

## Findings from an Assessment of New Century Health's Medical Cost Savings Methodology

Cancer is diagnosed more frequently with advancing age, and with the U.S. population of those age 65 and over expected to increase from 40 million in 2010 to 73 million in 2030, the rate of cancer diagnosis will parallel that expansion of the cancer-prone segment of the population. The rapid growth of cancer prevalence is occurring in an environment of expanding and changing complex management and treatment protocols. These factors combined with a care delivery system with misaligned payment incentives and wide variations in oncology practice patterns creates an imperative for adherence to evidence-based clinical guidelines or pathways to improve quality and stave off explosive cost growth.

### The New Century Health Approach to Evidence-Based Medicine and Affordability Management

New Century Health (NCH) uses a technology-enabled clinical review process that increases compliance with guideline-based care by helping physicians select evidence-based therapies. A proprietary clinical decision support platform assesses the treatment plan against compendia-based clinical pathways as well as New Century Health's Preferred Pathways to detect variation that is relayed back to the treating oncologist. In most of these cases, this feedback results in treatment changes to comply with evidence-based pathways, resulting in cost changes, either positive or negative savings, from the original treatment plan. New Century Health measures these savings by comparing the expected costs for the original treatment plan to the expected costs for the new treatment plan.

In order to confirm the validity of their approach, New Century Health requested that Optum's Payer Consulting team assess the methodology by which they calculate market-level and client-specific savings resulting from this quality-driven clinical review process.

### Assessment Methodology

Optum developed a specific, consistent process for assessing the validity of the savings determination and savings calculations developed and employed by NCH. Optum reviewed 200 cases, randomly selected from the total interventions performed by New Century Health in 2013 for two health plans located in two different geographic markets. The 200 cases represented 21.3% of the total cases with clinical interventions for the health plans. Optum assessed the validity of the New Century Health savings determination by evaluating the analytic integrity of New Century Health's algorithm compared to Optum's independently calculated savings.

### Findings

Optum determined that the method by which New Century Health's oncology quality management program calculates savings is reasonable and is a valid representation of the financial impact resulting from the New Century Health intervention. Optum also confirmed that the approach for attributing savings to interventions and the savings calculations utilized by New Century Health are clinically and logically consistent, reasonable, and conservative.

The nature of cancer care lends itself to clinical interventions that examine and enhance adherence to cancer care guidelines. New Century Health uses a physician-facing clinical decision support platform, clinical pathways, and medical oncologist support to identify and resolve deviations from evidence-based guidelines. Based on this independent review, Optum validates that NCH accurately measures the savings that result from the high percentage of their clinical interventions with providers that result in correction of deviations from guidelines.



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## Findings from an assessment of New Century Health's medical cost savings methodology



Cancer diagnosis is growing rapidly in the United States, and this growth is expected to accelerate as the population ages. Treatment options are also expanding and changing. These factors, in addition to shifts in chemotherapy site-of-service administration options, varying levels of clinical pathway adoption by practices,<sup>1</sup> and off-label use of oncology medications (recently benchmarked at 30%<sup>2</sup>) have contributed to a care delivery landscape with variations in medical oncology practice patterns.<sup>3</sup>

In addition to widespread variation in medical oncology care, it has been noted there is also variation in cost without differences in care quality.<sup>4</sup> The Institute of Medicine released a report in 2013 that describes cancer care as “a system in crisis.”<sup>5</sup> One of the issues that they cite is that the treatment of cancer is not as evidence-based as it should be. There are a number of trends that increase the challenge to improving cancer care. These include:<sup>6</sup>

- A rapid increase in the number of people with cancer
- Unsustainable growth in cost of care
- Complexity of prescribing and managing new treatments
- Workforce shortages and maldistribution of oncology services

An additional significant challenge to improving cancer care is a care delivery system with misaligned incentives.

