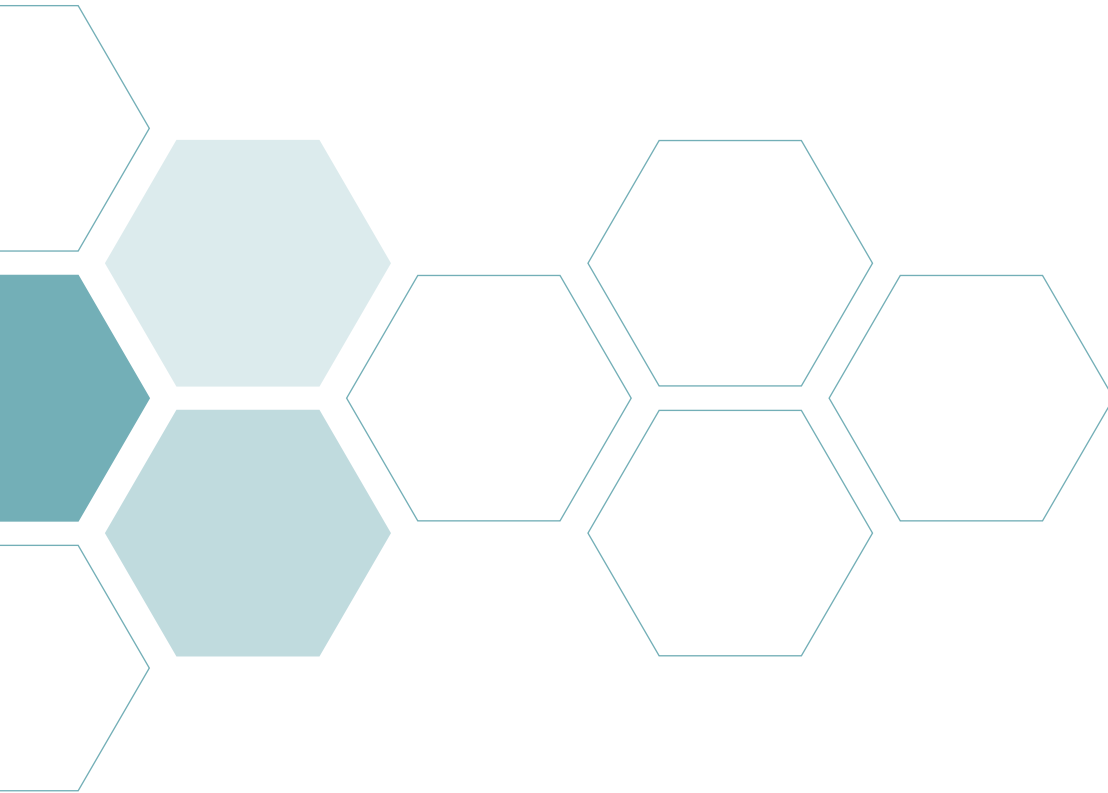


# NAMCP Medical Directors Institute 2018 Oncology Profile Study:

The Importance of Patient Management, Total Overall Costs of Care,  
Patient Acuity and Provider Collaboration for Managing Oncology Costs



**JOURNAL of MANAGED CARE MEDICINE**

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Douglas Murphy Communications, Inc.

### Custom Article Reprints

High quality reprints of individual articles  
are available in print and electronic formats.

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804-527-1905 for reprints.

ISSN: 1094-1525. The *Journal of Managed Care Medicine* is published by NAMCP Medical Directors Institute. Corporate and Circulation offices: 4435 Waterfront Drive, Suite 101, Glen Allen, VA 23060; Tel (804) 527-1905; Fax (804) 747-5316. Editorial and Production offices: P.O. Box 71895, Richmond, VA 23255-1895; Tel (804) 387-7580; Fax (703) 997-5842. Advertising offices: Sloane Reed, 4435 Waterfront Drive Ste 101, Glen Allen, VA 23060 Tel (804) 527-1905, Fax (804) 747-5316. All rights reserved. Copyright 2018. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage or retrieval system, without written consent from the publisher. The publisher does not guarantee, either expressly or by implication, the factual accuracy of the articles and descriptions herein, nor does the publisher guarantee the accuracy of any views or opinions offered by the authors of said articles or descriptions.

POSTMASTER: Send address changes to The Journal of Managed Care Medicine, 4435 Waterfront Drive, Suite 101, Glen Allen, VA 23060.



# JOURNAL of MANAGED CARE MEDICINE

The Official Journal of the NAMCP MEDICAL DIRECTORS INSTITUTE

A Peer-Reviewed Publication

Oncology Profile Study 2018

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# NAMCP Medical Directors Institute 2018 Oncology Profile Study:

## The Importance of Patient Management, Total Overall Costs of Care, Patient Acuity and Provider Collaboration for Managing Oncology Costs

Dawn Holcombe, MBA, FACMPE, ACHE and Sheryl Riley, RN, OCN, CMCN

### Summary

This monograph discusses ways to contain oncology costs and care through patient management and provider collaboration. Using profiles and comparisons of four unique markets from claims based data, we build recommendations and observations relative to disease, providers, patient acuity and Total Overall Costs of Care, that will affect local and national managed care medical directors and providers.

### Abstract

*This study reviews the Total Overall Costs of Care profile for oncology patients for four unique claims data sets from local, regional and state payer claims databases. It discusses trends and observations for these populations in the context of disease specific challenges and opportunities, quality and payment reform, the business of oncology, and issues and strategies for plans and purchasers seeking solutions for oncology management. The study findings will lead to activities and initiatives within the NAMCP Medical Directors Institute to support medical directors from purchasers, plans, and provider systems, to achieve greater collaboration that should lead to improved patient outcomes in oncology.*

### INTRODUCTION

THE NAMCP MEDICAL DIRECTORS 2018 Oncology Profile (2018 Oncology Profile) study from the NAMCP Medical Directors Institute Oncology Council provides a real-world perspective on the actual overall total care spend for oncology patients in four distinct markets, and actionable information. **A unique, national non-profit initiative to aggregate and benchmark full claims/treatment data from real world claims data, the 2018 Oncology Profile observes and addresses the range of care delivery programs, patient variation, and disease, as well as implications of those components of cancer treatment related to the management of oncology.**

Oncology treatment, quality, value and costs are among the top concerns for health plans and purchasers, yet most medical directors in those venues are not oncology-trained specialists. There is great interest and increased discussion about understanding and managing oncology, but too often plans and

purchasers also seek a context in which to evaluate potential policy, risk management and value of care being provided for their members. Members of the NAMCP Medical Directors Oncology Institute have asked for a context from which to consider oncology management options, to consider the resources that NAMCP can offer, and to develop actionable oncology policy strategy that is better informed, relative to market trends. The NAMCP 2018 Oncology Profile study is the first to transform claims data into useable acuity-based oncology profiles for participants, and to launch a series of abstracts and white papers to transform and heighten oncology management policy between business coalitions, health plans, employers, and providers.

The 2018 Oncology Profile study was sponsored by Genentech for the purpose of enhancing the understanding of Total Overall Costs of Care for cancer patients and becoming a catalyst for improved collaborations between business coalitions, health plans, employers, and providers for better patient outcomes.

## Managing Cancer in 2018

According to the American Cancer Society (ACS), “Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. There are many known cancer causes, including lifestyle factors, such as tobacco use and excess body weight, and non-modifiable factors, such as inherited genetic mutations, hormones, and immune conditions. These risk factors may act simultaneously or in sequence to initiate and/or promote cancer growth.”<sup>1</sup>

Cancer treatment success is vulnerable to how early cancers are diagnosed, the sensitivity of the cancer and treatment to comorbidities, how well adverse events are controlled and the selection of appropriate therapy that is delivered in a timely and safe manner. Cancer patients are complex and may seek treatment at different stages of their disease, but also experience varying health and environmental conditions that all contribute to the outcomes and total overall costs of their care. Effective cancer management (on an individual and a population basis) is the responsibility of business coalitions, health plans, employers, and providers, but cannot be achieved without collaboration.

Cancer incidence in a market is difficult to obtain, but crucial in the hope of better understanding the opportunities for better cancer management. Only those with full claims data sets hold the detailed information that can reveal the Total Overall Costs of Care for patients, but most do not have sufficient analytic capabilities to drill down and create a profile of the oncology market in their area. Providers only, can access information on the trends and costs of care within their facilities.

## The Importance of Comorbidities and Acuity Scores in an Oncology Population/Market Profile

The reason for adding initial acuity scores into an analysis of an oncology population/market profile is to clarify the intensity of resources that are likely to be needed or expended for different patients. **The more that business coalitions, employers and health plans understand the concentration of different patient acuity levels in their own oncology markets, and which providers and diseases are most involved with those patient acuities and costs, the more they can begin to share that information with providers and develop collaborative strategies for better management of those patients. Drug management without consideration of other acuity factors for patients is likely to contribute to lower drug costs, but higher overall patient cost of care.**

A patient with a simple melanoma that can be excised with no further treatment is going to consume far fewer resources and treatment costs than a patient with a cancer that will require further treatment and who also faces medical challenges from comorbidities such as diabetes and hypertension. One patient with breast or esophageal cancer can be treated with generic drugs and have no adverse effects, while another patient with a similar cancer diagnosis, but who also has cardiac issues could develop ischemic ECG abnormalities or chest pain, leading to higher management costs, including hospitalization. The differences between these patients are often not recognized in traditional drug utilization management programs and processes, yet failure to identify and manage those differences collaboratively at the reimbursement policy and coverage level, as well as at the treating provider level, can lead to significant additional costs.

### Steps to Understanding a Geographic Population/Market Oncology Profile

- Identify on which diseases the spend is concentrated.
- Know both the Total Overall Costs of Care and the Average Costs of Care for each cancer.
- Understand the distribution of acuity levels for cancer patients in the market.
- Define the top providers caring for cancer patients in the market (by Total Overall Costs of Care, Member. Acuity Level Care, Average Costs of Care per member)
- Learn the profiles of specific cancers – the Total Overall Costs of Care Distribution and Episodes of Care Patterns.
- Identify the impact of comorbidities and effective patient management on the most complex members.
- Plan effective action to improve the status of the population, thus the management of the most complex. members, through collaboration with key market providers, and ultimately reduce Total Overall Costs of Care while improving quality and outcomes for cancer patients in the market.

## Total Overall Patient Costs of Care are Growing in Importance

Total Overall Costs of Care, rather than just Cancer Costs of Care for cancer patients, are growing in importance as data sharing between business coalitions, health plans, employers, and providers begins. The Center for Medicare and Medicaid Services (CMS)

is setting the stage by now providing total overall beneficiary cost and benchmarking data to oncology providers participating in the Oncology Care Model Project (OCM) – spurring new provider focus on accountability and enhanced patient management. This creates opportunities for those who pay for care to also leverage their data and accountability/value-based provider relationships.

**Business Coalitions, Commercial insurers and self-funded employers that can address full cost accountability with providers, will achieve more significant overall cost reductions and quality improvements, than those that focus on drug management. This can be accomplished by:**

- **Identifying Oncology Management Improvements** – moving beyond drug cost into the true basis for improved oncology management, complexity of patients and total overall costs of all care, not just oncology services and drugs.
- **Segmenting Oncology Patient Total Cost Profiles** – identifying overall total and average per member costs of care across payer groups, providers, disease, and patients by complexity, based upon real world data on a local and aggregated basis, will yield illuminating opportunities for education, prevention, wellness, policy and care.
- **Focusing on Oncology Management Opportunities** – beyond drug management, complexity can be positively or adversely affected by timeliness of screening and diagnosis, care management, treatment choices, site of service, patient demographics, comorbidities, patient engagement, provider and payer perspectives and choices, and market understanding of the disease, treatments, etc.

### Medical Director Concerns and Questions About Their Oncology Population/Market Profile

The following are topics and questions beginning to be raised by medical directors of business coalitions, health data exchanges, employers, health plans and providers regarding the profile of their oncology spend in comparison to the general landscape:

- How can I understand my oncology spend for my members/employees?
- What is the total cost of care spend for my patients with cancer?

- Who are my key providers for patients with cancer?
- What diseases are included in my oncology spend?
- How do my average Total Overall Costs of Care compare to those of other markets or nationally, especially for specific cancers?
- How complex are my cancer patients and what does that mean for costs and disease management?
- What information can I take to key providers in my market for collaborative patient management?
- What does an individual cancer look like, in terms of cost, complexity and patient stories?
- What do I need to know about my own oncology spend and treatment profiles to improve collaboration, care, and patient outcomes for my market?

These questions are all being factored into choices, within a cancer center or a health plan, that are being made about the management of oncology that affect the cost, quality and access of cancer care. In these choices, it is useful to be aware of the many variables involved, while deciding how oncology care will be managed. The NAMCP Medical Directors Institute develops tools and support like this 2018 Oncology Profile study for the decision-making challenges that face its members.

### Methodology

Four diverse participants in the 2018 Oncology Profile provided three full years (2014, 2015 and 2016) of both medical and pharmacy claims data to the NAMCP Medical Directors Institute, under appropriate confidentiality and privacy agreements. Three of the participants wish to retain confidentiality. One participant felt that this initiative was aligned with several activities they are pursuing with their data analytics and wanted to openly share their participation in this project. There were 2,082,761 total covered lives represented in the aggregated data sets. Of those, 888,128 had a diagnosis of cancer. There were 850,631 members under Medical Claims, and 715,078 under Pharmacy Claims. For the purposes of this 2018 Oncology Profile study, members with a minimum of one year of cancer claims were identified, so the analyses were conducted on a net aggregated data set of 394,128 members with cancer.

No individual or participant data was shared with any external entity, including the sponsor. The data base established by the NAMCP Medical Directors Institute and Saisystems Health was kept private and

used exclusively for the development of trends and observations under the Oncology Profile project.

### **NAMCP Medical Directors Institute Collaboration with Colorado Center for Improving Value in Health Care**

The Colorado based Center for Improving Value in Health Care (CIVHC) is the Administrator of the Colorado All Payer Claims Database (CO APCD). The CO APCD is the state's most comprehensive claims data set representing the majority of insured lives in Colorado and includes all major commercial payers, Medicaid and Medicare. CIVHC, represented as "Client D" in this study, partnered with the NAMCP Medical Directors Institute, and will be profiling this project that used the CO APCD data set in their Change Agent Gallery (<http://www.civhc.org/change-agents>). CIVHC, like the NAMCP Medical Directors Institute, is an objective, not-for-profit organization.

It is important to note that CIVHC provided a data set from the CO APCD to support the analysis, but is not responsible for the results, representation of the data, or conclusions made within this paper.

### **The 2018 Oncology Profile Data Set and Analyses**

All participants shared claims data sets from their market areas, which were geographically in the center and east of the country. One participant was an employer, one an integrated health system with health plan and provider components, and two represented state-wide commercial medical and pharmacy claims data sets.

The data sets were blinded, then analyzed independently and as an aggregated data set by Saisystems Health. Saisystems Health is a health services company focused on providing care management solutions such that business coalitions, health plans, employers, providers and patients achieve cost savings and improved clinical outcomes. Backed by their cutting-edge, proprietary intriCare technology platform, they include reporting, analytics and software to guide care management workflow and operations. Saisystems Health analyzed the submitted medical and pharmacy claims for each client and extracted total covered lives with at least a minimum one year of cancer diagnosis claims. Saisystems Health provided a standard set of reports for each client, and one for the aggregated data set.

The 2018 Oncology Profile study placed the aggregated data into a useable common format which could be utilized to identify where dollars were being spent and potential opportunities for care improvement. The claims were divided into

cost buckets of provider costs, primary diagnosis, patient acuity and place of service. The average and median costs of diseases, place of service and patient acuity levels, top ten diseases and providers, as well as levels of care and episodes of care analyses for up to six preselected cancers (breast, lung, liver, bladder, melanoma, and prostate) were derived from the aggregated data.

Patients were given initial acuity scores based upon their financial (cost), diagnosis, comorbidities, and demographic factors as reflected in claims data. The acuity scores were developed based upon a proprietary algorithm used by Saisystems Health for over a decade. Saisystems Health also provides care management services for oncology patients and expands their acuity scoring of patients for their customers through a combination of screenings, interviews, assessments, and clinic, hospital, skilled nursing facilities, as well as home visits with patients. For the purposes of this 2018 Oncology Profile, the initial acuity score was the only score assigned. Saisystems Health has found the initial scores based upon claims data analysis to be comparable to later scores completed when clinical staging data was added.

Patients were classified based upon their claims data for the Oncology Profile into four levels of acuity.

- Level 1 – Minimally Toxic Treatment, Minimal Comorbidities
- Level 2 – Moderately Toxic Treatment, Low Comorbidities
- Level 3 – Highly Toxic Treatment, Moderate Comorbidities
- Level 4 – Recurrent Metastatic and/or Advanced Disease, High Comorbidities

Most of the claim data sets were of sufficient size so that comparative data across the diseases could be reported. The analysis followed the CMS Cell Size Suppression Policy (current version date: May 8, 2017). The CMS standards for minimum cell sizes aim to protect the confidentiality of Medicare and Medicaid beneficiaries by avoiding the release of information that can be used to identify individual beneficiaries. No cell (e.g. admissions, discharges, patients services, etc.) containing a value of 1 to 10 was reported directly. In addition, no cell was reported that allowed a value of 1 to 10 to be derived from other reported cells or information. The policy applies to any output in tables and texts describing any of the following: beneficiaries, procedures and diagnoses.

## Findings from the NAMCP 2018 Oncology Profile Study

### CANCER PROFILES AND MIX VARY ACROSS MARKETS

The Aggregated Oncology Profile shown in Figure 1 reflects the range of diseases found in the data set. These primarily commercially insured members revealed over 40 different cancers across the 394,128 patients with a minimum one year of cancer claims. Of greatest note is the wide variation for every cancer between median and average costs. This indicates a wide range of differences in treatment (and thus patient Total Overall Costs of Care) for the same disease across the aggregated data base. While this study does not identify the specific causes, some of those differences may be ascribed, as we shall see in later figures, to variations in site of care delivery, while others could be the result of loose patient management and both gaps and redundancies in management of the patient across not only the cancer journey, but also comorbidity management.

### OBSERVATIONS

The columns in Figure 1 show the cancers in order of Total Overall Costs of Care spent per patient (not just costs spent for cancer care), as reflected on the left axis. The median, average and national costs for those patients with that primary cancer diagnosis are measured along the right axis.

### • Metastatic Cancer Claims are the Most Costly—

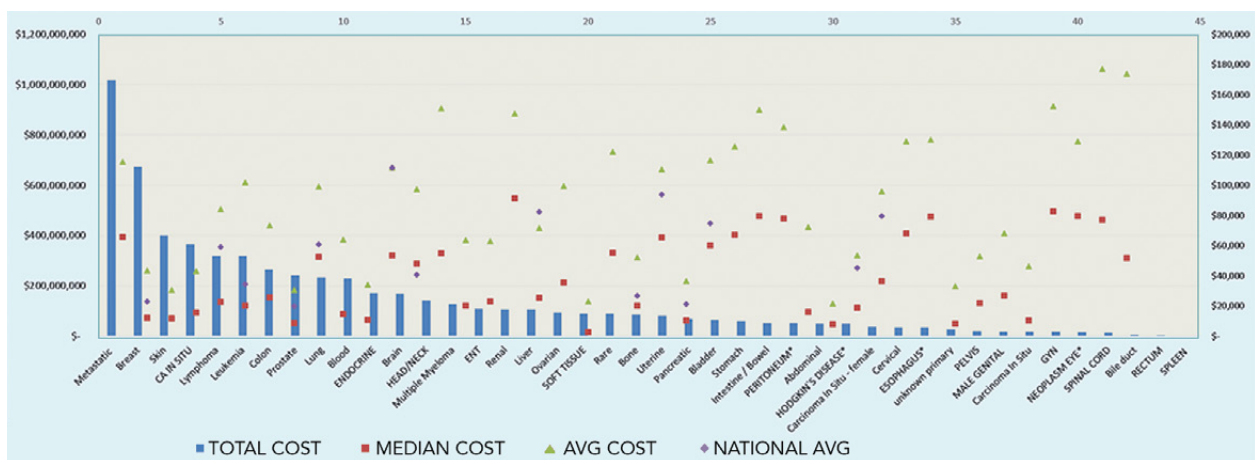
The costliest category for the aggregated 2018 Oncology Profile data set was primary diagnoses of metastatic disease, resulting in over one billion total dollars in Total Overall Costs of Care. These patients not only have advanced disease and are dealing with cancers that have spread out of the primary site to other location in their bodies, but they also are more likely to be dealing with other comorbidities. The other specifically identified cancers showed higher average and median costs, but patients with metastatic diagnoses incurred Total Overall Costs of Care ranging from one-third more to in excess of 10 times the Total Overall Costs of Care of patients with other cancer diagnoses.

