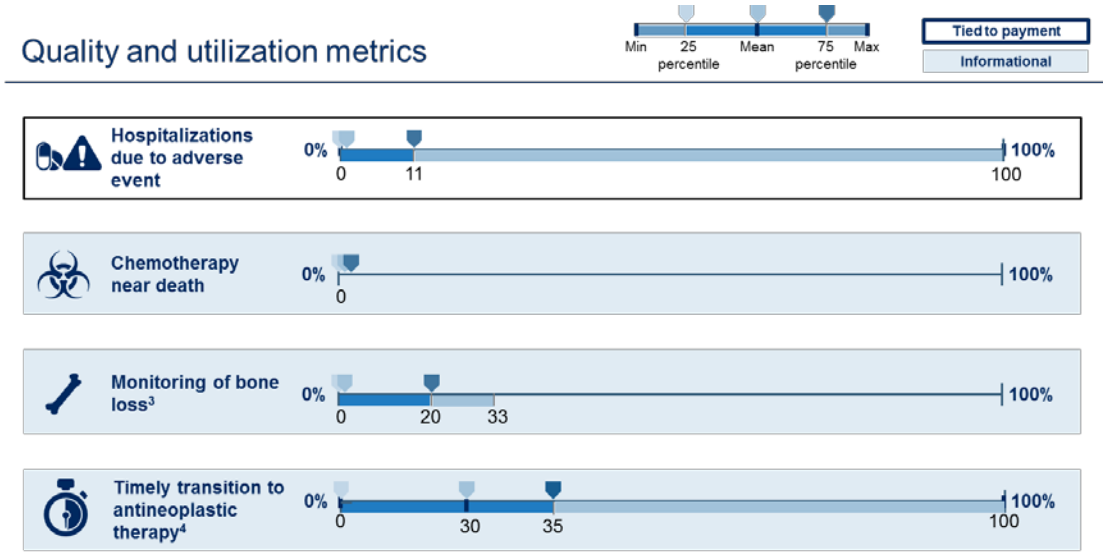
1 Showing a select number of potential exclusions

2 For episodes with this potential exclusion; one episode can have multiple exclusions

3 Age refers to patients under 13 years or over 64 years of age

SOURCE: OH claims data with episodes ending between 1/1/2014 and 12/31/2014

EXHIBIT 8 - PAP PERFORMANCE ON PROPOSED EPISODE QUALITY AND UTILIZATION METRICS[1,2]



1 For valid episodes (158) across PAPs with 5 or more valid episodes (13); valid episodes for PAPs with 4 or less episodes are not included in this analysis; valid episodes do not include those with business (e.g., third-party liability, dual eligibility) or clinical exclusions (e.g., HIV)

2 Timely clinical registry reporting is currently not reflected in this exhibit

3 For patients on aromatase therapy for breast cancer who had a central dual energy X-ray absorptiometry (DXA) or are on pharmacologic therapy (e.g. bone resorption inhibitors)

4 Evidence of biopsy or breast cancer surgery up to 60 days before the triggering treatment

SOURCE: OH claims data with episodes ending between 1/1/2014 and 12/31/2014