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## Increased disease prevalence

Approximately 1.6 million people are diagnosed with cancer each year.<sup>7</sup> Cancer diagnoses increase with age, and the U.S. Census Bureau projects that the population aged 65 years and older is expected to increase from 40 million in 2010 to nearly 73 million in 2030.<sup>7</sup> This age group will increase from 13% to 20% of the total U.S. population. Further, with improved five-year survival rates, the number of people who have been diagnosed in the population will continue to increase.

### Self-reported cancer prevalence by age category and year (adults)

Age category	1997–98	2011–12
18–44	1.7%	1.6%
45–64	5.4%	6.5%
65+	14.1%	18.5%

Source: National Center for Health Statistics: 2013

## Cost of care

There have been significant improvements to cancer outcomes following major investment in cancer research and improved health behaviors, most notably a reduction in the number of smokers. Cancer treatment today involves newly approved drugs and therapies that are more precise and effective. In 2013 alone, the FDA approved 18 new cancer treatment drugs and biologicals.<sup>6</sup> Several of the drugs introduced during the past several years, while very effective, can also be very expensive for patients and health plans. Gleevec (imatinib mesylate) used to treat chronic myeloid leukemia and Zaltrap (ziv-aflibercept) which is used to treat metastatic colorectal cancer, can cost health plans more than \$50,000 annually for a course of therapy. Balancing clinically appropriate therapy for patients with issues of affordability for all stakeholders is a very real and sometimes uncomfortable situation requiring informed discussion and shared decision-making by patients and providers.

With these new treatments, improved survival, and a growing population of elders, annual cancer costs are projected to be more than \$173 billion in 2020.<sup>6</sup> A recent report from a major U.S. commercial payer stated that cancer therapy accounts for 11% of its commercial plan budget, and the proportion is growing.<sup>10</sup> Medicare reduced reimbursement levels for drugs in 2005 in an attempt to reduce cost. One consequence of this reduction was for some oncology practices to increase the number of patients treated with chemotherapy and switch to more expensive drugs than those for which the reimbursement level was cut.<sup>11</sup> Since the launch of Medicare Part D in 2006, the complexity of the cancer care delivery landscape has been further compounded by the ongoing shift from fee-for-service to new models that better align quality and affordability.

## Complexity of prescribing and managing new treatments

The rapid increase in understanding of cancer is leading to treatments that are precisely tailored to each patient. This will require oncologists to obtain and monitor more information about each patient to manage the complex treatment protocols. Increasing adherence to clinical pathways and widely accepted quality measures is essential to delivering quality care to patients. In fact, advancing the use of evidence-based tools such as clinical decision support platforms and other methods which promote quality and more affordable outcomes is a central component of the 2010 Accountable Care Act. Starting in 2014, cancer hospitals will be required to publicly report cancer-specific and other quality metrics.

The complexity of oncology management is further complicated by the increasing options in care delivery site-of-service. This will present challenges to oncologists to adequately communicate with patients and caregivers to promote compliance with therapy.<sup>6</sup> In addition, health plans may also have to address the supply chain cost management issues of oncology medications dispensed by a specialty pharmacy versus an on-site pharmacy managed by an oncology practice.

The American Society of Clinical Oncology (ASCO) recognizes that delivering high-value care will be essential. They define this as the "use of tests and treatments that scientific evidence demonstrates are most likely to promote survival and quality of life."<sup>7</sup>

## Workforce shortages and maldistribution of resources

While the demand for oncology services is expected to grow by 42% by 2025,<sup>8</sup> the supply of oncologists is expected to grow by only 28%. Oncologists are older than the average physician in the United States. Additionally, there are significant geographical gaps, with oncologists concentrated in urban areas. Disparities in treatment across racial groups have been shown in numerous studies. Increased physician and health plan adoption of quality management programs like those at New Century Health (NCH), which use a clinical decision support platform to apply consistency and evidence-based care, could help to resolve some of the racial disparities of oncology care delivery.