- Metastatic categorization came through as a primary diagnosis on most of the claims data sets. Patients that were identified as metastatic based upon the diagnoses, were not counted in the other cancer disease data. For the purposes of this analysis, we did not delve deeper into other cancer diagnoses related to the metastatic diagnosis.

- **Breast Cancer is a High Total Overall Cost, but Lower in Average Costs per Patient** – breast cancer total overall cost of care spending

**Figure 1: Total Overall, Average and Median Costs of Disease Benchmarked**

Disease Benchmarked Total Overall, Average and Median Costs



### Observations

- Individual diseases, in the region, shown by Cost, with annotations for Average and Median Costs as well
- Average and median cost are widely scattered. This could mean that there is much variation in the treatment of cancer

<http://www.nationalacademies.org/hmd/~/media/C6D78194E674475AA6B861D2F18D0C53.ashx>  
<https://costprojections.cancer.gov>



was more than double most of the other cancers, but showed much lower average costs per member. The sheer volume of breast cancer patients may be a factor for that second highest total spend, but it will be important to also look at the acuity levels of these patients. Comorbidities and loose patient management may also lead to higher Total Overall Costs of Care.

- **Wide Variation in Cancer Costs Across Markets** – the wide gaps between average and median Total Overall Costs of Care for most of the cancer diagnoses shown in this figure suggest that there may be several patients, possibly groups from some of the local markets, where higher Total Overall Costs of Care serve to raise the average significantly. It is possible that site of care delivery might contribute to this variation. Average costs of care are likely to be higher in hospital-based care settings rather than private community practice-based settings. Avalere Health, Inc. noted in a March 2012 report on the Cost of Cancer Care that “Our risk-adjusted results suggest that treatment for patients receiving chemotherapy in a HOPD [Hospital Outpatient Department] costs on average 24 percent more than treatment received in a physician’s office.”<sup>2</sup>

- **Each Market Shows a Unique Cancer Profile – Illustrating that Healthcare IS Local** – there was also significant variation in terms of which diseases reflected the highest Total Overall Costs of Care. The 2018 Oncology Profile looks at Total Overall Costs of Care, therefore comorbidities, site of care delivery and general patient management (or lack thereof) can affect the mix of highest cost disease profiles in individual markets. The sheer volume of patients with a specific disease diagnosis, even if the average cost of patients with that disease is lower than of other cancers, can raise that disease’s costs.

- In Colorado, analysis of the CO APCD data showed the Total Overall Costs of Care of patients with a metastatic primary diagnosis to be almost double those of patients with a primary diagnosis of breast cancer, and the next eight primary diagnosis cancers were each all less than one-third the Total Overall Costs of Care of breast cancer patients.
- The other three anonymous client data sets showed the five diseases with the highest reportable Total Overall Costs of Care to be:

- Leukemia, malignant neoplasm, lung, breast, and liver
- Breast and prostate (although seven other diseases that had to be suppressed because the patient counts per disease were less than 10, did reflect higher Total Overall Costs of Care than breast and prostate cancers for this client)
- Metastatic, skin, breast, CA in situ and lymphoma

#### NAMCP NOTE

Knowing the distribution and variation of disease and the Total Overall Costs of Care, is the first step to understanding the cancer profile of a population/market. This information can become the catalyst for a one to three-year plan to collaborate with treating providers to better control variation and outcomes in the local market.

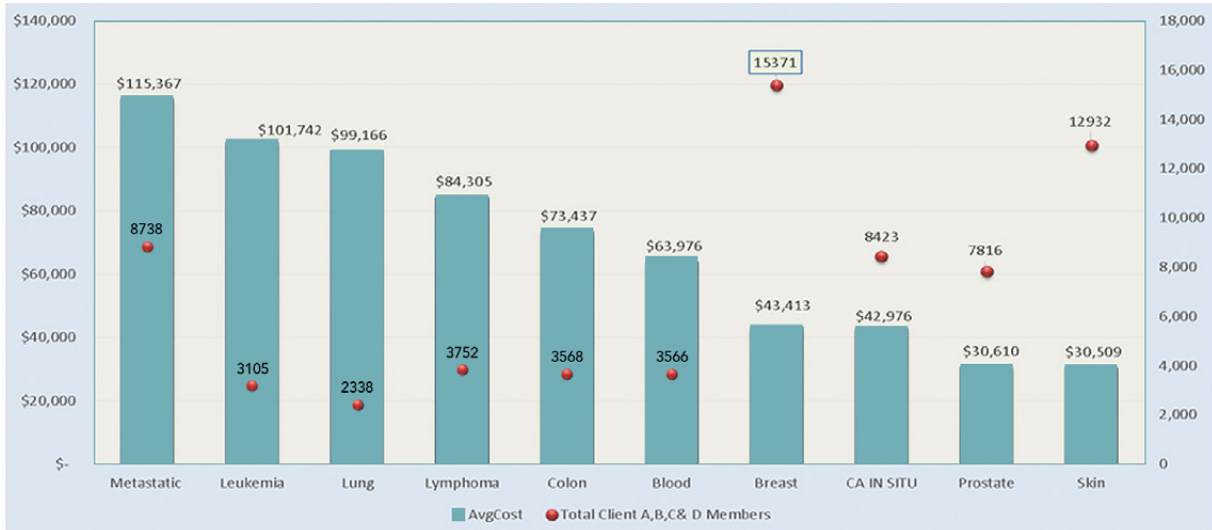
#### Top Ten Cancer Diagnoses by Average Costs of Care

Of the 394,128 members in the study with cancer, almost 18 percent (17.7%) represented the top ten cancer diagnoses in the data base with the highest average cost over the three-year period, ranging from \$115,367 for metastatic claims to \$30,509 for skin cancer. Figure 2 ranks the top ten cancers in the aggregated 2018 Oncology Profile by average cost per member. Cancers with the highest incidence of occurrence among members tended to reflect lower average costs per member.

#### OBSERVATIONS

- Primary diagnosis of metastatic disease claims, representing the most advanced disease, was by far the most costly on average per member, but represented only 2.2 percent of the members in the 2018 Oncology Profile data set.
- Leukemia and lung cancers, each with member counts of less than 1 percent of the data set, averaged around \$100,000 per member.
- Breast cancer members were almost 39 percent of the data set, but their average cost per member was a little more than one-third (37.6%) of the average cost of caring for a metastatic cancer member.

Figure 2: Top Ten Cancer Diagnoses by Average Overall Costs of Care



Observations

- Client D Leukemia average cost less than National average
- Client C Melanoma costs are very high than national average
- Client C Leukemia and Prostate average cost is significantly less than national average cost, rest all are almost equal or high

| Cancer DX  | Client A Avg Cost | Client B Avg Cost | Client C Avg Cost | Client D Avg Cost | Client ABCD Avg Cost | National Intl Yr. Avg Cost | National Final Yr. Avg Cost |
|------------|-------------------|-------------------|-------------------|-------------------|----------------------|----------------------------|-----------------------------|
| Metastatic |                   |                   | \$ 153,651        | \$ 99,937         | \$ 115,367           |                            |                             |
| Leukemia   | \$ 275,375        |                   | \$ 101,765        | \$ 99,989         | \$ 101,742           | \$ 34,602                  | \$ 131,657                  |
| Lung       | \$ 105,928        |                   | \$ 134,973        | \$ 82,742         | \$ 99,166            | \$ 60,709                  | \$ 93,921                   |
| Lymphoma   | \$ 74,509         |                   | \$ 89,703         | \$ 82,084         | \$ 84,305            | \$ 59,291                  | \$ 113,219                  |
| Colon      | \$ 33,775         |                   | \$ 92,843         | \$ 82,269         | \$ 73,436            | \$ 51,327                  | \$ 84,519                   |
| Blood      |                   |                   | \$ 72,433         | \$ 59,884         | \$ 63,976            |                            |                             |
| Breast     | \$ 25,099         | \$ 114,077        | \$ 62,396         | \$ 34,468         | \$ 43,413            | \$ 23,078                  | \$ 62,856                   |
| CA IN SITU |                   |                   | \$ 55,333         | \$ 34,545         | \$ 42,976            |                            |                             |
| Prostate   | \$ 18,581         | \$ 45,903         | \$ 48,570         | \$ 22,351         | \$ 30,610            | \$ 19,710                  | \$ 62,242                   |
| Skin       |                   |                   | \$ 31,335         | \$ 27,966         | \$ 30,509            |                            |                             |

- Almost the same number of members had CA in SITU as their primary diagnosis as those who had Metastatic cancer, but their average costs were also just a little more than one-third of those patients with Metastatic cancer.
- Prostate cancer is considered one of the top four cancers, but in this data set, the average costs per member were close to a quarter of the average costs of managing Metastatic cancer, and the Prostate member count was under 3 percent of the total data set (2.7%).

The Table in Figure 2 shows the variation in Total Overall Cost of Care Average Costs for these Top Ten Cancer Diagnoses across the four participants in the data set. One client had reportable data for only two cancers – Breast and Prostate based upon the CMS Cell Size Suppression Policy – whereas other clients had sufficient data set sizes to report all the cancers seen in their data. In this table, the variation of averages costs in different markets across the country becomes more obvious.

While not small enough to be suppressed, Client A is a smaller data set than Clients C and D. The higher average costs for Client A in leukemia (more than double that of the aggregated data set) and lung, and the lower than average costs in lymphoma, colon (half of the aggregated data set), breast and prostate (almost half of the aggregated data set) highlight the variation that can occur across diseases and markets.

Client C tends to have average costs of care higher than the aggregated data set for metastatic, lung, lymphoma, colon, blood, CA in situ, breast and prostate. Only leukemia costs were close to the aggregated average.

The CO APCD data (represented as Client D in the table) tends to have average costs of care lower than the aggregated data set for every cancer.

Client B has the smallest data set, and the highest average cost for breast cancer of all the participants.

## NAMCP NOTE

Treating providers are only beginning to understand the Total Overall Costs of Care or Average Costs Per Member for different cancers in their markets. Identification of these key data elements becomes a focal point for initial collaborative discussions with local market providers. **As the oncology market is pushed into a more value-based payment model, understanding cost (Total Overall Costs of Care not just the costs of treatment by the provider) and variability of patient health and acuity status will become vital for all stakeholders.**

Consider local market profiles and needs: Knowing that cancers can vary in financial impact, identifying both the most costly in terms of Total Overall Costs of Care and as Average Costs Per Member for a local population can lead to more focused conversations between business coalitions, health plans, employers, and key treating providers for those cancers.

The significant variation in average costs of care across the four clients illustrates the challenges

of discussing risk with providers. Individual providers, whether hospitals or practices, care for a subset of cancer patients in an individual market. Achieving control over sufficient volumes of patients with individual cancers to effectively manage risk will be a significant challenge, if not impossible. **Collaborative discussions between key business coalitions, employers, health plans and providers for cancer patients in a given market may be more effective in Total Overall Costs of Care reduction and quality improvement than expecting provider risk assumption models to yield success, but either way, having and understanding the Total Overall Costs of Care allows for better discussion and improved quality of care.**

Collaboration Discussion Points:

- Here is what our local market looks like!
- These are cancers we are concerned about!
- How can we manage these cancers and patients better together to reduce costs and improve outcomes?

## Patient Complexity Drives Costs — Stratification/Care Level Oncology Summary

Total Overall Costs of Care and Average Costs of Care do not provide sufficient information to understand the oncology profile of a local market. Cancer patients in and of themselves are complex, but navigating the burden of cancer, with additional comorbidities and health concerns can be overwhelming and lead to far higher costs than expected. **The 2018 Oncology Profile analyzed the member cancer patients based upon their demographics, type and costs of care, and the presence of multiple diagnoses and comorbidities.**

As shown in Figure 3, 82 percent of the 394,128 cancer members received acuity scores that placed them in the simplest acuity category of Level 1 Acuity (Low Acuity and Minimally Toxic Treatment), with an average total cost of care of \$10,114.

Almost 11 percent of the members were ranked at Level 2 Acuity (Medium Acuity and Moderately Toxic Treatment) with an average total cost of care more than triple that of the Level 1 members — \$39,804. This is due to the nature of a categorized

Level 2 Acuity patient ranking, as these patients often experience multiple therapies and surgeries in combination for cure. Hospitalizations for surgical interventions can also drive up the cost.

Only 5 percent of the members landed in the Level 3 Acuity (Higher Acuity and Highly Toxic Treatment), and their average total cost of care was almost six times that of the Level 1 members — \$58,715. These are usually patients with late stage cancers who opt for aggressive, often expensive new and cutting-edge therapies.

Just 3 percent (11,161) of the 394,128 members in the full data set qualified as Level 4 Acuity (High Comorbidities, Recurrent Metastatic and/or Advanced Disease with Highly Toxic Treatment), but their average costs of care were more than ten times the costs of the Level 1 Acuity members (\$103,783.) and almost double that of the Level 3 Acuity members. The higher cost of Acuity Level 4 ranked patients is due to the incurable nature of metastatic cancer. For some cancers, this can be considered chronic cancer care, which opens the door for maintenance therapies which could expand life and treatment for another 5

Figure 3: Stratification Summary Report for Overall Costs

| Total 394,128 Members     |                  |                  |                  |                  |  |
|---------------------------|------------------|------------------|------------------|------------------|--|
|                           | Level-1          | Level-2          | Level-3          | Level-4          |  |
| Maximum Cost              | \$ 5,016,428     | \$ 10,068,196    | \$ 3,016,875     | \$ 6,298,078     |  |
| Median Cost               | \$ 3,066         | \$ 18,524        | \$ 24,930        | \$ 44,372        |  |
| Avg Cost                  | \$ 10,114        | \$ 39,804        | \$ 58,715        | \$ 103,783       |  |
| Total Cost                | \$ 3,239,171,467 | \$ 1,659,987,493 | \$ 1,158,680,301 | \$ 1,158,420,335 |  |
| Total Claim Cost          | \$ 2,427,688,137 | \$ 1,274,025,607 | \$ 970,031,414   | \$ 1,043,220,795 |  |
| Total Pharma Cost         | \$ 811,483,331   | \$ 385,961,886   | \$ 188,648,887   | \$ 115,199,540   |  |
| Minimum Acuity            | 2                | 51               | 101              | 201              |  |
| Maximum Acuity            | 50               | 100              | 200              | 4319             |  |
| Neo Member Count          | 321,492          | 41,732           | 19,737           | 11,161           |  |
| Neo Male/Female Count     | 111458 / 210034  | 16048 / 25684    | 8491 / 11246     | 5211 / 5950      |  |
| Non Neo Member Count      | 431,288          | 25,139           | 11,390           | 5,197            |  |
| Non Neo Male/Female Count | 142125 / 289163  | 8567 / 16572     | 3958 / 7432      | 2014 / 3183      |  |

Observations

- The average cost per member is going up by level of care (Level 1 being the healthiest) and the numbers of members per level is going down
- Average cost per member is more than double from 3 to 4

to 10 years. Also, the use of last ditch efforts, clinical trials and over use of inpatient facilities and services, as well as utilization of new novel therapies are common for these patients. Clinical trials and drug studies usually begin with the metastatic population and then over time, work their way to application in first-line therapy. Any credible guideline or treatment pathway for advanced disease will always include clinical trial participation as a recommended option to consider.

OBSERVATIONS

Individual clients experienced variations in the ranges of Average Costs of Care for each patient Level of Acuity, and in the percentage mix of patients at the different acuity levels. **These variations were not quantified, but influencing factors could include late diagnosis, fewer screenings, more gaps in care and insufficient side effect management, higher incidence of related costs, and even the distribution of the care delivery sites in the geography of the market, and related access issues.**

- Client A had fewer members at Level 1 Acuity (70%), and more at Levels 2 (21%) and 3 (9%), and fewer at Level 4 (1%). Client A Average Costs for Levels 1 and 2 were comparable to the aggregated data set, but Level 3 was significantly higher than the aggregated data costs by 34

percent, yet Level 4 was about 10 percent lower. Note, that this Client had one of the smaller data sets in the aggregated population, and greater variation can be more pronounced with lower denominator counts.

- Client B had a lower percentage of Level 1 Acuity members than the aggregated data set (77%) and about 5 percent more members at Level 2 Acuity. This was a smaller data set so the cost variations were significantly wider than the aggregated data set.
- Clients C showed significant variation from the aggregated data set. There were more members in the Level 1 Acuity (86%) than in the aggregated data set (82%), and far fewer Level 4 Acuity level members (0.2% versus 2.8%). However, the average costs per member at each acuity level were significantly higher for this population/market than for the aggregated data set – 67 percent higher for each of Levels 1 and 2, 152 percent higher for Level 3, and 268 percent higher for Level 4 Acuity members.
- The Colorado data set (Client D) reflected an acuity distribution that was fairly close to the aggregated data set.

#### NAMCP NOTE

Identification of the more complex patients suggests that a patient management focus on those complex patients, in collaboration with treating providers, may yield more tangible results than a broad-brush management approach. Working with providers to anticipate which patients have the potential to accelerate their complexity, and for whom potential adverse effects could be aggravated by comorbidities or gaps in care management or communication could prevent patients from advancing from lower levels of acuity to higher, more costly levels.

- Increases in Level 1 Acuity and decreases in Level 4 Acuity in a population or market could be a significant effect of early screening, which usually mean the cancers are identified early, treated, cured and therefore result in limited advanced disease. This is a trend for which every employer and/or group should be striving.
- Screening, cancer education and wellness programs may become opportunities to work with providers to raise awareness in the general population, so that cancers are caught in the early, more treatable stages.
- Toxicity of cancer drugs is often a balance against aggressiveness of the drug to battle the cancer. Giving treating providers facts about the Total Overall Costs of Care in a population or market, as well as giving them the flexibility to closely manage patients at risk of adverse effects could yield significant cost savings while increasing quality of care and outcomes.

- Supportive care drugs exist to help manage the toxicities of cancer treatments. Allowing physicians to address potential side effects and symptoms before they become a reality can dramatically improve the patient care and ultimately reduce costs due to gaps in care once patients have started to exhibit breakthrough symptoms.

- **Traditional drug management tools such as step edits, prior authorizations, and formulary limitations can become a direct barrier to patient management from an acuity and Total Overall Costs of Care perspective. Saving pennies on a drug that allows symptom breakthroughs and leads to hospitalizations for adverse effect management is not cost-effective.**

#### Collaboration Discussion Points:

- **Here is what our local distribution of cancer patients by acuity scores looks like.**
- **Here are the types of patients about whom we are initially most concerned.**
- **How can we manage these cancers and patients better, to reduce costs and improve outcomes?**
- **What are likely triggers that might lead a cancer patient to become more complex and higher in the acuity measures?**
- **Are there benefit design or coverage policies that might be supportive or barriers to better patient management?**

### Patient Complexity is a More Important Variable than Drug Choice

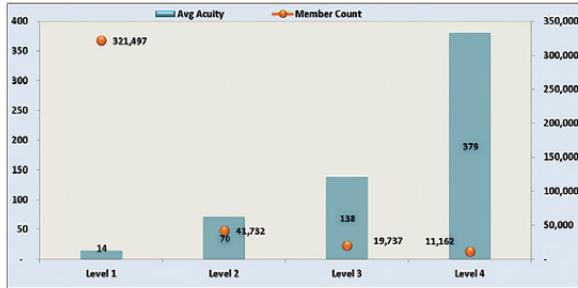
#### AVERAGE ACUITY AND COST BY LEVEL OF CARE

Many oncology management programs focus on the choice of drug. Clinical Guidelines and Clinical Pathways programs, in particular, try to narrow down to one preferred drug for a cancer diagnosis. Clinical Guidelines and Pathways most frequently utilized by the health plan community tend to be administered by external vendors and focus on simple paths based upon diagnosis and at most a few other variables.

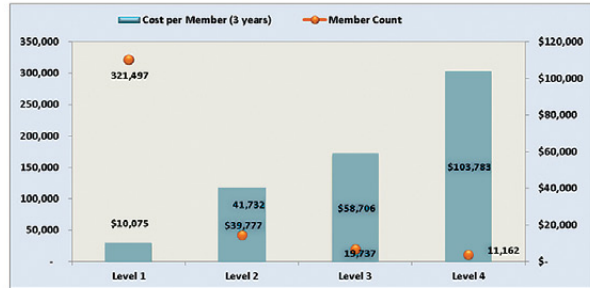
In the 2018 Oncology Profile study, the importance of medical decision-making and provider knowledge of the patient is illustrated by the impact of patient acuity and comorbidities on total overall cost of care. Figure 4 showcases the dramatic increase in both Average Acuity rankings and Average Cost Per Member at each of the four Acuity Levels. These differences cannot be managed down by a drug formulary, prior authorization or step edits alone.

**Figure 4: Average Acuity and Costs by Acuity Level of Care**

Average Acuity Level and Members Counts by Level of Care



Average Total Overall Cost per Member by Level of Care



| Stratification Level | Dx Count  | AVGDxCount | Member Count |
|----------------------|-----------|------------|--------------|
| Level 1              | 9,305,891 | 29         | 321,497      |
| Level 2              | 2,663,964 | 63         | 41,732       |
| Level 3              | 1,472,989 | 74         | 19,737       |
| Level 4              | 1,103,612 | 98         | 11,162       |

**Observations**

- Data based on Neoplasm Members only
- Average acuity in each level of care represents the number of diagnoses and cost plus age
- Average acuity grows substantially from 2 to 3 and 3 to 4
- Average diagnoses count includes all current and past diagnoses and symptoms
- Average number of diagnoses per level of care helps to give you a better picture of the member overall condition
- Cost per member more than double from 2 to 4
- Level 4 patients have higher per member cost and higher average acuity

**OBSERVATIONS**

- Patients with Acuity Levels 3 and 4 are actually a fairly small percentage of the total members with cancer. Programs that focus on these patients, which numbered 5 percent at Level 3 and less than 3 percent at Level 4 should be manageable for business coalitions, health plans, employers, and providers, yield significant value.
- In terms of population management, programs that manage to shift even small numbers of patients that could progress into Acuity Level 3 or 4, keeping them at the lower levels, could lead to significant savings due to the large magnifications of average costs at successively higher Acuity Levels.
- The Average Acuity in each level represents the number of diagnoses (comorbidities), costs and toxicities, and patient demographics taken from claims data in the aggregated data set.
- The Average Diagnoses Counts in the attached table in Figure 4 include all current and past diagnoses and symptoms, for all care visits and services, whether or not those visits and services were to an oncologist.

- The Average Number of Diagnoses per Acuity Level helps to provide a better picture of the overall condition and health of the member, which can significantly affect the success of cancer treatments, the incidence of complications during cancer treatment, and additional healthcare costs resulting from those complications.

**NAMCP NOTE**

**Traditional models of drug management, prior authorizations, and step edits may not take into account the acuity levels of patients and their comorbidities.**

One cancer drug may be appropriate for an uncomplicated cancer patient but may cause adverse effects for patients with comorbidities such as hypertension or heart disease, and cause hospitalizations. Patient management at the physician level to determine drug choices allows for more cost-effective and value driven patient care.

Health plans and employers with access to their Oncology Profile, Total Overall Costs of

#### NAMCP NOTE (continued)

Care and Patient Acuity Levels can share this information with key treating providers so as to begin discussions of how more complex patients can be more tightly managed in a collaborative fashion. **Markets with key providers that are actively participating in the CMS Oncology Care Model will be prime examples of key providers that are ready for such conversations, having already embarked upon significant practice and patient management transformation.**

#### Collaboration Discussion Points:

- How do you, as a provider, identify patients with higher acuity levels?
- Do you coordinate care with the patients' other care providers?
- How can we address the treatment, benefit design and management of these patients to allow for provider flexibility to manage these complicated patients and provide them with treatments from the outset that will aggressively address their cancer diagnosis and control flare up of potentially detrimental and costly adverse effects?

### Site of Care Matters – Top Ten Providers by Level of Acuity and Average Cost

Some markets have limitations regarding provider choice. Most larger state level markets will have some mix of academic, hospital and private based care providers. However, some local markets are restricted to all hospital-based or a shrinking volume of private-based care providers due to hospitals purchases of oncology practices. These provider options can play a significant role in the variability of costs of care between markets for oncology and all other services.

A 2012 Avalere study on the total costs of cancer by site of service (which also was a research project for which the NAMCP Medical Directors Institute worked with its members to submit blinded commercial claims data for the purposes of benchmarking and analysis) quantified the higher costs for hospital-based care. **“Our risk-adjusted results suggest that treatment for patients receiving chemotherapy in a hospital outpatient depart-**

**ment (HOPD) costs on average 24 percent more than treatment received in a physician’s office. We also found care for patients treated in a physician’s office less expensive, regardless of the length of the chemotherapy duration.”**<sup>3</sup>

Community-based private office-based care can offer competitive quality at significantly reduced costs compared to academic or hospital-based care for both patients and those who pay for the care.

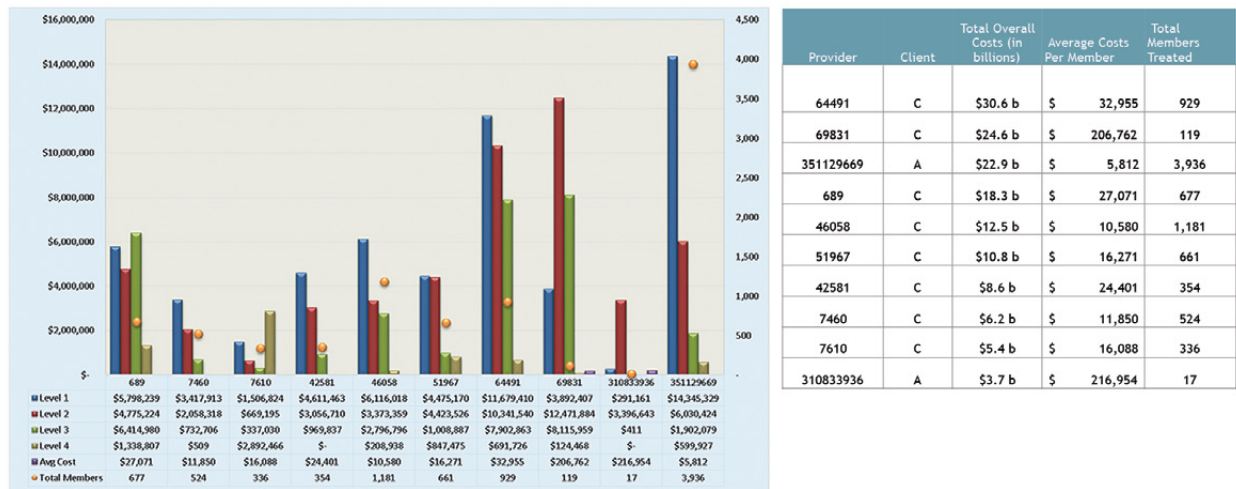
The providers shown in Figure 5 come from across the four client markets. The Average Total Overall Costs of Care for the count of members cared for by that provider, ranges from \$5,812 to \$216,762. The total overall dollars spent at these 10 providers ranges from \$3.7 billion to \$30.6 billion.

Other analyses in the 2018 Oncology Profile study looked at the distribution of costs for each Top Ten Provider between office, on-campus outpatient hospital, inpatient hospital, independent laboratory, skilled nursing facility and others.

#### OBSERVATIONS

- The provider numbers in the chart are unique to the participant claim data sets. Those individual clients will be able to identify the specific provider and whether it is a private practice, free standing facility, hospital, or academic center. For the purposes of the aggregated data set shown here, it is more useful to look at the overall differences in the profiles of the top ten providers, than to know exactly who they are.
- It is interesting to note, that the third highest amount of total dollars spent was paid to a provider that had the lowest Average Cost and also cared for the highest number of members (3,936). Most of that care was provided to patients categorized as Level 1 Acuity.
- Two providers show average costs higher than \$200,000 per member yet have the two lowest treated member counts of all the top ten providers in this data set. The next highest average per member cost range drops sharply to between \$30,000 and \$40,000 for the next two providers. Another two providers have average costs of care per member ranging between \$20,000 and \$29,999 and the remaining five providers show average costs of care per member at \$19,999 or less. Two of the lowest average costs of care per member providers cared for the highest number of members (3,936 and 1,181) of all the aggregated top ten providers.

Figure 5: Top Ten Providers by Acuity Level of Care



Observations

- Data based on Neoplasm Members only
- Number of Members and total cost
- Average cost by Member
- Provider Numbers are unique to the Source Data Set

NAMCP NOTE

Understanding the profile of cancer patients at each of the top ten providers in an individual market is critical to determining next steps for proactive collaborative discussion. **These providers are likely completely unaware of the number of members, the distribution of Acuity Levels across those members, and particularly, the Average Cost of Care at their facility for members with cancer, compared to those in other markets. Review of the oncology landscape in your individual market to determine site of delivery issues will be helpful as you determine the top three to five providers with whom you want to start discussions.**

Variation in specific markets will occur, but it is important to understand not only the total cost as well as the average cost per member, but also the distribution of patient acuity levels. Reviewing these elements with both providers and those who pay for care can lead to insight as to the types of patients being seen and treated in

that population.

**Providers who care for a significant number of patients at Acuity Levels 3 and 4 become key targets for collaborative discussions regarding the management of those patients. These are the patients that are usually late stage metastatic cancers on aggressive treatments with short long-term survival, but if the cancer is found earlier and potential adverse effects of the treatment and comorbidities are managed well, patients may have lower costs and better chance of overall survival.**

**Providers who care for higher numbers of patients with Acuity Levels of 2 or 3 will become important collaborators in the management of those patients, so that they do not advance to Acuity Levels 3 or 4. Treatment choices, possibly for more aggressive, newer types of therapies, may be an important part of the conversation, even if they are new market introductions.**



NAMCP NOTE (continued)

Knowing the Oncology Profile of your members provides a solid data platform to share, and from which to start collaborative discussions, to improve the patient and population of the cancer patients in your market.

Collaboration Discussion Points:

- How are cancer patients managed across your facilities?
- What coordination is there between departments for a typical cancer patient versus a complex patient with a number of comorbidities?
- What factors may have lead to the Average Cost of Care being identified for your facility?
- How can we work together to manage complex cancer patients to keep them from advancing in acuity?

### Most Oncology Costs Remain in the Medical Benefit – Oncology Cost by Place of Service

Total Overall Costs of Care for the members with cancer in the 2018 Oncology Profile in Figure 6 show that **almost 80 percent of the Total Overall Costs of Care are delivered in the medical benefit rather than the pharmacy benefit. Actual drug spend also resides mostly in the medical benefit.**

*Adverse Consequences of External Vendors for Patient Management:* Pharmacy benefits managers are seeking greater responsibility for managing pharmacy and now medical benefits. In a world where patient acuity and management of comorbidities is needed to keep populations from advancing to the highest levels of acuity and cost, utilization of external vendors with limited access to the patient during treatment and no access to the patient's health records and charts, does not seem to be supported.

Site of Care for drug dispensing is a concern for both business coalitions, health plans, employers, and providers. According to the 2018 Genentech Oncology Trend Report, "In-office infusions continue to dominate, while in-practice oral drug dispensing has tripled in four years, however, MCOs (managed care organizations) are moving to restrict in-office

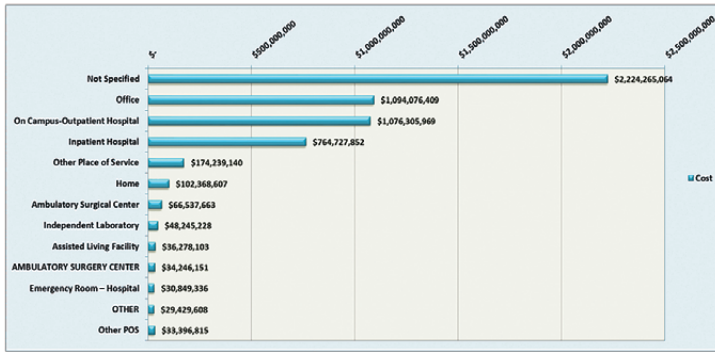
dispensing. Meanwhile, oncologists tend to consider oral oncology drug education to be their responsibility rather than the pharmacist's, while dispensing practices are typically able to fill the first script of an oral drug in-office for patients, only about 40 percent of patients, on average, are able to receive subsequent refills in-practice."<sup>4</sup> **The oncologist assesses the patient's health status at every visit and holds the full patient medical record for effective patient management. The patient trusts the cancer team and the physicians, and often is confused by contacts coming from external vendors such as mandated specialty pharmacies. Patient health status and ability to tolerate oral cancer drugs can vary from week to week, rendering longer-term fills of prescriptions impractical (which is the stock in trade of specialty pharmacies.)**

**Health plans and employers concentrate most oncology management on drug spend, if they manage oncology at all.** The 2018 Genentech Oncology Trend Report noted that "most employers aren't using any special tactics for managing cancer spend. Last year (2016 study year), 30 percent of employers adopted special benefit designs for cancer care, but this year (2017 study year) just 22 percent of employers did so. Even fewer employers reported taking special measures to control cancer drug costs (likely due to the fact that drug spend makes up just a fraction of cancer spend). Only 15 percent of employers reported using a separate pharmacy benefit manager (PBM) for specialty drugs and only 8 percent contract directly with oncology drug manufacturers."<sup>5</sup>

Managed Care Organizations (MCOs) reported, via the 2018 Genentech Trend Report, that use of traditional utilization management tools – such as prior authorizations, formulary tiering, and step editing – remains common.

- *Prior authorization/pre-certification.* In the 2016 study year, 91 percent of MCOs said they used prior authorization/pre-certification. This year that number remains virtually unchanged at 90 percent.
- *Formulary tiering.* In the 2016 study year, 77 percent of MCOs said they used formulary tiering to control oncology spend. This year, that number remains high at 74 percent.
- *Step editing.* Both in the 2016 study year and this year, 67 percent of MCOs said they used step editing to control oncology spend.<sup>6</sup>

Figure 6: Oncology Total Overall Cost By Place of Service



| POS                           | Cost                    | Percent |
|-------------------------------|-------------------------|---------|
| Not Specified                 | \$ 2,224,265,064        | 39%     |
| Office                        | \$ 1,094,076,409        | 19%     |
| On Campus-Outpatient Hospital | \$ 1,076,305,969        | 19%     |
| Inpatient Hospital            | \$ 764,727,852          | 13%     |
| Other Place of Service        | \$ 174,239,140          | 3%      |
| Home                          | \$ 102,368,607          | 2%      |
| Ambulatory Surgical Center    | \$ 66,537,663           | 1%      |
| Independent Laboratory        | \$ 48,245,228           | 1%      |
| Assisted Living Facility      | \$ 36,278,103           | 1%      |
| AMBULATORY SURGERY CENTER     | \$ 34,246,151           | 1%      |
| Emergency Room – Hospital     | \$ 30,849,336           | 1%      |
| OTHER                         | \$ 29,429,608           | 1%      |
| Other POS                     | \$ 33,396,815           | 1%      |
| <b>Total</b>                  | <b>\$ 5,714,965,946</b> |         |

Observations

- Data based on Neoplasm Members only
- Top POS comes with "Not Specified " because of data comes with blank POS and ? and CM.
- Other POS category contains all POS except top 12
- Examples for Other POS - Community Nursing Facility, Independent Clinic
- TOP 4 POS's combined 93% of total cost

Medical Benefit Drug Claims - \$3,378,301,544 – 69%  
 Pharmacy Benefit Claims: \$1,494,074,137 - 31%

POS Codes & Description: [https://www.cms.gov/Medicare/Coding/place-of-service-codes/Place\\_of\\_Service\\_Code\\_Set.html](https://www.cms.gov/Medicare/Coding/place-of-service-codes/Place_of_Service_Code_Set.html)

OBSERVATIONS

- The actual Total Overall Costs of Care for the members with cancer in the 2018 Oncology Profile shows a total spend of \$7.2 billion, of which \$5.7 billion (79%) was paid under the medical benefit, and almost \$1.5 billion (21%) was paid under the pharmacy benefit.
- Actual drug (including, but not limited to oncology drugs) spend also resides mostly in the medical benefit (\$3.4 billion, or 69%) rather than the pharmacy benefit (\$1.5 billion, or 31%).
- Because the data set comes from claims data from multiple sources, there is variation in the completion amongst the various data fields. This aggregated data set had a high number of claims for which a place of service was not designated, and we chose not to make line-by-line estimates or modifications.
- The Not Specified, Inpatient Hospital, Office and On-Campus Outpatient Hospital costs do include their respective portions of the medical benefit drug claims, which totals the \$3.4 billion across all places of service in the medical benefit.

NAMCP NOTE

Managed care medical directors from employers, health plans and providers without a clear strategy for managing their oncology profile or with a focus that remains limited to pharmacy spend or drug management, might want to consider the impact of developing a new strategy for closing gaps in care and improving patient management. The CMS Oncology Care Model practice participants are two years into a five year commitment to transform their medical care delivery processes and have been implementing new models for care that recognize accountability for Total Overall Costs of Care.

**Requirements that pharmacy fills should come from external vendors, such as those affiliated with pharmacy benefit managers (PBMs), may not be the most cost-effective drug management choice for complex oncology patients.** Treating providers may be better equipped to manage, not just the drug, but also the patient and their full care spectrum, making in-office physician dispensing more cost-effective, for state

#### NAMCP NOTE (continued)

health managers, employers, health plans, providers and patients than outsourcing to specialty pharmacies. **In a much referenced 2012 specialty pharmacy landscape report from Express Scripts, 40.9 percent of specialty pharmacy cancer patients were reported as non-adherent to medication therapy.**<sup>7</sup> This is a very high percentage, the highest of the seven (inflammatory conditions, multiple sclerosis, cancer, HIV, growth deficiency, pulmonary hypertension, transplant) medical conditions for which the report defined a percentage of non-adherence.