## Oncology care delivery and misaligned incentives

Medical oncology care delivery is often fraught with resolving the sometimes competing interests of providers, health plans and patients. The historical model for oncology practice economic viability has been linked to fee-for-service and the profit margin on oncology medications.<sup>13</sup> In a recent position paper<sup>14</sup> on payment reform to support patient-centered cancer care

published by ASCO, several factors were cited as contributing to the challenge of balancing high-quality patient care with controlling spending for payers:

- A significant portion of practice revenue depends on the administration of drugs in the office.
- Practice revenues are lower when fewer drugs, less expensive drugs and fewer parenterally administered drugs are prescribed for patients.
- There is no difference in compensation regardless of the quality of care provided.

The increasing pressure to balance care quality with affordability affects all payers, especially Medicare. The economic burden of cancer is significant. In 2005, cancer care accounted for approximately 10% of Medicare spending and 4.7% of overall medical treatment expenditure. Moreover, 41.3% of Medicare drug costs were for oncology/hematology medications that were paid primarily through Part B reimbursement.<sup>15</sup> The table below, which estimates the total Medicare chemotherapy burden for several selected cancer diagnoses, reflects only a subset of total cancer care costs<sup>16</sup> (cancer-related surgery and hospitalization costs are excluded.)

**Total Medicare payments for initial cancer care extrapolated to the U.S. fee-for-service Medicare population aged 65 and older, 2002**

	Mean 2002 chemotherapy payment for persons receiving service	Total Medicare payment 2002
Breast (n = 50,716)	\$12,802	\$157,354,829
Lung (n = 50,024)	\$23,026	\$406,661,649
Colorectal (n = 49,551)	\$12,972	\$188,419,474
Prostate (n = 86,589)	\$6,015	\$35,991,490

Note: table above is an abridged version of the original exhibit

The increasing economic burden of oncology medications faced by payers is also challenging many patients. A pre-publication workshop summary by the Institute of Medicine highlighted the increasing financial strain on patients with cancer caused by rising premiums, deductibles, out-of-pocket costs, and copays.<sup>17</sup> A large proportion of the oncology drug pipeline is comprised of oral medications. As these oral agents are often placed by Medicare plans on specialty tiers, associated copays and/or out-of-pocket expenses can potentially represent a significant financial burden for patients.<sup>18</sup>

**Part D Drugs on specialty tiers**

Drug name	Typical cancer treatment use	Primary cost-sharing range
Xeloda	Breast, colon, rectum	Part B covered product
Gleevec	Leukemia	25.01%–35%
Nexavar	Liver, thyroid, kidney	25.01%–35%
Revlimid	Multiple myeloma, mantle cell lymphoma	25.01%–35%
Sutent	Pancreas, kidneys	25.01%–35%
Tarceva	Non-small sell lung, pancreas	25.01%–35%
Temodar	Brain tumors	Part B covered product
Tykerb	Breast	25.01%–35%