**The practice of “white-bagging”, where specialty pharmacies ship drugs to treating providers, can lead to significant additional costs to employers and health plans when those drugs are not used for a variety of reasons (including patient death, change in health status, financial reasons, or prescription changes).** Oncology practices that dispense orals find very low levels of non-adherence which they often attribute to their close treatment contact with the patient and full knowledge of their medical situation and changing health status. **Oncology practices commonly end up with hundreds of thousands of dollars of useless inventory shipped from specialty pharmacies to their offices and patients that cannot be used by the patient and cannot be returned, but which was paid for under the patient’s insurance benefit.**

#### Collaboration Discussion Points:

- **How is this local market affected by distribution of medical and pharmacy benefit design?**
- **Are there considerations that should be made for improvement?**
- **Are there issues and barriers that are limiting effective patient management by the provider?**
- **How can we collaborate on benefit design and operational improvements to more effectively manage Total Overall Costs of Care and improve patient care?**

## Comorbidities Matter – Neoplasm and Chronic Member Comparison Calls Out to Specific Focus

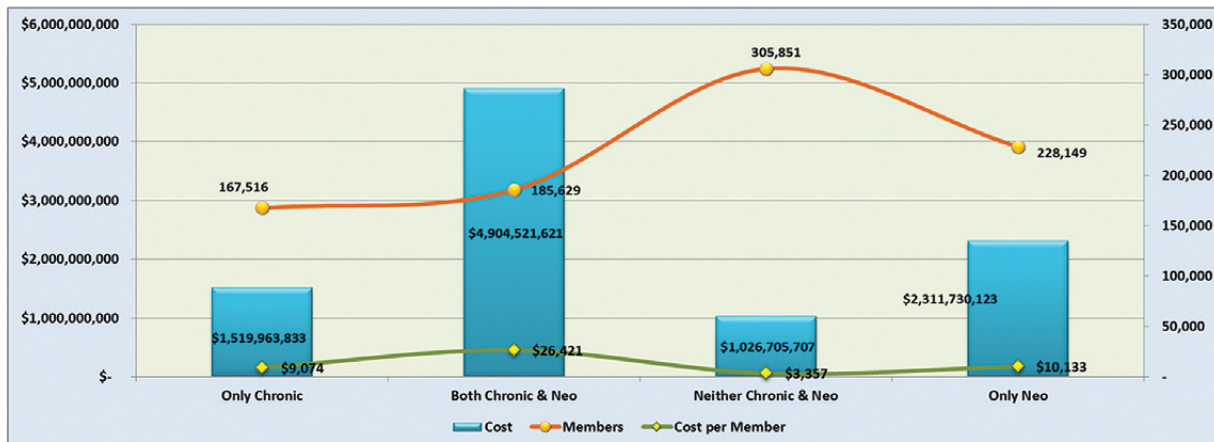
Patients who develop chronic conditions (lasting longer than a few days or weeks), and especially cancer, are obviously going to utilize more health care resources. “Age is the greatest risk factor for developing cancer. The majority (60%) of people who have cancer or who are cancer survivors are 65 or older. Other chronic health conditions that are also more common in adults over age 65 include: arthritis, diabetes, heart disease, high blood pressure, kidney disease, and lung disease.”<sup>8</sup>

The impact of combining both chronic conditions and cancer is dramatic, underscoring the need for new patient management strategies (by providers, business coalitions, health plans, and employers), that address the combination. **Traditional cancer cost utilization strategies that focus predominantly on drug spend and do not differentiate between a member with cancer or a member with cancer plus comorbidities will not lead to effective value-driven patient management.**

#### OBSERVATIONS

- In Figure 7, the data from the entire aggregated data set (not just those members with cancer) shows that members with both chronic and neoplasm conditions incur costs (Average Total Cost per member of \$26,421) at about 6.9 times those of members without either conditions.
- Insured members without chronic or neoplasm diagnosis in the 2018 Oncology Profile data set had Average Total Cost per member of \$3,357.
- Members with either Chronic and neoplasm conditions are comparable in average costs (\$9,074 for patients with only chronic conditions and \$10,133 for patients only with cancer).
- Common comorbid conditions for the 2018 Oncology Profile of members with cancer include, in order of frequency, hypertension (HTN), diabetes, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and coronary artery disease (CAD), in addition to others.

Figure 7: Total Overall Cost of Care and Average Cost Per Member by Chronic and Cancer Diagnosis



| Category              | Members        | Cost                    | Cost per Member |
|-----------------------|----------------|-------------------------|-----------------|
| Only Chronic          | 167,516        | \$ 1,519,963,833        | \$ 9,074        |
| Both Chronic & Neo    | 185,629        | \$ 4,904,521,621        | \$ 26,421       |
| Neither Chronic & Neo | 305,851        | \$ 1,026,705,707        | \$ 3,357        |
| Only Neo              | 228,149        | \$ 2,311,730,123        | \$ 10,133       |
| <b>Total</b>          | <b>887,145</b> | <b>\$ 9,762,921,285</b> |                 |

Number of Discrete Diagnoses submitted for Member Care, across Patient Acuity rankings

| DX       | Level 1 | Level 2 | Level 3 | Level 4 |
|----------|---------|---------|---------|---------|
| CAD      | 9235    | 6621    | 4664    | 3549    |
| CHF      | 1454    | 2431    | 2666    | 3522    |
| COPD     | 16169   | 8354    | 5430    | 4679    |
| Diabetes | 151567  | 29634   | 14849   | 8078    |
| HTN      | 158297  | 38885   | 20242   | 12319   |
| (blank)  | 507631  | 16982   | 6394    | 2337    |

Observations

- Data based on whole population of the aggregated data set, not just those with cancer
- Members with Neoplasm and Chronic conditions represent the highest average cost at \$26,421 per member
- 1,85,629 members have Both Neoplasm and Chronic conditions totaling \$ 4,904,521,621

NAMCP NOTE

Business coalitions, health plans, employers, and providers should be able to target key providers that care for members with cancer and develop a joint plan for identifying and managing those patients with significant comorbid conditions. **Most oncology providers do not have access to population information regarding the frequency and cost impact of combined chronic and neoplasm conditions, so sharing the claims analyses in the 2018 Oncology Profile will be a productive first step.** Initial conversations could focus on managing cancer patients with hypertension and diabetes, and then address the other common comorbid conditions.

Collaboration Discussion Questions:

- Can we identify and track cancer patients with comorbid conditions?

- **What communications between oncology and the other specialties managing these patients currently occur and how can they be enhanced?**
- **Are treatment choices managed with awareness of potential comorbid complications and are patients monitored to avoid adverse effects, and possible increased costs of care related to the comorbidity complexities?**
- **Can we develop a collaborative management plan for complex patients with comorbidity that starts with prevention, education and wellness at the health plan or employer level, with collaboration from the medical community?**

## Understanding Oncology Diseases

One of the goals of the 2018 Oncology Profile is to build an overview of the different cancers, and to look closely at six specific cancers (breast, lung, liver, bladder, prostate, and melanoma). Just as each individual cancer patient is different, cancers have varying profiles that can require adaptive management policy and flexible treatment options. While the 2018 Oncology Profile uses claims primary diagnoses to identify key cancers, treatment approaches are rapidly moving away from geographic identification of cancers (like breast and lung) and more towards genetic, molecular or cellular distinctions, that may cross traditional definitions and treatment paradigms, coverage and policy decisions that focus primarily on geographic cancer approvals. Initial Food and Drug Administration (FDA) indications usually lag behind the science of cancer etiology, possibly leading to increased costs and reduction in quality of care as physicians and patients struggle with the results of that disconnect.

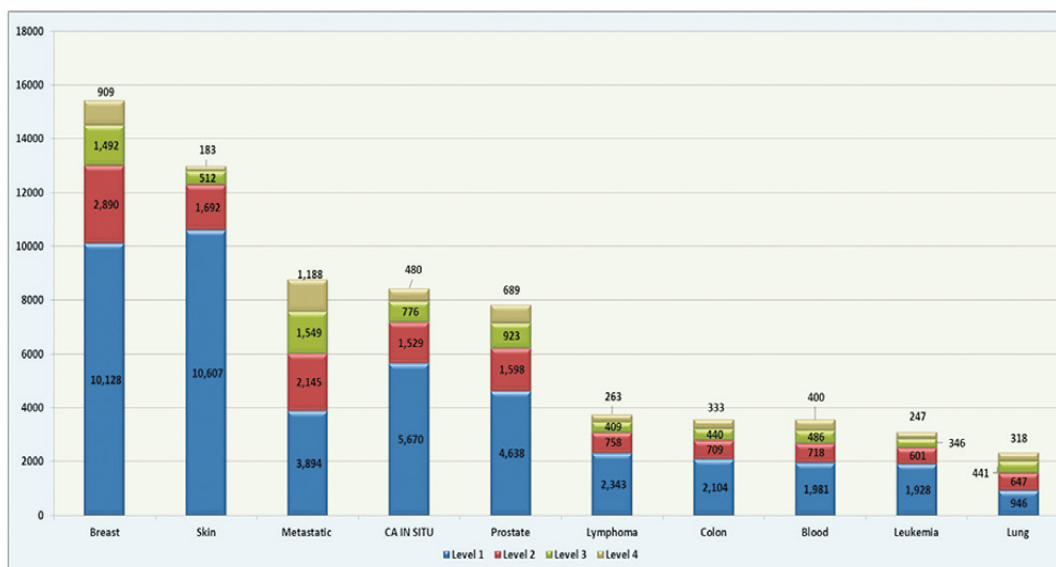
In Figure 8, the distribution of patient acuity levels for the top 10 cancers is ranked by member volume. These are not necessarily the most costly cancers on a per patient basis, but do reflect the cancers most prevalent in the aggregated data set.

Each individual client market showed a different distribution of cancers, highlighting the message that health care is local. Figure 9 illustrates the distribution of patients at each acuity level and costs for the selected six cancers being reviewed in the 2018 Oncology Profile. Cancer type distribution across populations will commonly vary by factors including geographic, gender and ethnicity.

### OBSERVATIONS

- While the highest incidence was noted in breast and skin cancer, the majority of those patients are presenting as Level 1 Acuity, and thus are at the lowest Total Average Cost.
- Cancer excellence programs that focus on the lower volume, but more costly and complex cancers could bring significant value to patients and those who pay for care.
- Lung, liver and prostate cancers appear to be presenting more frequently at higher levels of acuity.

Figure 8: Top Ten Neoplasm with Member Counts by Acuity Levels



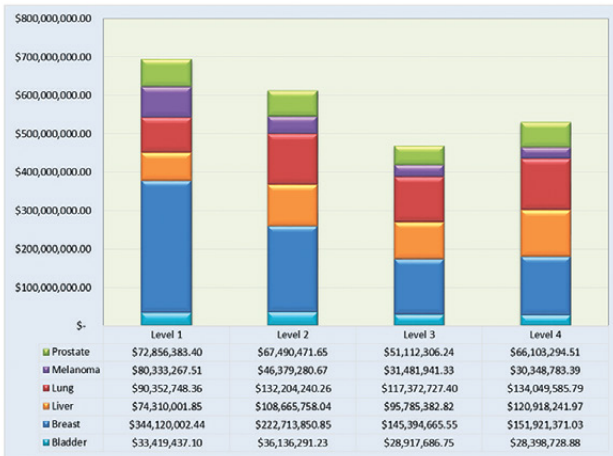
### Observations

- Data based on Neoplasm Members only and Primary Diagnosis
- Top 10 Cost cancer types. And their Members
- This excluded "benign ONLY" diagnosis" and "Unspecific" cancer types. Members having at least one Non Benign and Non Unspecific cancer type

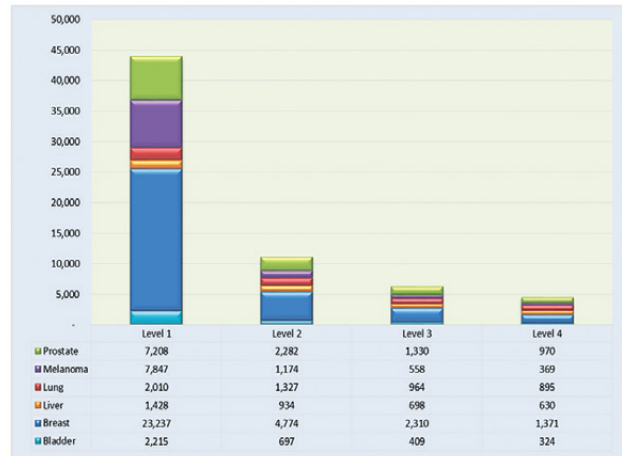
- Total members with neoplasm = 394,128
- Members with Benign cancer & at least one other cancer = 84,637
- Members with 2 or more cancer types = 100,776
- Members with at least one cancer type = 307,600
- Highest incidence noted in Breast and skin

Figure 9: Primary Diagnosis Neoplasm Members for Six Selected Cancer Types

Total Overall Costs of Care per Primary Diagnosis



Total Number of Members per Primary Diagnosis



Observations

- Data based on Primary Diagnosis Neoplasm for Six Selected Cancers

NAMCP NOTE

Opportunities may exist for collaboratively better managing the market patient population and in the future shifting entire cohorts of patients to lower acuity levels at diagnosis. Understanding the variation in patient acuity, as well as the identification of the top ten cancers in a local market can lead to more productive discussions between business coalitions, health plans, employers, and providers. **Treating providers only know the costs incurred in their service or practice. Business coalitions, health plans, and employers that can bring a disease profile and Total Overall Costs of Care, as well as patient acuity mix data to a discussion with providers, will find those to be invaluable collaborative conversation starters.**

Some cancers (including lung, liver and prostate) are not easily identified. Even though a patient might have symptoms, those symptoms can be vague and/or go unnoticed for long periods of time. Screenings for patients at risk for these cancers are improving. **It is important that providers and business coalitions, health plans, and employers support and encourage education about the availability and value of screenings on a regular basis. Employers and health plans can work with key area providers to bring screening and education to their site of work to improve**

**early detection and treatment.** Often screening availability may not be sufficient for some patient populations and working harder to ensure that it is accessed may be important.

**Collaboration Discussion Points:**

- **Share and discuss the details of the top ten cancers in the market.**
- **Seek to identify, together, those factors that might lead to improvements or barriers of caring for specific disease patient cohorts, particularly those with higher acuity or comorbidities.**
- **Age and gender can hinder some screening opportunities, so it will be important to select relevant media of interest to each population, that you wish to educate and have participate in the screening process.**
- **Perhaps design joint initiatives between providers and business coalitions, health plans, and employers that incorporate education, screening and wellness components to reduce the acuity scores and speed of diagnosis for specific cancers.**
- **Discuss the presence and mix of the top six cancer types in the market. Look for opportunities.**

## Breast Cancer

“Breast cancer is the leading cause of cancer for North American females (excluding skin cancers). Breast cancer treatment can cover years, compared to other cancers where treatment cycles can be measured in months. Finding breast cancer as early as possible provides a better chance of successful treatment. Screening can find breast cancer earlier, when it is easier to treat and before it is big enough to feel or cause symptoms.

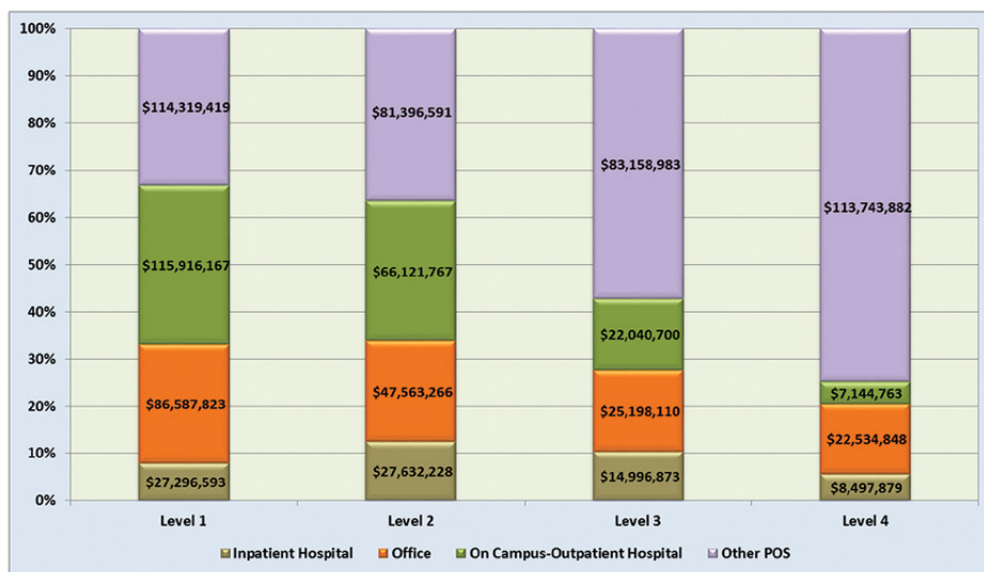
Treatment usually involves either breast conserving surgery (surgical removal of the tumor and surrounding tissue, sometimes called a lumpectomy) or mastectomy (surgical removal of the breast), depending on tumor characteristics (e.g., size, hormone receptor status, and extent of spread) and patient preference. Radiation to the breast is recommended for most patients having breast-conserving surgery. For women with early stage breast cancer (with no spread to the skin, chest wall, or distant organs), studies indicate that breast-conserving surgery plus radiation therapy results in long-term outcomes equivalent to, and possibly even better than, mastec-

omy. Radiation is sometimes recommended after mastectomy in the case of larger tumors or node-involved breast cancers. One or more underarm lymph nodes are usually evaluated during surgery to determine whether the tumor has spread beyond the breast. Women undergoing a mastectomy who elect breast reconstruction have several options, including the type of tissue or implant used to restore breast shape. Reconstruction may be performed at the time of the mastectomy (also called immediate reconstruction) or as a second procedure (delayed reconstruction), but often requires more than one surgery. Treatment may also involve chemotherapy (before or after surgery), hormone (anti-estrogen) therapy, and/or targeted therapy. Women with early-stage breast cancers who test positive for hormone receptors benefit from treatment with hormone therapy for five or more years. Several targeted therapies are available to treat the approximately 14 percent of women who have breast tumors that over-express the growth-promoting protein HER2.”<sup>9</sup>

**The prognosis for breast cancer patients at all stages has improved enormously over**

Figure 10: Acuity Level Analysis (Breast Cancer)

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Breast Cancer (Primary Diagnosis)



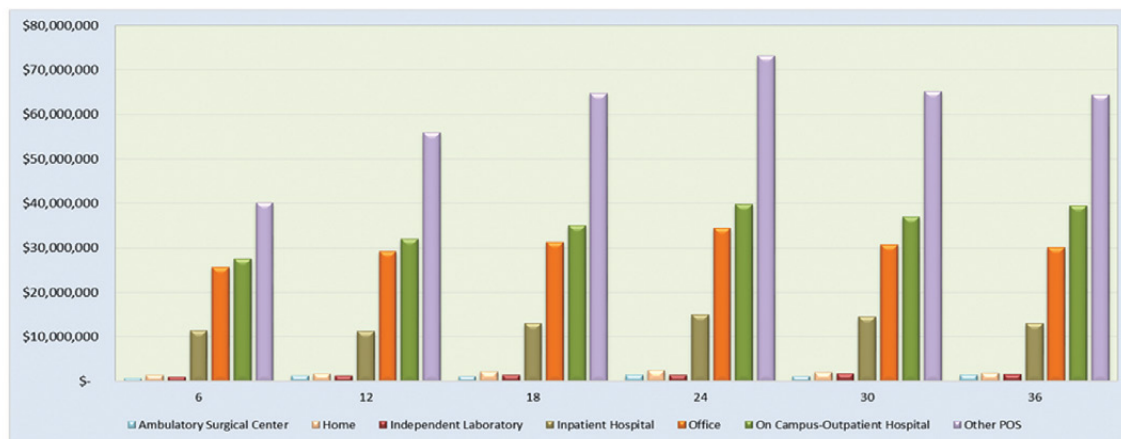
### Observations

- Data based on Primary Diagnosis Neoplasm for Six Selected Cancers

| StratificationLevel | Inpatient Hospital | Office         | On Campus-Outpatient Hospital | Other POS      | Total          |
|---------------------|--------------------|----------------|-------------------------------|----------------|----------------|
| Level 1             | \$ 27,296,593      | \$ 86,587,823  | \$ 115,916,167                | \$ 114,319,419 | \$ 344,120,002 |
| Level 2             | \$ 27,632,228      | \$ 47,563,266  | \$ 66,121,767                 | \$ 81,396,591  | \$ 222,713,851 |
| Level 3             | \$ 14,996,873      | \$ 25,198,110  | \$ 22,040,700                 | \$ 83,158,983  | \$ 145,394,666 |
| Level 4             | \$ 8,497,879       | \$ 22,534,848  | \$ 7,144,763                  | \$ 113,743,882 | \$ 151,921,371 |
|                     | \$ 78,423,573      | \$ 181,884,046 | \$ 211,223,396                | \$ 392,618,875 | \$ 864,149,890 |

**Figure 11: Episodes of Care Analytics: Six-Month Snapshots – Breast Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Breast Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: include Not Specified, Assisted Living Facility, Emergency Room – Hospital, and Ambulance

| Episode            | Ambulatory Surgical Center | Home                 | Independent Laboratory | Inpatient Hospital   | Office                | On Campus-Outpatient Hospital | Other                 | Grand Total           |
|--------------------|----------------------------|----------------------|------------------------|----------------------|-----------------------|-------------------------------|-----------------------|-----------------------|
| 6                  | \$ 730,318                 | \$ 1,493,231         | \$ 1,125,086           | \$ 11,472,600        | \$ 25,760,627         | \$ 27,638,783                 | \$ 40,235,123         | \$ 108,505,768        |
| 12                 | \$ 1,230,055               | \$ 1,811,954         | \$ 1,410,149           | \$ 11,268,024        | \$ 29,245,731         | \$ 32,114,084                 | \$ 56,033,153         | \$ 133,232,395        |
| 18                 | \$ 1,204,418               | \$ 2,184,874         | \$ 1,511,540           | \$ 13,096,577        | \$ 31,325,589         | \$ 35,113,239                 | \$ 64,753,437         | \$ 149,134,673        |
| 24                 | \$ 1,575,747               | \$ 2,476,586         | \$ 1,580,208           | \$ 14,984,525        | \$ 34,516,116         | \$ 39,896,459                 | \$ 73,209,379         | \$ 166,209,021        |
| 30                 | \$ 1,269,062               | \$ 2,133,420         | \$ 1,799,731           | \$ 14,625,327        | \$ 30,792,017         | \$ 36,933,235                 | \$ 65,136,016         | \$ 152,685,807        |
| 36                 | \$ 1,592,047               | \$ 1,913,831         | \$ 1,686,475           | \$ 13,035,920        | \$ 30,223,967         | \$ 39,557,597                 | \$ 64,412,300         | \$ 132,362,227        |
| <b>Grand Total</b> | <b>\$ 7,690,296</b>        | <b>\$ 12,073,295</b> | <b>\$ 9,122,169</b>    | <b>\$ 78,423,973</b> | <b>\$ 181,694,047</b> | <b>\$ 211,223,396</b>         | <b>\$ 363,611,800</b> | <b>\$ 864,149,691</b> |

the last 10 years. Innovations in screening technologies, education, targeted therapies, immunotherapies, and individualized genomics approaches have had impacts on even the most advanced cancer types. A June 2018 report in *Nature Medicine*,<sup>10</sup> showed how revolutionary new interventions based on the molecular biology of the cancer, in this case a combination of tumor genomics, adoptive cell transfer (ACT) of the patient's own tumor infiltrating lymphocytes (TILs), and checkpoint inhibitor drugs, can give hope to patients that previously were considered untreatable.