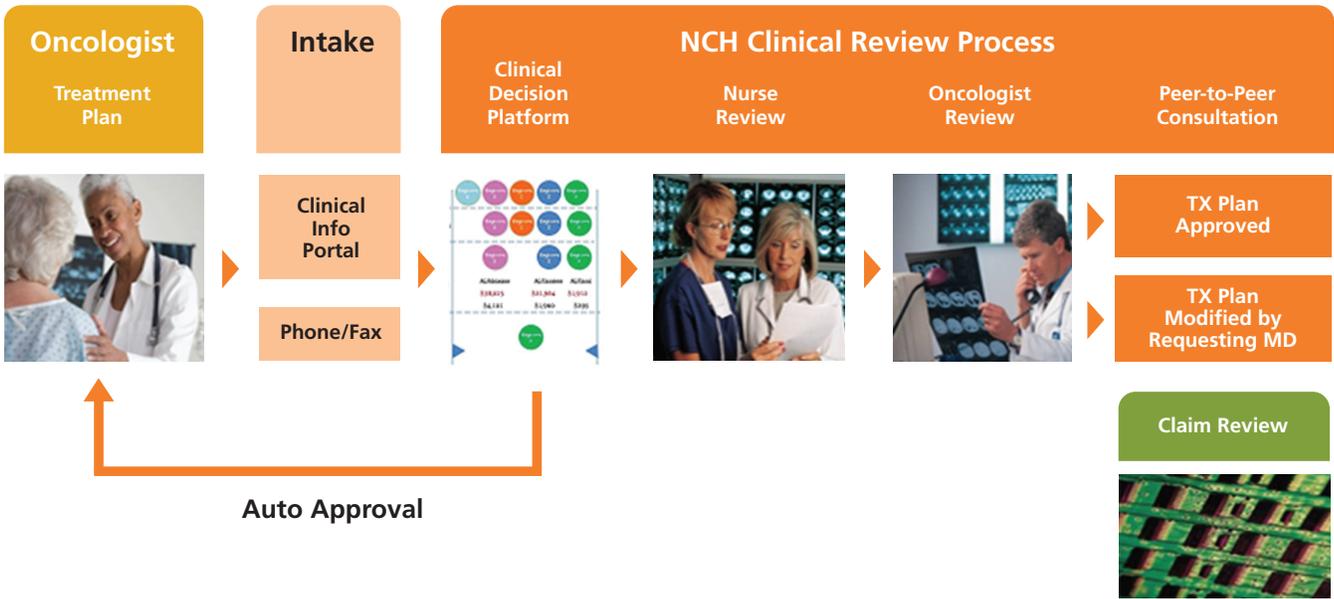
Note: table above is an abridged version of the original exhibit

**The New Century Health approach to evidence-based medicine and affordability management**

In this context of complex management and treatment protocols, the key to effective management of oncology spend and quality of care is adherence to clinically recognized pathways or guidelines such as guidelines for chemotherapeutic and supportive care and treatment outlined in the National Comprehensive Cancer Network (NCCN) Compendium. The NCH approach of using evidence-based clinical pathways with a goal of improved overall quality and efficiency of care also fulfills a major component of regulatory compliance with the 2010 Patient Protection and Affordable Care Act.

New Century Health uses a technology-enabled clinical review process, illustrated below, that increases compliance with guideline-based care by helping physicians select evidence-based therapies.

1. The process begins with the submission by the oncologist of a treatment plan for authorization.
2. A proprietary clinical decision support (CDS) platform assesses the treatment plan against compendia-based clinical pathways as well as New Century Health’s Preferred Pathways, which are evidence-based clinical pathways developed by NCH oncologists with input from community oncologists and with oversight by an independent scientific advisory board comprised of academic and community oncologists.
3. The CDS platform automatically approves complete, clinically appropriate treatment plans.
4. The majority of the remaining cases are reviewed on a timely basis by NCH staff oncology nurses and medical oncologists.



5. In approximately 15% of all cases, an oncologist-to-oncologist consultation is required to review the evidence-based rationale for the treatment plan. After this peer-to-peer discussion, in the vast majority of cases, consensus is achieved between the community oncologist and the NCH oncologist reviewer and the treatment plan is approved or is modified by the treating physician. In the rare situation where consensus is not reached (approximately 3% of all cases), NCH forwards a recommendation of adverse determination to the health plan’s designated medical director.

**New Century Health assesses savings resulting from clinical review process**

New Century Health requested that the Optum payer consulting team assess the methodology by which New Century Health calculates market-level and client-specific savings resulting from this quality-driven clinical review process. The remainder of the white paper highlights the process by which this assessment was conducted and the associated findings.

**Data**

The clinical and claims data that Optum™ used for its assessment process were gathered and integrated by New Century Health’s informatics department. A file was prepared for Optum which contained outputs sourced from NCH’s clinical informatics warehouse with the following reference tables used to create the files:

- Average Sales Price (ASP) tables
- Unit Conversion Tables to convert authorized unit of measure to ASP unit of measure if necessary

- Dosing/Frequency lookup to determine the three-month duration of treatment
- Manual Pricing Table for drugs not in the ASP tables

Optum was provided an original data file which included authorization totals for which a New Century Health clinical intervention occurred for seven health plans. From these, two health plans in two different geographic service areas and their data from January 1, 2013–December 31, 2013, were selected. The file contained data on the following elements:

- Original authorization request information including authorization number, creation date, diagnoses, code and description of drug, dosage, and regimen requested
- New Century Health intervention information including reason codes, description of findings, action taken, authorization linkage, and a savings dollar value
- Resubmitted authorization information for all of the fields of the original authorization
- Cost and savings information including ASP+6 unit cost and cost calculations for three months and six months duration for each requested drug/dosage/regimen combination from the authorization request

The data set supplied by New Century Health contained 5,420 individual, patient de-identified claim lines for chemotherapy and adjunctive pharmaceuticals which composed 939 total cases for which interventions had occurred. The individual claim lines represented both original and resubmitted claims for the cases. The cases appeared without evidence of selection bias and represented a cross section of Commercial and Medicare health plan membership.

## Methods

Optum developed a specific, consistent process for assessing the validity of the savings determination and savings calculations developed and employed by NCH. The process the Optum used involved the following steps:

(1) Random selection of 100 cases for each health plan, with a case defined as all of the drugs requested for linked original and resubmitted authorizations from each of the two markets:

- The 200 cases reviewed were randomly selected based on an arithmetic schema (e.g., every xth case) and represented 21.3% of the total cases
- All claim lines were reviewed for each of the 200 cases

(2) Review of each case, with evaluation of the following attributes:

- How specific authorizations were linked together to create a unique case
- Whether the case includes a RAD (Recommended Adverse Determination)
- Whether the case includes a J-Code change
- Any changes to use/duration of specific drugs
- The reason for NCH intervention
- Savings as calculated by NCH
- Savings as calculated by Optum using the same formula used by NCH

(3) Assessment of the validity of the NCH savings determination methodology:

- Optum evaluated the analytical integrity of NCH's approach and algorithm and independently calculated savings
- Any differences in savings between the Optum calculation and NCH's method were noted and NCH was consulted for clarification as necessary when questions arose

## Findings

Measuring savings associated with a specialty such as oncology is very complicated and there are various methodologies that can be employed. The method by which NCH calculates savings is reasonable and is a valid representation of the financial impact resulting from the NCH intervention. Optum determined that the approach for attributing savings to interventions and the savings calculations utilized by NCH are clinically and logically consistent, reasonable and conservative.

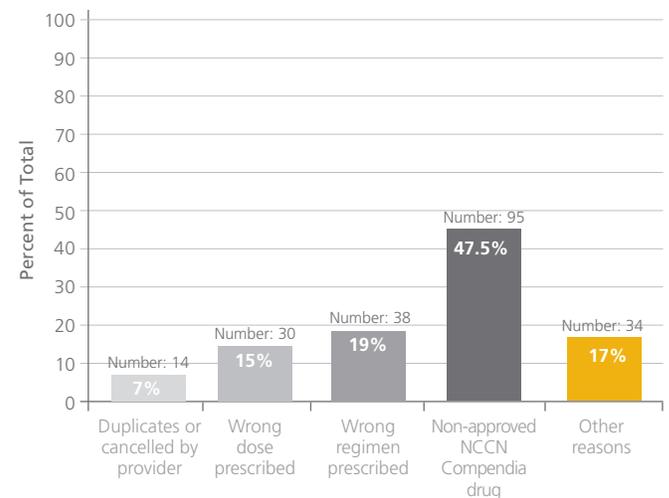
During the assessment, 17 (8.5%) of the 200 cases resulted in clarifying questions which were discussed with NCH. There were no discrepancies in the savings calculations between those done by NCH and those performed by Optum using the

same methodology. It was discovered during the course of the assessment that in automating its savings calculation process, NCH loaded the CMS file containing the ASP+6 unit costs at the beginning of the year and used those values throughout the year instead of updating the ASP+6 costs each quarter from a new CMS file. Since these costs generally increase a small amount each quarter, this actually results in a slightly lower savings value each quarter than would have been calculated had the file been updated. Although NCH recognizes they are not fully recognizing potential savings relating to the ASP pricing update process, their internal analysis indicates that these foregone savings are not material.