In Figure 10, the distribution of Total Overall Costs of Care for those patients with breast cancer are displayed across the four Acuity Levels and Place of Service. Figure 11 shows the distribution of Total Overall Costs of Care for Place of Service when costs are broken down into six-month Episodes of Care.

**OBSERVATIONS**

Breast cancer treatment can cover a span of years, compared to other cancers with shorter treatment cycles.

In this aggregated market, most costs are expended on behalf of lower Acuity Level patients, but very low percentages of patients are consuming significant cost at the higher Acuity Levels 3 and 4.

| Breast Cancer Members — Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|---|------------------------------------|--|
| Acuity Level 1                          | 64%                                | 40%                                      |
| Acuity Level 2                          | 20%                                | 26%                                      |
| Acuity Level 3                          | 10%                                | 17%                                      |
| Acuity Level 4                          | 6%                                 | 18%                                      |

- The CO APCD data reflected a higher concentration of costs for the higher acuity levels of patients, (Level 3 members incurred 22% of the Total Overall Client D market costs, and Level 4 members represented 30% of the Total Overall Costs of Care – a combined rate of 52% of the breast Cancer costs for this market) despite having a similar percentage distribution to the aggregated data base (13% at Level 3 and 9% of members were Level 4 Acuity).

- One of the other client's data presented a quite different picture of breast cancer members, where 55 percent of the Total Overall Costs of Care were for Level 1 Acuity mem-



bers, and 33 percent of that market's costs were incurred for Level 2 Acuity members.

- The other two clients had the majority of their Total Overall Costs of Care for breast cancer members concentrated in patients at Level 2 and Level 3 Acuity rather than at the highest acuity level.
- The majority of Total Overall Costs of Care in the aggregated data base for members with breast cancer (excluding those not specified as to place of service on the claims being analyzed – 42%) were divided between Hospital Outpatient (24%), Office (21%), followed by Inpatient (9%), Laboratory (1%), Home Care (1.4%) and Ambulatory Surgery Costs (0.9%), and were all consistent across the Episodes of Care, but close to just three percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in six-month episodes for members with breast cancer maintain consistency, with a leveling between 18 and 24 months:
  - 6 Months – 13% of Total Overall Costs of Care
  - 12 Months – 15% of Total Overall Costs of Care
  - 18 Months – 17% of Total Overall Costs of Care
  - 24 Months – 19% of Total Overall Costs of Care
  - 30 Months – 18% of Total Overall Costs of Care
  - 36 Months – 18% of Total Overall Costs of Care

#### NAMCP NOTE

Breast cancer patients in this aggregated market appear to be captured fairly early, with three-quarters presenting at Level 1 Acuity. However, the 12 percent of members that presented in the higher levels of acuity (3 and 4), incur over one-third of the Total Overall Costs of Care (35% between the two levels). Clearly, the concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care varied widely across the individual client data bases. **Individual markets should develop a disease management plan for breast cancer with key treating providers, that focuses on early detection and targeted management of the more complex patients with advanced disease and high levels of comorbidities.**

## Lung Cancer

According to the American Society of Clinical Oncology (ASCO) patient facing web site, Cancer. Net, **Lung cancer is responsible for more cancer deaths than any other cancer in men and women – anyone can get lung cancer.** In fact, 1 in 16 people in the United States will be diagnosed in their lifetime – that's a new diagnosis every 150 seconds. Although smoking is the most common cause of lung cancer, almost two-thirds of all new diagnoses are for people who have never smoked or are former smokers. Lung cancer may not produce noticeable symptoms in the early stages, and many people aren't diagnosed until the disease has advanced.

As with many other cancers, **a key to surviving lung cancer is detection in its earliest stage, when it is most treatable.** For patients who have small, early-stage lung cancer, the cure rate can be as high as 80 to 90 percent. Cure rates drop dramatically as the tumor becomes more advanced and involves lymph nodes or other parts of the body. Screening with low-dose spiral computed tomography (CT) scan has been proven to reduce lung cancer deaths in people at high risk for lung cancer.

About 80 to 85 percent of lung cancer diagnoses are non-small cell lung cancer (NSCLC), and there are three main subtypes:

- *Adenocarcinoma.* This is the most common subtype of cancer, but also much more common in people who never smoked, younger patients, and women.
- *Squamous Cell Cancer.* This is more commonly linked to a history of smoking. It develops in the airways of the lungs.
- *Large Cell Carcinoma.* This is an uncommon type of lung cancer, accounting for less than 10 percent of cases.

Small cell lung cancer (SCLC) accounts for around 10 to 15 percent of all lung cancers and very rarely develops in someone who has never smoked.”<sup>11</sup> Targeted therapy is an important component of treating lung cancer. Up to a quarter of lung cancer tumors carry a genetic mutation that may be targeted with available medications. All patients with advanced adenocarcinoma should be tested for genetic mutations such as *EGFR*, *ALK*, *ROS1*, and *BRAF*. With a rapidly growing body of research on mutations, those who pay for care, and providers, should find it reasonable to do wider testing to look for other relevant mutations. Immunotherapy, which boosts

or activates a patient's immune system to identify and kill cancer cells, is a rapidly emerging weapon against lung cancer. Researchers are investigating four main kinds of immunotherapies for lung cancer:— checkpoint inhibitors, monoclonal antibodies, therapeutic vaccines, and adoptive cell therapy. Four immunotherapy drugs, all checkpoint inhibitors, have been approved to treat NSCLC.<sup>12</sup>

Although research innovations, in targeted and immune therapies, will undoubtedly reduce the high mortality rates of lung cancer, non-smoking initiatives will likely remain the most effective and accessible prevention. Common comorbidities for lung cancer include emphysema, coronary artery disease, and chronic obstructive pulmonary disease. In one 2015 study conducted at the University of Nebraska Medical Center in Omaha, nearly three-quarters of lung cancer patients had at least one comorbidity, including obesity at the time of diagnosis. Dr. KM Monirul Islam, associate professor in the Department of Epidemiology at the University of Nebraska Medical Center noted that over 52 percent of that study population had chronic

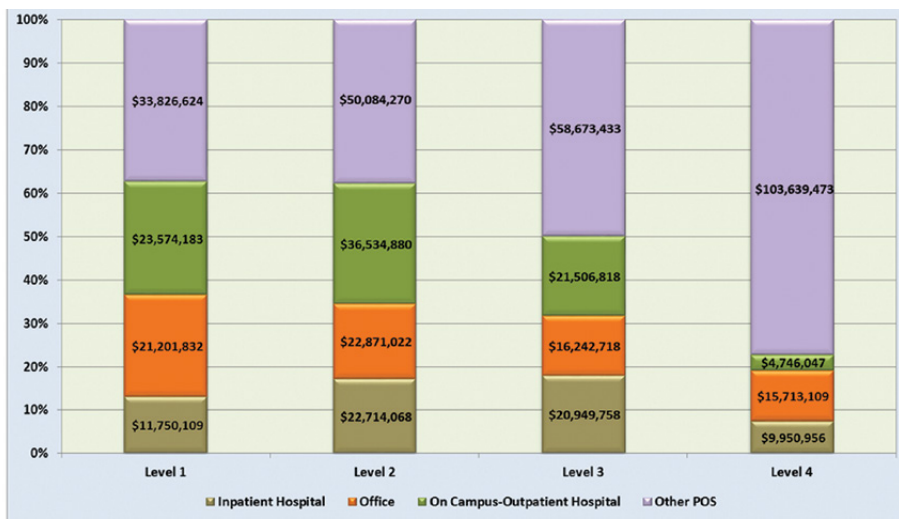
pulmonary disease, 16 percent had diabetes, followed by congestive heart failure at 12.4 percent. Having one or more comorbidities may not put patients at higher risk for lung cancer, but it may change the way they are treated. Surgery is the standard of care for an early stage lung cancer, but comorbid conditions and complications could rule out surgery and lead toward radiation or chemotherapy options for treatment instead.<sup>13</sup>

Patients can lose up to 10 percent of their overall body weight before diagnosis, so weight management and nutrition should be incorporated in the treatment plan to avoid adverse events.

In Figure 12, the distribution of Total Overall Costs of Care for those patients with lung cancer are displayed across the 4 Acuity Levels and Place of Service. Figure 13 shows the distribution of Total Overall Costs of Care for Place of Service when costs are broken down into six-month Episodes of Care.

**Figure 12: Acuity Level Analysis (Lung Cancer)**

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Lung Cancer (Primary Diagnosis)



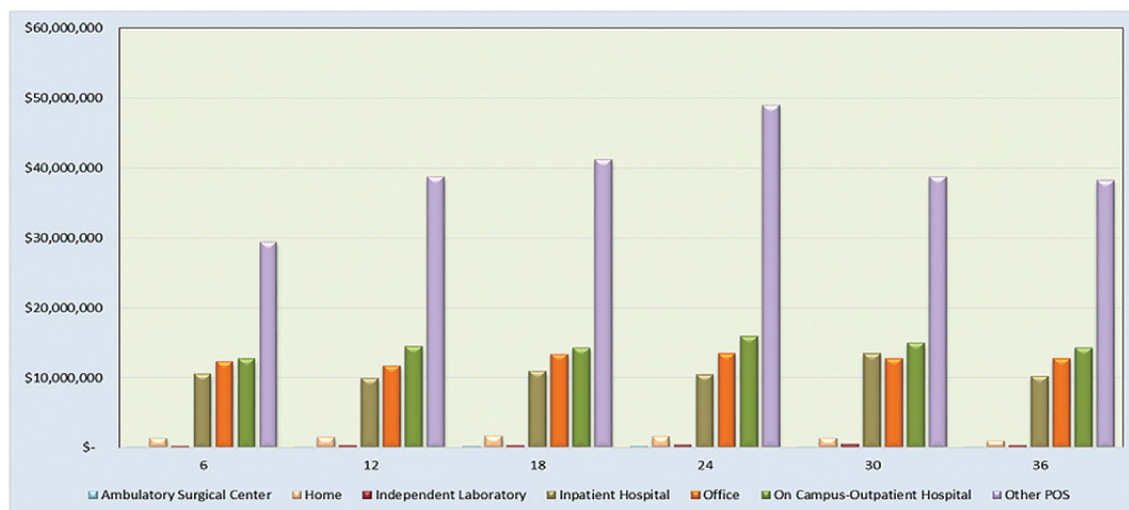
**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Home, Assisted Living Facility, Independent Laboratory, Ambulatory Surgical Center, Emergency Room – Hospital

| StratificationLevel | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other POS      | Total          |
|---------------------|--------------------|---------------|-------------------------------|----------------|----------------|
| Level 1             | \$ 11,750,109      | \$ 21,201,832 | \$ 23,574,183                 | \$ 33,826,624  | \$ 90,352,748  |
| Level 2             | \$ 22,714,068      | \$ 22,871,022 | \$ 36,534,880                 | \$ 50,084,270  | \$ 132,204,240 |
| Level 3             | \$ 20,949,758      | \$ 16,242,718 | \$ 21,506,818                 | \$ 58,673,433  | \$ 117,372,727 |
| Level 4             | \$ 9,950,956       | \$ 15,713,109 | \$ 4,746,047                  | \$ 103,639,473 | \$ 134,049,586 |
|                     | \$ 65,364,891      | \$ 76,028,682 | \$ 86,361,928                 | \$ 246,223,600 | \$ 473,979,302 |

**Figure 13: Episodes of Care Analytics: Six-Month Snapshots – Lung Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Lung Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Assisted Living Facility, Emergency Room – Hospital

| Episode            | Ambulatory Surgical Center | Home                | Independent Laboratory | Inpatient Hospital   | Office               | On Campus-Outpatient Hospital | Other                 | Grand Total           |
|--------------------|----------------------------|---------------------|------------------------|----------------------|----------------------|-------------------------------|-----------------------|-----------------------|
| 6                  | \$ 101,102                 | \$ 1,347,765        | \$ 191,561             | \$ 10,503,252        | \$ 12,301,051        | \$ 12,661,139                 | \$ 29,414,718         | \$ 66,520,587         |
| 12                 | \$ 131,867                 | \$ 1,459,914        | \$ 329,291             | \$ 9,835,332         | \$ 11,675,716        | \$ 14,454,689                 | \$ 38,692,600         | \$ 76,679,409         |
| 18                 | \$ 178,532                 | \$ 1,646,094        | \$ 296,264             | \$ 10,977,293        | \$ 13,303,083        | \$ 14,218,004                 | \$ 41,219,957         | \$ 81,839,228         |
| 24                 | \$ 148,791                 | \$ 1,560,229        | \$ 447,626             | \$ 10,393,593        | \$ 13,406,716        | \$ 15,896,857                 | \$ 48,887,061         | \$ 90,740,873         |
| 30                 | \$ 128,172                 | \$ 1,831,061        | \$ 455,474             | \$ 13,372,449        | \$ 12,630,979        | \$ 14,904,448                 | \$ 38,726,838         | \$ 81,549,420         |
| 36                 | \$ 130,144                 | \$ 876,330          | \$ 325,787             | \$ 10,182,973        | \$ 12,711,137        | \$ 14,226,791                 | \$ 38,187,624         | \$ 76,549,785         |
| <b>Grand Total</b> | <b>\$ 827,608</b>          | <b>\$ 8,221,393</b> | <b>\$ 2,046,003</b>    | <b>\$ 65,364,891</b> | <b>\$ 76,029,682</b> | <b>\$ 86,361,929</b>          | <b>\$ 235,128,797</b> | <b>\$ 473,979,303</b> |

**OBSERVATIONS**

- **Without screening of high-risk patients, diagnosis (which is often associated with the onset of symptoms) may not occur until the cancer is advanced.**
- Comorbidities may lead to less or more aggressive treatment choices, rather than standard care.
- In this aggregated market, Total Overall Costs of Care are distributed fairly evenly across the Acuity Levels, but the combined 33 percent of the higher Acuity Levels 3 and 4 members consume a higher portion of the Total Overall Costs of Care (53%).

| Lung Cancer Members — Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|---------------------------------------|------------------------------------|--|
| Acruity Level 1                       | 39%                                | 19%                                      |
| Acruity Level 2                       | 26%                                | 28%                                      |
| Acruity Level 3                       | 19%                                | 25%                                      |
| Acruity Level 4                       | 17%                                | 28%                                      |

- The CO APCD data reflected a higher concentration of costs (Level 3 members incurred 24% of the Total Client D market costs, and Level 4 members represented 44% of the Total Overall Costs of Care, at a combined rate of 68% of the lung Total Overall Costs of Care for patients with a primary diagnosis of lung cancer costs for this market) for the higher acuity levels of patients, despite having a similar but slightly higher percentage distribution in comparison to the aggregated data base (20% at Level 3 and 23% of members were Level 4 Acuity).
- One of the other client’s data presented a quite different picture of lung cancer members, where 42 percent of the total lung cancer costs were for Level 2 Acuity members, and 27 percent of that market’s Total Overall Costs of Care were incurred for each of Level 1 and Level 3 Acuity members.
- The other two clients had the majority of their Total Overall Costs of Care for members with lung cancer concentrated in patients at the Level 3 Acuity, rather than at the highest acuity level.

- The majority of costs in the aggregated data base (excluding those not specified as to place of service on the claims being analyzed – 50%) were divided between Hospital Outpatient (18%), Office (16%), followed by Inpatient (14%). Laboratory (0.4%), Home Care (1.7%) and Ambulatory Surgery Costs (0.2%) were all consistent across the Episodes of Care, but close to just two percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in six-month episodes for members with lung cancer maintain consistency, with a slight spike at 24 months:
  - 6 Months – 14% of Total Overall Costs of Care
  - 12 Months – 16% of Total Overall Costs of Care
  - 18 Months – 17% of Total Overall Costs of Care
  - 24 Months – 19% of Total Overall Costs of Care
  - 30 Months – 17% of Total Overall Costs of Care
  - 36 Months – 16% of Total Overall Costs of Care

#### NAMCP NOTE

Lung cancer patients in this aggregated market appear to be captured fairly early, with almost 40 percent presenting at Level 1 Acuity. However, **the one-third (34%) of members that presented in the higher levels of acuity (3 and 4), incurred over one half of the Total Overall Costs of Care (53% between the two levels.)**

The concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care varied widely across the individual client data bases. Individual markets should develop a disease management plan for lung cancer with key treating providers that focuses on early detection, judicious use of new targeted therapies and immunotherapies, as well as targeted management of the more complex patients with advanced disease and high levels of comorbidities.

## Liver Cancer

The American Cancer Society describes liver cancer as a group of several different cancers with different causes and therapies. “The liver is made up mainly of cells called hepatocytes. It is also made up of

other types of cells, including cells that line its blood vessels and cells that line small tubes in the liver, called bile ducts. These different types of cells in the liver can form several types of malignant (cancerous) and benign (non-cancerous) tumors. These tumors have different causes, are treated differently, and have different prognoses.”<sup>14</sup>

- Benign liver tumors can usually be cured with surgery, if needed.
- Hemangiomas, which start in the blood vessels, are the most common type of benign liver tumor, and occasionally need to be removed surgically.
- Hepatic adenoma is also a benign tumor that can eventually cause symptoms whose risk can lead to a recommended surgical tumor removal.
- Focal nodular hyperplasia is a benign tumor-like growth that can be difficult to distinguish from true liver cancers. Surgical removal will be recommended to manage symptoms that can arise.
- There are different kinds of adult primary liver cancer.
  - Hepatocellular carcinoma (HCC) is the most common form of liver cancer in adults and can have different growth patterns. Several subtypes of HCC can be distinguished, including one found in young women under 35, that has a better outlook than other types of HCC.
  - Intrahepatic cholangiocarcinoma (bile duct cancer) represent about 10 percent to 20 percent of liver cancers.
  - Angiosarcoma and hemangiosarcoma cancers are rare, grow quickly, are hard to treat, and are usually too widespread to be removed surgically by the time they are found. Chemotherapy and radiation therapy may help to slow the disease.
  - Secondary liver cancers have usually metastasized from somewhere else in the body, and are treated as the originating cancer, not as liver cancer. In the United States, secondary liver tumors are more common than primary liver cancer.”<sup>15</sup>

**Liver cancer incidence has been increasing in the United States since the mid-1970s. Major contributing factors appear to be a higher rate of hepatitis C virus infection among baby**

**boomers (persons born in 1945 through 1965), the obese, type 2 diabetics, and alcohol and tobacco users. Despite improvements in liver cancer survival in recent decades, only 1 in 5 patients survives five years after diagnosis.**<sup>16</sup>

The American Cancer Society noted in their 2018 Cancer Facts and Figures report that the death rate for liver cancer has more than doubled, from 2.9 (per 100,000) in 1980 to 6.6 in 2015. Symptoms do not usually appear until the cancer is advanced. Liver cancer is about three-times more common in men than in women. Early-stage liver cancer can sometimes be treated successfully with surgery to remove part of the liver (few patients have sufficient healthy liver tissue for this option), or with liver transplantations. Other treatment options include tumor ablation (destruction) or embolization (blocking blood flow). Fewer treatment options exist for patients diagnosed at an advanced stage.<sup>17</sup>

**According to the American Cancer Society, there are currently only a few effective ways to prevent or treat liver cancer (targeted therapies and chemotherapy may be options), making continued and emerging research very important.** Some scientists believe that vaccinations and improved treatments for hepatitis could prevent

about half of liver cancer cases worldwide. Standard chemotherapies may be toxic to the healthy cells of a critical organ that cannot be removed unless replaced, but some new combinations are in trials. New targeted therapies and immunotherapies are now approved and available. Some new radiation therapies have been modified to better protect healthy cells. Delivery of drug-coated beads to embolize the main artery supplying a liver tumor has had some recent success, and some virus approaches have been able to directly kill tumor cells.<sup>18</sup>

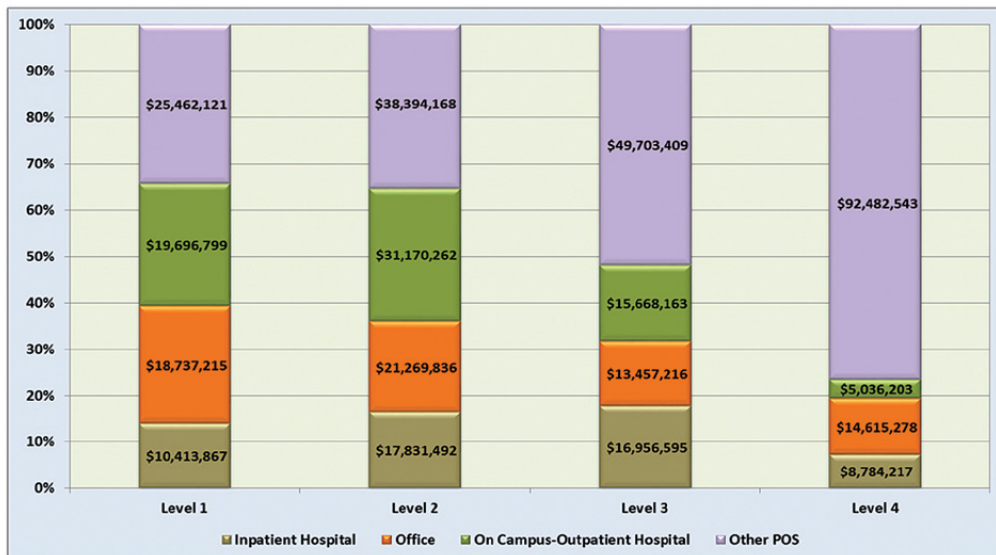
In Figure 14, the distribution of Total Overall Costs of Care for those patients with liver cancer are displayed across the four Acuity Levels and Place of Service. Figure 15 shows the distribution of Total Overall Costs of Care for Place of Service when costs are grouped into six-month Episodes of Care.

**OBSERVATIONS**

- In this aggregated market, the profile of patient Acuity Level and Total Overall Costs of Care distribution is very similar to the lung cancer profile. About 35 percent of the patients in the higher Acuity Levels, 3 and 4, represent over half (54%) of the Total Overall Costs of Care.

**Figure 14: Acuity Level Analysis (Liver Cancer)**

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Liver Cancer (Primary Diagnosis)



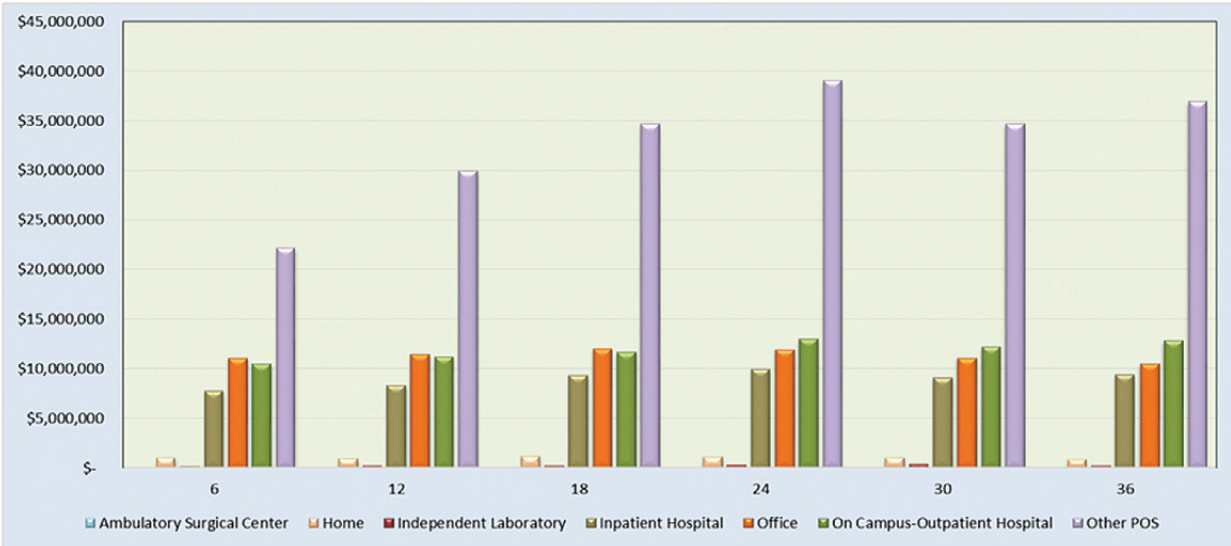
**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Home, Assisted Living Facility, Independent Laboratory, Ambulatory Surgical Center, Emergency Room – Hospital

| StratificationLevel | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other POS      | Total          |
|---------------------|--------------------|---------------|-------------------------------|----------------|----------------|
| Level 1             | \$ 10,413,867      | \$ 18,737,215 | \$ 19,696,799                 | \$ 25,462,121  | \$ 74,310,002  |
| Level 2             | \$ 17,831,492      | \$ 21,269,836 | \$ 31,170,262                 | \$ 38,394,168  | \$ 108,665,758 |
| Level 3             | \$ 16,956,595      | \$ 13,457,216 | \$ 15,668,163                 | \$ 49,703,409  | \$ 95,785,383  |
| Level 4             | \$ 8,784,217       | \$ 14,615,278 | \$ 5,036,203                  | \$ 92,482,543  | \$ 120,918,242 |
|                     | \$ 53,996,172      | \$ 68,079,544 | \$ 71,571,427                 | \$ 206,042,242 | \$ 399,679,385 |

**Figure 15: Episodes of Care Analytics: Six-Month Snapshots – Liver Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Liver Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Assisted Living Facility, Emergency Room – Hospital

| Episode            | Ambulatory Surgical Center | Home                | Independent Laboratory | Inpatient Hospital   | Office               | On Campus-Outpatient Hospital | Other                 | Grand Total           |
|--------------------|----------------------------|---------------------|------------------------|----------------------|----------------------|-------------------------------|-----------------------|-----------------------|
| 6                  | \$ 83,735                  | \$ 1,081,544        | \$ 155,472             | \$ 7,749,077         | \$ 11,061,845        | \$ 10,510,169                 | \$ 22,176,191         | \$ 52,808,033         |
| 12                 | \$ 105,880                 | \$ 977,110          | \$ 250,510             | \$ 8,358,598         | \$ 11,441,999        | \$ 11,203,414                 | \$ 29,932,183         | \$ 62,269,673         |
| 18                 | \$ 123,260                 | \$ 1,243,206        | \$ 237,197             | \$ 9,330,948         | \$ 12,033,925        | \$ 11,675,521                 | \$ 34,617,528         | \$ 69,270,676         |
| 24                 | \$ 130,186                 | \$ 1,165,688        | \$ 338,914             | \$ 9,990,863         | \$ 11,924,952        | \$ 13,032,952                 | \$ 39,006,125         | \$ 75,589,679         |
| 30                 | \$ 113,118                 | \$ 1,028,700        | \$ 400,113             | \$ 9,120,254         | \$ 11,078,982        | \$ 12,276,632                 | \$ 34,679,913         | \$ 68,727,713         |
| 36                 | \$ 79,684                  | \$ 910,115          | \$ 236,587             | \$ 9,427,442         | \$ 10,547,841        | \$ 12,872,730                 | \$ 36,930,223         | \$ 71,013,010         |
| <b>Grand Total</b> | <b>\$ 635,623</b>          | <b>\$ 6,406,463</b> | <b>\$ 1,648,793</b>    | <b>\$ 63,986,172</b> | <b>\$ 68,079,544</b> | <b>\$ 71,571,427</b>          | <b>\$ 197,351,162</b> | <b>\$ 399,679,385</b> |

| Liver Cancer Members — Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|--|------------------------------------|--|
| Acuity Level 1                         | 39%                                | 19%                                      |
| Acuity Level 2                         | 25%                                | 27%                                      |
| Acuity Level 3                         | 19%                                | 24%                                      |
| Acuity Level 4                         | 17%                                | 30%                                      |

- The CO APCD data reflected a higher concentration of costs (Level 3 members incurred 20% of the Total Client D market costs, and Level 4 members represented 25 percent of the Total Overall Costs of Care – at a combined rate of 55% of the liver cancer costs for this market) for the higher acuity levels of patients, despite having a similar but slightly higher percentage member acuity distribution to the aggregated data base (20% at Level 3 and 25% of members were Level 4 Acuity).

- One of the other client’s data presented a quite different picture of liver cancer members, where 43 percent of the Total Overall Costs of Care were for Level 2 Acuity members with liver cancer, and 28 percent of that market’s Total Overall Costs of Care were incurred for Level 1, while Level 3 Acuity members generated 24 percent of the Total Overall Costs of Care.
- The other two clients had the majority of their Total Overall Costs of Care in members with liver cancer concentrated at the Level 3 Acuity rather than at the highest acuity level.

- The majority of costs in the aggregated data base (excluding those not specified as to place of service on the claims being analyzed – 50%) were divided between Hospital Outpatient (18%), Office (16%), followed by Inpatient (14%). Laboratory (0.4%), Home Care (1.7%) and Ambulatory Surgery Costs (0.2%) were all consistent across the Episodes of Care, but close to just two percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in six-month episodes for members with

liver cancer maintain consistency, with a slight spike at 24 months:

- 6 Months – 13% of Total Overall Costs of Care
- 12 Months – 16% of Total Overall Costs of Care
- 18 Months – 17% of Total Overall Costs of Care
- 24 Months – 19% of Total Overall Costs of Care
- 30 Months – 17% of Total Overall Costs of Care
- 36 Months – 18% of Total Overall Costs of Care

#### NAMCP NOTE

Liver cancer patients in this aggregated market appear to be captured fairly early, with almost 40 percent presenting at Level 1 Acuity. However, more than one-third (36% combined) of members that presented in the higher levels of acuity (3 and 4), incur over one-half of the Total Overall Costs of Care (54% between the two levels).

Even less aggressive forms of liver cancers may lead to surgical intervention and costs. Comorbidities may complicate treatment choices. **Both cancers and comorbidities tend to increase in prevalence as the population ages. In recent years, early detection tools have become more available, which may be reflected in the higher member counts at Acuity Levels 1 and 2 and reflect encouraging news in the battle against liver cancer.** With the advances in liver cancer screening and treatment, continued collaboration in the creation of specific treatment protocols, that consider age, prior treatments, and comorbidities are vital.

Clearly, the concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care varied widely across the individual client data bases. **Individual markets should develop a disease management plan for liver cancer with key treating providers, that focuses on early detection, judicious use of surgery for less aggressive tumors, treatment of cancerous tumors, as well as targeted management of the more complex patients with advanced disease and high levels of comorbidities.**

### Bladder Cancer

Bladder cancer is the fourth most common cancer in men and the sixth most common type of cancer overall. However, it is relatively under-recognized. Dr. Ganesh Raj, a professor of urology at UT Southwestern Medical Center, described the bladder as

primarily functioning as a storage unit to hold waste products. He notes that it is repeatedly exposed to substances that can be toxic, including ammonia, urea, and environmental metabolites, like aromatic amines (organic compounds found in manufacturing and tobacco smoke). Bladder cancers often occur in multi-pack year smokers. Other primary risk factors are chronic bladder infections, exposure to other environmental mutagens and prior radiation or chemotherapy.”<sup>19</sup>

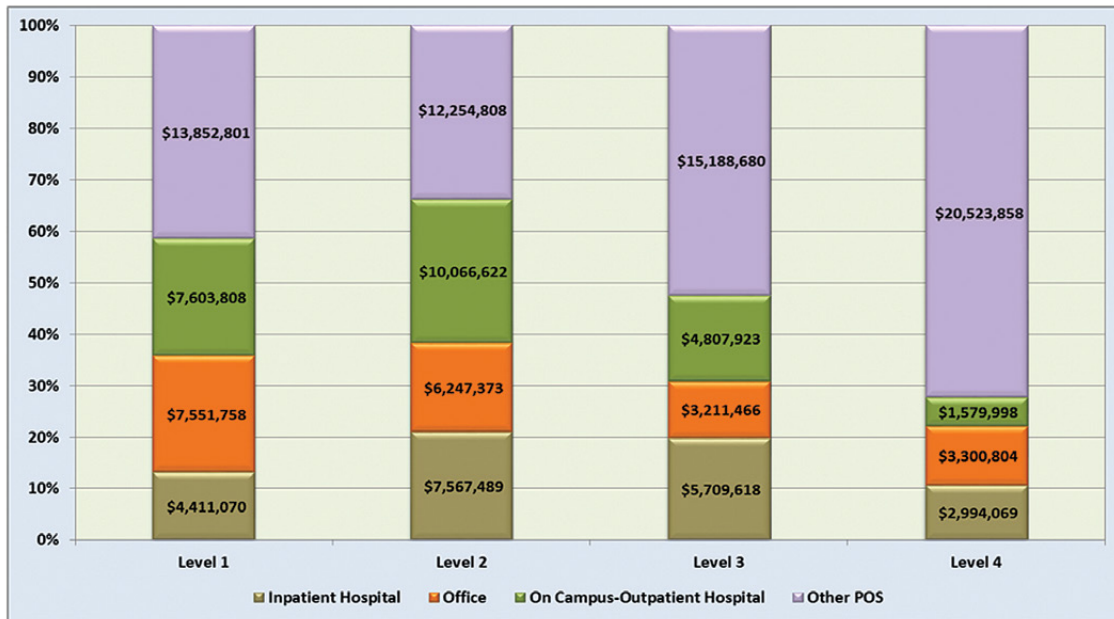
Most bladder cancers are found when symptoms lead a patient to a physician, often a urologist. Dr. Arjun Balra, director of the genitourinary medical oncology program at Perlmutter Cancer Center at NYU Langone Health, told the U.S. News and World Report that if cancer is seen, the urologist may perform a transurethral resection, in which the doctor scrapes the inside of the bladder to remove the cancer. “Patients with low-grade tumors have a high chance their tumor will recur within five years, but still have a good prognosis. About 70 percent of people diagnosed with bladder cancer in the U.S. will have a low-grade cancer, that is treated with the transurethral resection and possibly a type of immunotherapy, then monitored every three to six months. Patients with non-invasive, superficial bladder cancers can have a 95 percent or greater five-year survival rate. The 30 percent of patients with high-grade, more aggressive tumors have a high chance their tumors will recur and progress to invasive cancer that can spread outside the bladder. Patients with high-grade cancers may have surgical removal of the bladder (the standard of care) and must be monitored aggressively, with CT scans and MRIs, after surgery for metastatic spread, recurrence and progression. About 20 to 30 percent of patients with high-grade, non-muscle invasive disease will progress to the point where they need radical cystectomy. Both chemotherapy and immunotherapy options are now available to treat patients with metastatic bladder cancer.”<sup>20</sup>

**The grim prognosis for advanced bladder cancer may soon be ameliorated by the advent of more effective immunotherapies, including recently FDA approved checkpoint inhibitors. However, some bladder cancer patients may not respond to these checkpoint inhibitors, so some focus will be on achieving higher response rates in these patients.** An immunostimulating bacterium has proven effective in early bladder cancers. In addition, CAR-T cell therapies, so effective in blood cancers, are in clinical trials for solid tumors as well.

In Figure 16, the distribution of Total Overall Costs of Care for those patients with bladder cancer

**Figure 16: Acuity Level Analysis (Bladder Cancer)**

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Bladder Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Home, Assisted Living Facility, Independent Laboratory, Ambulatory Surgical Center, Emergency Room – Hospital

| StratificationLevel | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other POS     | Total          |
|---------------------|--------------------|---------------|-------------------------------|---------------|----------------|
| Level 1             | \$ 4,411,070       | \$ 7,551,758  | \$ 7,603,808                  | \$ 13,852,801 | \$ 33,419,437  |
| Level 2             | \$ 7,567,489       | \$ 6,247,373  | \$ 10,066,622                 | \$ 12,254,808 | \$ 36,136,291  |
| Level 3             | \$ 5,709,618       | \$ 3,211,466  | \$ 4,807,923                  | \$ 15,188,680 | \$ 28,917,687  |
| Level 4             | \$ 2,994,069       | \$ 3,300,804  | \$ 1,579,998                  | \$ 20,523,858 | \$ 28,398,729  |
|                     | \$ 20,682,246      | \$ 20,311,401 | \$ 24,058,350                 | \$ 61,820,146 | \$ 126,872,144 |

are displayed across the four Acuity Levels and Place of Service. Figure 17 shows the distribution of Total Overall Costs of Care for Place of Service when costs are divided into six-month Episodes of Care.

**OBSERVATIONS**

- In this aggregated market, a significant portion of patients with a primary bladder cancer diagnosis are caught at the lowest Acuity Level, but 45 percent of the Total Overall Costs of Care are incurred by the 20 percent of patients combined in Acuity Levels 3 and 4.

| Bladder Cancer Members — Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|--|------------------------------------|--|
| Acuity Level 1                           | 61%                                | 26%                                      |
| Acuity Level 2                           | 19%                                | 28%                                      |
| Acuity Level 3                           | 11%                                | 23%                                      |
| Acuity Level 4                           | 9%                                 | 22%                                      |

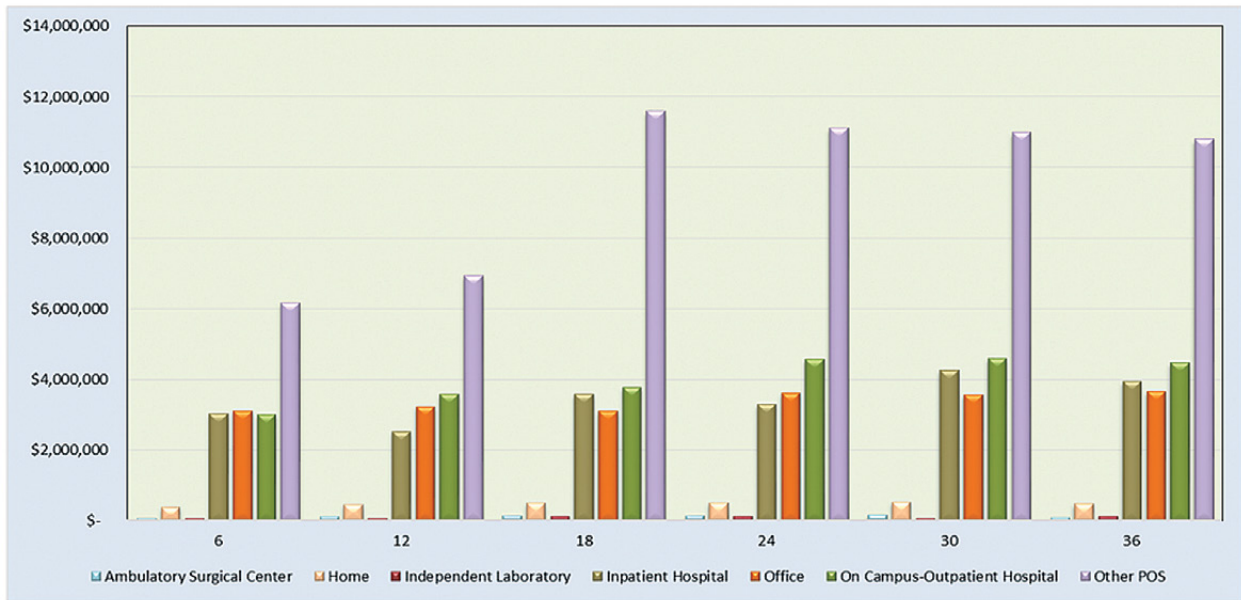
- The CO APCD data reflected a higher concentration of costs (Level 3 members incurred 24% of the Total Overall Costs of Care for Client D’s market, and Level 4 members represented 35% of the Total Overall Costs of Care – at a combined rate of 59% of the bladder cancer costs for this market) for the higher acuity levels of patients. Colorado bladder cancer patients presented later than the aggregated data base (58% presented at Level 1 and 17% at Level 2 compared to 61% and 19% respectively in the aggregated data base).

- Two of the other clients’ data presented a quite different picture of bladder cancer members, where Total Overall Costs of Care were distributed fairly even between Acuity Levels 1, 2, and 3 members (30%, 32%, and 38% respectively for one client and 31%, 39% and 24% for the other) with no Level 4 costs for one client and just 6 percent of Total Overall Costs of Care at Level 4 Acuity, for the other.



**Figure 17: Episodes of Care Analytics: Six-Month Snapshots – Bladder Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Bladder Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Assisted Living Facility, Emergency Room – Hospital

| Episode            | Ambulatory Surgical Center | Home               | Independent Laboratory | Inpatient Hospital   | Office               | On Campus-Outpatient Hospital | Other                | Grand Total           |
|--------------------|----------------------------|--------------------|------------------------|----------------------|----------------------|-------------------------------|----------------------|-----------------------|
| 6                  | \$ 67,791                  | \$ 386,479         | \$ 70,835              | \$ 3,028,971         | \$ 3,105,277         | \$ 3,013,020                  | \$ 6,163,352         | \$ 15,835,825         |
| 12                 | \$ 115,431                 | \$ 470,729         | \$ 79,076              | \$ 2,535,154         | \$ 3,238,255         | \$ 3,599,458                  | \$ 6,938,889         | \$ 16,976,972         |
| 18                 | \$ 144,679                 | \$ 505,326         | \$ 121,345             | \$ 3,588,470         | \$ 3,102,153         | \$ 3,783,386                  | \$ 11,586,028        | \$ 22,833,387         |
| 24                 | \$ 158,451                 | \$ 506,640         | \$ 128,338             | \$ 3,314,500         | \$ 3,627,925         | \$ 4,581,159                  | \$ 11,099,138        | \$ 23,415,151         |
| 30                 | \$ 167,173                 | \$ 527,813         | \$ 77,058              | \$ 4,257,206         | \$ 3,570,431         | \$ 4,597,575                  | \$ 10,990,620        | \$ 24,187,877         |
| 36                 | \$ 108,100                 | \$ 485,387         | \$ 116,049             | \$ 3,957,945         | \$ 3,667,360         | \$ 4,483,752                  | \$ 10,803,340        | \$ 23,621,894         |
| <b>Grand Total</b> | <b>\$ 761,625</b>          | <b>\$2,082,374</b> | <b>\$ 592,800</b>      | <b>\$ 20,682,246</b> | <b>\$ 20,311,401</b> | <b>\$ 24,058,350</b>          | <b>\$ 57,583,347</b> | <b>\$ 126,872,143</b> |

- The other client had the majority of their Total Overall Costs of Care for members with bladder cancer concentrated in patients at the Level 3 Acuity (67%) and 24 percent of Total Overall Costs of Care were incurred by Acuity Level 2 patients with just 8 percent at Acuity Level 1 and 1 percent at Acuity Level 4.
- The majority of costs in the aggregated data base (excluding those not specified as to place of service on the claims being analyzed – 45%) were divided between Hospital Outpatient (19%), Office (16%), followed by Inpatient (16%). Laboratory (0.5%), Home Care (2.3%) and Ambulatory Surgery Costs (0.6%) were all consistent across the Episodes of Care, but close to just three percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in six-month episodes for members

with bladder cancer maintain consistency, with a rise at 18 months that stays consistent through 36 months:

- 6 Months – 12% of Total Overall Costs of Care
- 12 Months – 13% of Total Overall Costs of Care
- 18 Months – 18% of Total Overall Costs of Care
- 24 Months – 18% of Total Overall Costs of Care
- 30 Months – 19% of Total Overall Costs of Care
- 36 Months – 19% of Total Overall Costs of Care

**NAMCP NOTE**

Bladder cancer is complicated, in that it can be identified and treated by more than one specialty, and is managed surgically as well as through chemotherapy and immunotherapy. Coordination of care across specialists, and aggressive monitoring and surveillance are key to

**NAMCP NOTE** (continued)

the management of bladder cancer.

Bladder cancer patients in this aggregated market appear to be captured fairly early, with 61 percent presenting at Level 1 Acuity. However, Total Overall Costs of Care remain fairly consistent across all levels of Acuity (Acuity Level 1 – 26%, Level 2 – 28%, Level 3 – 23% and Level 4 – 22%), possibly because bladder cancer must be treated and monitored aggressively to prevent progression at any time it presents.

**Bladder cancer is complicated to treat, so good patient management will include insuring that patients are seen by the correct physicians at the correct time. An early aggressive treatment plan, with plans for progression, must be in place from the start of the diagnosis.**

The concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care again varied widely across the individual client data bases. **Individual markets should develop a disease management plan for bladder cancer with key treating providers (who will be a combination of specialties – not just oncology) that focuses on smoking cessation, early detection, judicious use of surgery for less aggressive tumors, treatment of cancerous tumors, aggressive monitoring and surveillance, as well as targeted management of the more complex patients with advanced disease and high levels of comorbidities.**

### Melanoma Cancer

**Cancer of the skin is by far the most commonly diagnosed of all cancers.** However, melanoma accounts for only about 1 percent of skin cancers but causes a large majority of skin cancer deaths.<sup>21</sup>

According to the American Cancer Society, there are three main types of cells in the top layer of the skin – squamous cells, basal cells and melanocytes. The melanocytes are the cells that can become melanoma. Having darkly pigmented skin lowers the risk of melanoma at the more common trunk, legs, neck and face sites, but anyone can get melanoma on the palms of the hands, soles of the feet, and under the nails as well as other parts of the body. Melanoma is much less common than basal cell and squamous cell skin cancers but is more dangerous because it

is much more likely to spread to other parts of the body, if not caught early.<sup>22</sup>

The American Cancer Society also reports that early detection is dependent upon awareness of new or changing skin growths, particularly those that look unusual. Most early skin cancers are diagnosed and treated by removal and microscopic examination of the cells. Surgery, radiation therapy and certain topical medications may be used. Melanomas with deep invasion or that have spread to lymph nodes may be treated with surgery, immunotherapy, chemotherapy, and/or radiation therapy. The treatment of advanced melanoma has changed greatly in recent years with FDA approval of several new immunotherapy and targeted drugs. Chemotherapy may be used but is usually much less effective than newer treatments.<sup>23</sup>

In Figure 18, the distribution of Total Overall Costs of Care for those patients with melanoma cancer are displayed across the four Acuity Levels and Place of Service. Figure 19 shows the distribution of Total Overall Costs of Care for Place of Service when costs are grouped into six-month Episodes of Care.

### OBSERVATIONS

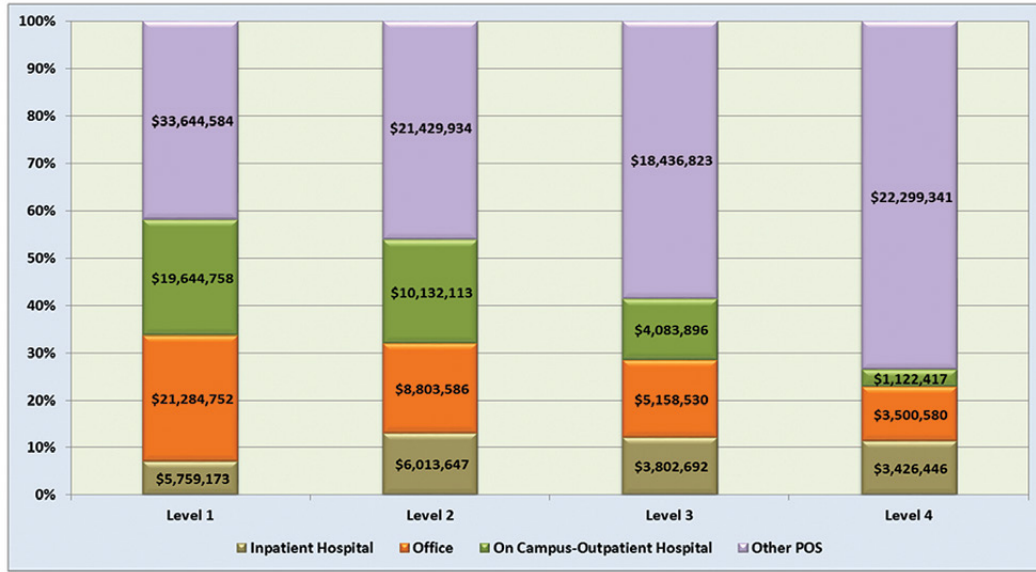
- In this aggregated market, melanoma cancers were diagnosed fairly early, but one-third of Total Overall Costs of Care are consumed by the 20 percent of patients in Acuity Levels 3 and 4.

| Melanoma Cancer Members - Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|---|------------------------------------|--|
| Acuity Level 1                            | 79%                                | 43%                                      |
| Acuity Level 2                            | 12%                                | 25%                                      |
| Acuity Level 3                            | 6%                                 | 17%                                      |
| Acuity Level 4                            | 4%                                 | 16%                                      |

- The CO APCD data reflected a even higher concentration of early detection and treatment without complications of significant comorbidities. Fully 89 percent of members were either at Acuity Level 1 (77%) or Acuity Level 2 (11%). However, the Total Overall Costs of Care were more evenly distributed (Acuity Level 1 members incurred 36% of the costs, whereas Acuity Levels 2, 3 and 4 hit 21%, 20% and 23% of the Total Overall Costs of Care

**Figure 18: Acuity Level Analysis (Melanoma Cancer)**

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Melanoma Cancer (Primary Diagnosis)



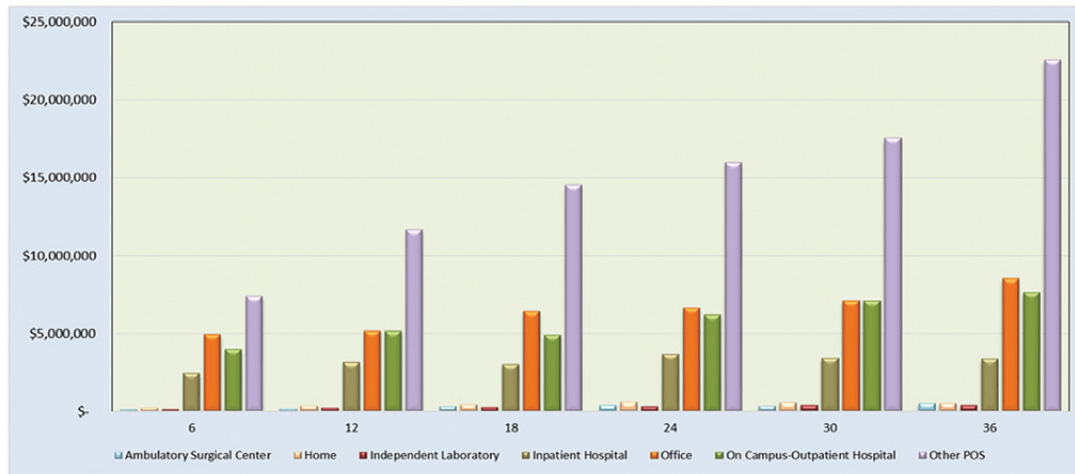
**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Home, Assisted Living Facility, Independent Laboratory, Ambulatory Surgical Center, Emergency Room – Hospital

| StratificationLevel | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other POS     | Total          |
|---------------------|--------------------|---------------|-------------------------------|---------------|----------------|
| Level 1             | \$ 5,759,173       | \$ 21,284,752 | \$ 19,644,758                 | \$ 33,644,584 | \$ 80,333,268  |
| Level 2             | \$ 6,013,647       | \$ 8,803,586  | \$ 10,132,113                 | \$ 21,429,934 | \$ 46,379,281  |
| Level 3             | \$ 3,802,692       | \$ 5,158,530  | \$ 4,083,896                  | \$ 18,436,823 | \$ 31,481,941  |
| Level 4             | \$ 3,426,446       | \$ 3,500,580  | \$ 1,122,417                  | \$ 22,299,341 | \$ 30,348,784  |
|                     | \$ 18,001,959      | \$ 38,747,448 | \$ 34,983,184                 | \$ 95,810,682 | \$ 188,543,273 |

**Figure 19: Episodes of Care Analytics: Six-Month Snapshots – Melanoma Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Melanoma Cancer (Primary Diagnosis)



**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Assisted Living Facility, Emergency Room – Hospital

| Episode     | Ambulatory Surgical Center | Home         | Independent Laboratory | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other         | Grand Total    |
|-------------|----------------------------|--------------|------------------------|--------------------|---------------|-------------------------------|---------------|----------------|
| 6           | \$ 130,708                 | \$ 231,402   | \$ 146,023             | \$ 2,440,993       | \$ 4,940,296  | \$ 4,016,519                  | \$ 7,376,889  | \$ 19,294,829  |
| 12          | \$ 158,473                 | \$ 343,377   | \$ 193,223             | \$ 3,143,805       | \$ 5,163,449  | \$ 5,144,371                  | \$ 11,653,292 | \$ 25,799,990  |
| 18          | \$ 302,475                 | \$ 437,774   | \$ 249,251             | \$ 3,015,736       | \$ 6,407,958  | \$ 4,884,195                  | \$ 14,520,035 | \$ 29,817,429  |
| 24          | \$ 396,253                 | \$ 584,700   | \$ 294,719             | \$ 3,641,493       | \$ 6,612,183  | \$ 6,206,595                  | \$ 15,967,609 | \$ 33,705,573  |
| 30          | \$ 334,188                 | \$ 571,055   | \$ 375,053             | \$ 3,408,921       | \$ 7,108,920  | \$ 7,099,678                  | \$ 17,570,916 | \$ 36,488,731  |
| 36          | \$ 525,085                 | \$ 520,830   | \$ 368,137             | \$ 3,351,011       | \$ 8,514,642  | \$ 7,629,826                  | \$ 22,557,193 | \$ 43,485,725  |
| Grand Total | \$ 1,847,182               | \$ 2,698,143 | \$ 1,626,407           | \$ 18,001,959      | \$ 38,747,448 | \$ 34,983,184                 | \$ 95,810,682 | \$ 188,543,273 |

for the Colorado market) – showing that lower numbers of patients at higher acuties to be more costly than higher numbers of members at lower acuties.

- One of the other client’s data presented a quite different picture of melanoma cancer members, where 31 percent of the Total Overall Costs for Care for members with melanoma were for Level 1 Acuity members, and 39 percent of that market’s Total Overall Costs of Care were incurred for Level 2, while Level 3 Acuity members generated 24 percent of the Total Overall Costs of Care and Acuity Level 4 just six percent.
- Another client had the majority of their Total Overall Costs of Care for members with melanoma cancer concentrated in patients at the Level 1 and 2 Acuity, with no costs recorded at the highest acuity level.
- The fourth client had too small a melanoma data set to report.
- The majority of Total Overall Costs of Care in the aggregated data base (excluding those not specified as to place of service on the claims being analyzed – 48%) were divided between Hospital Outpatient (19%), Office (21%), followed by Inpatient (10%). Laboratory (1.0%), Home Care (1.4%) and Ambulatory Surgery Costs (0.9%) were all consistent across the Episodes of Care, but close to just three percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in 6-month episodes for members with melanoma cancer consistently escalate over time of treatment:
  - 6 Months – 10% of Total Overall Costs of Care
  - 12 Months – 14% of Total Overall Costs of Care
  - 18 Months – 16% of Total Overall Costs of Care
  - 24 Months – 18% of Total Overall Costs of Care
  - 30 Months – 19% of Total Overall Costs of Care
  - 36 Months – 23% of Total Overall Costs of Care

#### NAMCP NOTE

**Melanoma cancer patients in this aggregated market appear to be captured fairly early, with almost 80 percent presenting at Level 1 Acuity. However, Average Per Member costs escalate with higher Acuity Levels, so early detection could yield significant value to both patients and those who pay for care.**

Education and awareness are critical to early detection and early treatment, and health plans, employers and providers can facilitate improved education and awareness for members in a local market area. Even less aggressive, early stage melanoma cancers result in surgical intervention and costs.

Every cancer market continues to be unique. The concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care varied widely across the individual client data bases. Individual markets should develop a disease management plan for melanoma cancer with key treating providers that focuses on early education, awareness and detection, judicious use of surgery for less aggressive tumors, treatment of cancerous tumors, as well as targeted management of the more complex patients with advanced disease and high levels of comorbidities.

#### Prostate Cancer

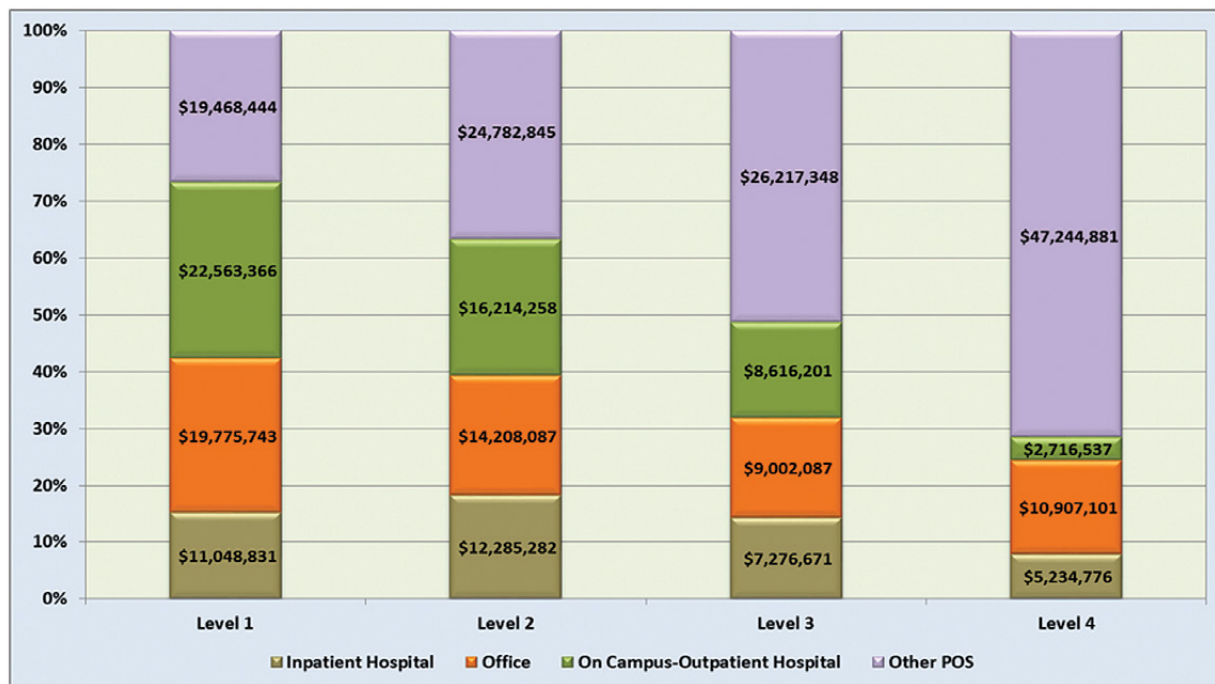
ASCO tells patients, through its Cancer. Net website, that “Prostate cancer is somewhat unusual when compared to other types of cancer, because many prostate tumors do not spread quickly to other parts of the body. Some prostate cancers grow very slowly and may not cause symptoms or problems for years or ever. Even when prostate cancer has spread to other parts of the body, it often can be managed for a long time, allowing men even with advanced prostate cancer to live with good health and quality of life for many years. **An important part of managing prostate cancer is monitoring it for growth over time. Treatment decisions will vary based upon the pattern and speed of growth.**”<sup>24</sup>

**Nearly every male who lives long enough will develop prostate cancer in their lifetimes. The vast majority of these are not life threatening.**

The American Cancer Society (ACS) reports that “early-stage prostate cancer usually has no symp-

Figure 20: Acuity Level Analysis (Prostate Cancer)

Place of Service (POS) Total Overall Costs of Care by Patient Acuity Level for Prostate Cancer (Primary Diagnosis)



Observations

- Data based on Neoplasm Members only
- Other POS Categories: Home, Assisted Living Facility, Independent Laboratory, Ambulatory Surgical Center, Emergency Room – Hospital

| StratificationLevel | Inpatient Hospital | Office        | On Campus-Outpatient Hospital | Other POS      | Total          |
|---------------------|--------------------|---------------|-------------------------------|----------------|----------------|
| Level 1             | \$ 11,048,831      | \$ 19,775,743 | \$ 22,563,366                 | \$ 19,468,444  | \$ 72,856,383  |
| Level 2             | \$ 12,285,282      | \$ 14,208,087 | \$ 16,214,258                 | \$ 24,782,845  | \$ 67,490,472  |
| Level 3             | \$ 7,276,671       | \$ 9,002,087  | \$ 8,616,201                  | \$ 26,217,348  | \$ 51,112,306  |
| Level 4             | \$ 5,234,776       | \$ 10,907,101 | \$ 2,716,537                  | \$ 47,244,881  | \$ 66,103,295  |
|                     | \$ 35,845,559      | \$ 53,893,018 | \$ 50,110,360                 | \$ 117,713,518 | \$ 257,562,456 |

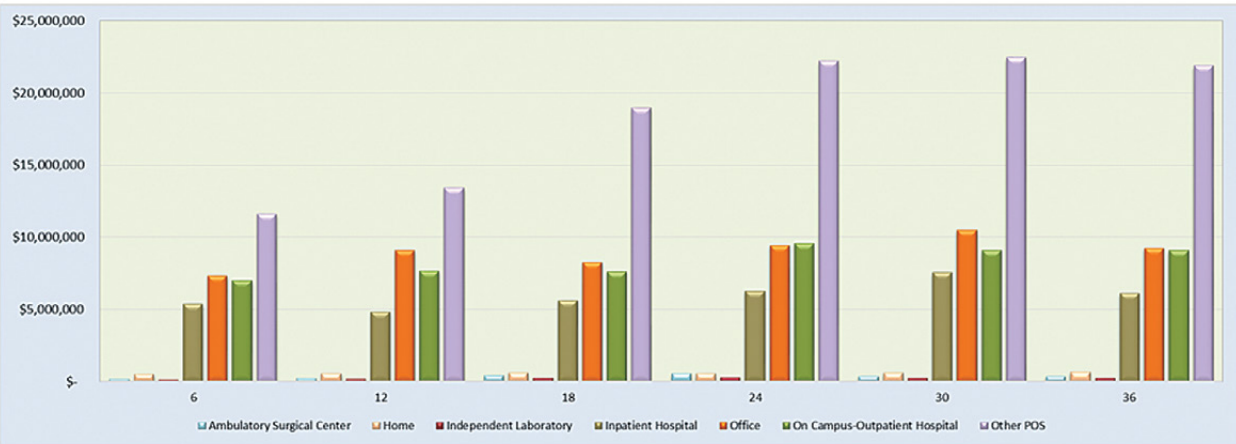
toms. Advanced prostate cancer commonly spreads to the bones, which can cause pain in the hips, spine, ribs, or other areas. The only well-established risk factors for prostate cancer are increasing age. ACS recommends that beginning at age 50, men who are at average risk of prostate cancer and have a life expectancy of at least 10 years, discuss the benefits and limitations of PSA testing and decide whether or not to be screened. Men at high risk of developing prostate cancer should have that discussion at age 45, and men at even higher risk (with several close relatives diagnosed at an early age) should begin at age 40. Treatment decisions should be based upon clinician recommendations and patient values and preferences. Careful monitoring of disease progression (active surveillance) is appropriate for many patients. Treatment options include surgery, external beam radiation, or radioactive seed implants (brachytherapy). Chemotherapy and/or hormonal therapy may be used along with surgery or radiation, in more advanced cases. The majority (91%)

of prostate cancers are discovered at a local or regional stage, for which the five-year survival rate approaches 100 percent. The five-year survival rate for disease diagnosed at a distant stage is 30 percent. The ten-year survival for all stages combined is 98 percent.”<sup>25</sup>

**One of the biggest challenges remains determining which prostate cancer will follow a less aggressive course at the time of diagnosis, and which is likely to be aggressive.** Many early prostate cancers are cured with robotic or standard surgery to remove the gland, followed by various chemotherapy regimens and/or radiation treatments. Metastatic prostate cancer presents a much bigger challenge. The emerging immunotherapies have much promise in this application. There are no checkpoint inhibitors or CAR-T cell therapy yet approved by the FDA, specifically for prostate cancer, but both categories of drugs have been approved for other cancers and both approaches are in active clinical trials for prostate cancer. Other approaches

**Figure 21: Episodes of Care Analytics: Six-Month Snapshots – Prostate Cancer**

Place of Service (POS) Total Overall Cost of Care Grouped into 6 Month Episodes for Prostate Cancer (Primary Diagnosis)



| Episode            | Ambulatory Surgical Center | Home                | Independent Laboratory | Inpatient Hospital   | Office               | On Campus-Outpatient Hospital | Other                 | Grand Total           |
|--------------------|----------------------------|---------------------|------------------------|----------------------|----------------------|-------------------------------|-----------------------|-----------------------|
| 6                  | \$ 183,619                 | \$ 520,229          | \$ 175,928             | \$ 5,387,738         | \$ 7,345,924         | \$ 7,036,107                  | \$ 11,616,937         | \$ 32,266,482         |
| 12                 | \$ 257,477                 | \$ 592,864          | \$ 190,539             | \$ 4,848,236         | \$ 9,126,557         | \$ 7,660,779                  | \$ 13,440,063         | \$ 36,106,535         |
| 18                 | \$ 423,798                 | \$ 833,946          | \$ 282,352             | \$ 5,618,069         | \$ 8,286,097         | \$ 7,822,540                  | \$ 18,944,755         | \$ 41,772,356         |
| 24                 | \$ 583,431                 | \$ 591,112          | \$ 309,302             | \$ 6,263,598         | \$ 9,425,658         | \$ 9,567,699                  | \$ 22,160,358         | \$ 48,921,239         |
| 30                 | \$ 372,543                 | \$ 583,930          | \$ 249,917             | \$ 7,563,205         | \$ 10,500,121        | \$ 9,117,532                  | \$ 22,437,772         | \$ 50,840,020         |
| 36                 | \$ 383,968                 | \$ 679,600          | \$ 228,182             | \$ 6,163,923         | \$ 9,228,661         | \$ 9,105,703                  | \$ 21,854,780         | \$ 47,655,826         |
| <b>Grand Total</b> | <b>\$ 2,214,835</b>        | <b>\$ 3,606,700</b> | <b>\$ 1,417,319</b>    | <b>\$ 35,845,559</b> | <b>\$ 53,893,019</b> | <b>\$ 50,110,361</b>          | <b>\$ 110,474,664</b> | <b>\$ 257,562,456</b> |

**Observations**

- Data based on Neoplasm Members only
- Other POS Categories: Assisted Living Facility, Emergency Room – Hospital

include, isolating existing T cells with receptors that already recognize specific tumor antigens, expanding them, and infusing them back into the patient. Modification of the tumor micro-environment (TME) could also make it less hospitable for tumor growth.

In Figure 20, the distribution of Total Overall Costs of Care for those patients with prostate cancer are displayed across the four Acuity Levels and Place of Service. Figure 21 shows the distribution of Total Overall Costs of Care for Place of Service when costs are broken down into six-month Episodes of Care.

**OBSERVATIONS**

- Prostate and skin cancers were the two least costly Average Cost of Care top ten ranked cancers in the 2018 Oncology Profile, and almost equivalent at \$30,610 per member for prostate cancer and \$30,509 per member for skin cancer.
- In this aggregated market almost half of the Total Overall Costs of Care (46%) was attributed to 19 percent of patients with the two highest Acuity

Levels 3 and 4. This profile does raise the question, of whether active surveillance, or even perhaps patient denial and resistance to treatment, might be leading to higher costs than might be more representative of optimum patient outcomes.

| Prostate Cancer Members — Aggregated Data | Percentage Distribution of Members | Percentage Distribution of Overall Costs |
|---|------------------------------------|--|
| Acuity Level 1                            | 61%                                | 28%                                      |
| Acuity Level 2                            | 20%                                | 26%                                      |
| Acuity Level 3                            | 11%                                | 20%                                      |
| Acuity Level 4                            | 8%                                 | 26%                                      |

- The CO APCD data reflected a higher concentration of costs (Level 3 members incurred 23% of the Total Client D market costs, and Level 4

members represented 42% of the Total Overall Costs of Care – at a combined rate of 65 percent of the prostate cancer costs for this market) for the higher acuity levels of patients, despite having a similar but slightly higher percentage member acuity distribution to the aggregated data base (14% at Level 3 and 11% of members were Level 4 Acuity).

- One of the other client’s data presented a quite different picture of prostate cancer members, where 41 percent of the Total Overall Costs of Care were for Level 3 Acuity members with prostate cancer, and 43 percent of that market’s Total Overall Costs of Care were incurred for Level 1, while Level 2 Acuity members generated the other 16 percent of the Total Overall Costs of Care – there were no Level 4 Acuity patient costs.
- The other two clients had the majority of their Total Overall Costs of Care, for members with prostate cancer, concentrated in patients at the Level 1 and 2 Acuity (53% and 30% respectively) and then evenly more concentrated on Acuity Levels 1,2, and 3 (25%, 38% and 35% respectively) rather than at the highest acuity level 4.
- The majority of costs in the aggregated data base (excluding those not specified as to place of service on the claims being analyzed – 50%) were divided between Hospital Outpatient (18%), Office (16%), followed by Inpatient (14%). Laboratory (0.4%), Home Care (1.7%) and Ambulatory Surgery Costs (0.2%) were all consistent across the Episodes of Care, but close to just two percent of Total Overall Costs of Care.
- The aggregated Total Overall Costs of Care grouped in 6-month episodes for members with prostate cancer maintain consistency early in the first 18 months, with an elevation as time progresses at 24 months of treatment and beyond:
  - 6 Months – 13% of Total Overall Costs of Care
  - 12 Months – 14% of Total Overall Costs of Care
  - 18 Months – 16% of Total Overall Costs of Care
  - 24 Months – 19% of Total Overall Costs of Care
  - 30 Months – 20% of Total Overall Costs of Care
  - 36 Months – 19% of Total Overall Costs of Care

#### NAMCP NOTE

Prostate cancer patients in this aggregated market appear to be captured early, as might be ideal, and as was reflected in some of the individual client markets, with 61 percent presenting at Level 1 Acuity. However, the 20 percent combined (11% at Acuity Level 3 and 8% at Acuity Level 4) of members that presented in the higher levels of acuity incur close to half of the Total Overall Costs of Care (46% between the two levels).

**Additionally, the concentration of patients at different acuity levels and the distribution of Total Overall Costs of Care varied widely across the individual client data bases. Cost management related to prostate cancer may be more linked to education, awareness and appropriate screening. However, there is a fine balance between active surveillance and waiting too long, so sharing information on the Total Overall Costs of Care for those with prostate cancer and developing a collaborative active management plan may prove to be a good solution.**

The 2018 Oncology Profile data does not tell us the reasons for there being no Level 4 Acuity patients for some of the data sets, but for prostate cancer, there are some possible factors. It is possible that no Level 4 Acuity patients could result from younger populations, where a cancer might be detected early and treatment was successful, or if the cancers were detected, but were very aggressive and led to death before the patient could be classified as a Level 4 Acuity patient. Acuity Level 3 patients can be the most costly, due to the aggressive nature of the treatment, especially if there was a delayed start to therapy.

**Individual markets should develop a long-term disease management plan for prostate cancer with key treating providers that focuses on early detection, discussion of a plan of action for active surveillance, and address any barriers that may lead to unwarranted delays in treatment, as well as targeted management of the more complex patients with advanced disease and high levels of comorbidities.**

## Conclusions and Next Steps Suggested by the NAMCP Medical Directors Institute Oncology Profile

### TOTAL CARE MANAGEMENT CAN CONTROL MORE ONCOLOGY COSTS THAN DRUG MANAGEMENT

“There is a general consensus that the current level of health care spending in the U.S. is unsustainable. Yet, such spending is expected to continue to grow faster than the U.S. gross domestic product over the next 10 years.

Hospitals and health systems are continuously striving to reduce costs and improve the efficiency of care. Historically, providers have focused on managing their own costs for a particular service, but new risk-based payment arrangements are making many hospitals and health systems accountable for a broader range of health care spending, including the cost of services delivered by other providers during an episode of care or for a defined population. It is, therefore, useful to consider the impact of discussing the “Total Overall Cost of Care” on hospitals and health systems, as well as contemplate what steps health care leaders need to take.”<sup>26</sup>

Managed care medical directors and employers are equally concerned about change and the looming impact of unsustainable costs. Cancer is complex, costly, and payer management of this high-profile disease has been mostly limited to drug management. Patients are complex and health care costs are driven by comorbidities, symptom management, treatment, adverse effects, and complications, more so than whether drug A costs X dollars more per treatment than drug B.

**Since drug formularies and clinical care pathways tend to focus on treatment choices for initial lines of therapy and do not consider the Total Overall Costs of Care, collaboration with providers who treat those more complicated patients should yield far greater value than the drug management focused methodologies most currently in vogue with those who pay for care and pharmacy benefit managers.**

### PATIENT MANAGEMENT IS MORE ESSENTIAL TO COST MANAGEMENT THAN PATIENT TREATMENT

It appears that benefit design and provider contracting that focuses on treatment controls, such as step therapy, formularies, and individual drug prices will result in higher overall costs, if cancer patients and physicians are not able to manage symptoms and adverse effects, or if patient comorbidities are

**not managed in concert with the cancer care. Few business coalitions, health plans, employers, or providers have the analytical capability to assess patient complexity on an individual or population basis.**

Escalating cancer expenditures are a major challenge that takes a significant toll on society, business coalitions, health plans, employers, and providers. Just as the causes of these rising costs are multifactorial, strategies aimed at effectively managing these costs need to become multifactorial as well as part of a growing national discussion on quality and value for cancer treatment. Quality measurement and improvement have been components in just about every payment reform model proposed by Congress, the Center for Medicare & Medicaid (CMS), physicians, health care systems and private health plans and employers. **However, without those who treat patients and those who pay for care using Total Overall Costs of Care for cancer patients as a base catalyst, progress toward patient management will be thwarted, and likely unsuccessful.**

### NEITHER PROVIDERS NOR THOSE MANAGING CLAIMS INDIVIDUALLY HAVE THE TOOLS NEEDED, BUT THEY CAN MAKE IMPROVEMENTS BY COLLABORATING, AND SHARING ONCOLOGY AND DISEASE PROFILES

Few health plan or employer medical directors are medical oncologists. Although very concerned about costs and policy issues for cancer, they are not always certain of what questions to ask and where some of the less obvious issues lie. It is our hope that the 2018 Oncology Profile helps the individual participants to better understand the oncology landscape hidden in their own claims data, to benchmark those findings, and to also review common background concerns and issues that other national medical directors may wish to address when embarking on a policy for managing their own oncology profiles. **The discussion of the 2018 Oncology Profile aggregated data set is intended to spur action among the individual participants, as well as to encourage other health plans, employers and regional and state coalitions to seek their own oncology profile to trigger proactive initiatives in their own markets. Our hope is that this 2018 Oncology Profile study will be the impetus to improve knowledge and communication between physicians, patients and payors. Early detection and long and short-term plans of care are vital in the success of cancer care, management of costs, quality and outcomes.**



## Next Steps

The NAMCP Medical Directors Institute embarked upon the 2018 Oncology Profile to serve as a catalyst for those who pay for care and those who provide care to cancer patients to begin collaboration and patient management from a platform of real world data perspectives on the impact of comorbidities and patient acuity on the total cost of care.

The observations and strategic notes presented in this review should provide valuable insights, not only to the four participants in the project, but also to the general healthcare community at large. Armed with a better understanding of the impact of comorbidities and patient acuity levels, and the landscape of oncology disease mix across providers in their local markets, the four participants should be able to, with the willing assistance of the NACMP Oncology Council leadership team, develop a working strategic plan for their local oncology market.

### **SPECIFIC OPPORTUNITIES FOR BUSINESS COALITIONS, HEALTH PLANS, EMPLOYERS, AND PROVIDERS TO EXPLORE MAY INCLUDE**

- **Review the patient and disease targets suggested by the 2018 Oncology Profile (pick two or three to address in the first two years).**
  - **Develop disease specific patient management goals, targeting patients with advanced disease and higher comorbidities and complexity.**
  - **Target cross comorbidities provider communication, and open Total Overall Costs of Care data sharing between payers and providers.**
  - **Identify high risk members (those with history of, family and environmental exposures).**
  - **Collaborative Education, Wellness, Screening and Early Detection – When done effectively, can lead to reduced Total Overall Costs of Care, improved quality of life, and maintain or enhance member productivity.**
  - **Explore or expand opportunities with nurse navigation, patient advocates or patient navigators to assist patients with the process from screening, to treatment and survivorship.**
- **Navigation will assist members in getting treatment in a more timely manner and keep them on track so they adhere and continue treatment, that supports the best possible outcome.**
- **Survivorship programs, including:**
    - **Provision for making more accessible physical therapy and occupational therapy after treatment.**
    - **Provision of incentives and cost reductions for gym and exercise memberships.**
    - **Covering and providing continued dietitian and nutritional counseling.**
  - **Consider the site of care—mix and options for the patient population/market – Accountable Care Organizations or integrated systems, hospital-based and academic centers can charge 20 to 40 percent higher rates for comparable treatments than community practices. Community practices can deliver that same or better quality of care than hospital-based care. Hospital-based and academic centers do deliver their own value and should be especially utilized for second options, rare and unusual cancers, and therapies that must be administered in a controlled facility. When possible negotiate specific rates, with groups such as these, to decrease outliers and escalating costs of treating rare or unusual cancers.**
  - **Guideline Management – Guidelines have their place in care of the cancer patient, but depending upon their source, may not lead to lower Total Overall Costs of Care or better outcomes, if they are too focused on drug cost management. Collaborating physicians should be allowed to take into consideration more than just standard treatment guidelines when managing their cancer patients. Collaborating physicians should be encouraged to utilize the tools available to them, such as innovative gene assay**

testing, circulating proteins, inhibitors and other targeted points of testing and treatment, along with age, ethnicity, geographic, co-morbid conditions, and make treatment decisions that strive for the maximum impact on Total Overall Costs of Care and patient outcomes.

- **Medication Management – Controlling this spend is not easy and most of the current tools are not as helpful as initially hoped. Focusing on innovative ways of those who pay for care and providers working with pharma and PBMs, is a necessary challenge.**
  - **One driving factor is an increase in oral medication for oncology, which most people think is a good trend, but it opens the door for unproductive compliance and adherence issues for a variety of reasons.**

Currently 25 percent of all the new drugs in the pipeline for oncology are oral. **The costs to business coalitions, health plans, employers, and providers of patient noncompliance and non-adherence, that result in paid drugs never being used, as well as the repercussions for patient productivity, health and treatment success are significant. The current approach to oral oncology and supportive care drugs is not working, and better alternatives that take advantage of physician management and in-office dispensing should be high on the strategies plan for both those who pay for care and providers.** NAMCP has also been able to initiate collaborative discussions with other key oncology organizations to bring a comprehensive set of perspectives to the discussion table. With the increasing activities of the NAMCP Oncology Institute, there are great opportunities for all involved to effect significant change and reform in the oncology space, while enhancing quality of care and patient outcomes, even as they reduce overhead burdens and costs.

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