The reasons for intervention and results for those with intervention reflect the complexity of care and difficult environment for cancer care.

- The reasons for intervention by NCH for the 200 cases reviewed were:

### Clinical intervention reason



- There were some cases with multiple intervention reasons
- Of the 200 cases reviewed, 30 (15%) resulted in an RAD status
- The total savings calculated was over \$2,146,000 and the average savings per case for the 200 reviewed cases was \$10,734, with 30 cases resulting in negative savings, 51 of \$0 savings and 119 with positive savings for the health plans

It is important to note that the NCH methodology for calculating savings includes both positive and negative savings. Negative savings occur when the intervention results in more costly therapy than the therapy on the originally submitted authorization request. Thus, in 15% of the NCH interventions reviewed, the guideline, evidence-based therapy was more costly than the therapy originally proposed by the oncologist. Yet significant overall savings still resulted from the interventions.

Here are two examples of cases for which NCH interventions occurred:

**Case 1:** A patient with breast cancer had a request from an oncologist submitted for Pegfilgrastim, a medication which stimulates the production of white blood cells, administered weekly. The case was flagged because the correct administration is every two weeks. The oncologist resubmitted a request with the correct administration schedule of every two to three weeks. Over the three-month course of treatment, this resulted in a savings of \$19,000.

**Case 2:** A patient with multiple myeloma had a request from an oncologist submitted for Bortezomib, an antineoplastic medication, at a dose of 1.3 mg for the four-dosage regimen. The case was flagged because the correct dosage was 2.3 mg for the patient. The oncologist resubmitted a request with the correct dosage. This resulted in additional costs (or a negative savings) of \$1,739 over the course of the treatment regimen.

## Discussion

The nature of cancer care lends itself to clinical interventions that examine and enhance adherence to cancer care guidelines, both in terms of pharmaceuticals to treat the cancer itself as well as pharmaceuticals used to treat side effects of the cancer and cancer treatment. In a landmark benchmarking study Harlan, et al., found that adherence to guidelines in the treatment of newly diagnosed cancer was 65% for insured patients.<sup>19</sup> New Century Health addresses this guideline compliance gap through its comprehensive oncology quality management program. The approach of NCH is to use a physician-facing clinical decision support platform, clinical pathways and medical oncologist support to identify and resolve deviations from evidence-based guidelines. This collaborative engagement strategy is not only appreciated by physicians, but it also changes physicians' practice patterns.<sup>20</sup> In addition to improving adherence to oncology care guidelines, this approach has the potential to drive improvements in oncologists' diagnosis coding and the resultant administrative savings that flows from that. This study by Optum validates the effectiveness of New Century Health's approach, demonstrating that a high percentage of their clinical interventions with providers result in correction of deviations from guidelines and resultant savings.

<sup>1</sup>Towle Elaine, et al. National Oncology Practice Benchmark, 2012 Report on 2011, Data *Journal of Oncology Practice*. October 2, 2012.

<sup>2</sup>Krzyzanowska, Monica. Off Label Use of Cancer Drugs: A Benchmark Is Established, *Journal of Clinical Oncology* Vol. 31, 2013.

<sup>3</sup>Feinberg Bruce, et al. "Implementation of Cancer Clinical Care Pathways: A Successful Model of Collaboration Between Payers and Providers," *Journal of Oncology Practice*. Vol. 8, Issue 3S, 2012.

<sup>4</sup>Kolodzei Michael, et al. Benchmarks for Value in Cancer Care: An Analysis of a Large Commercial Population, *Journal of Oncology Practice*. Sept. 2011.

<sup>5</sup>IOM (Institute of medicine) 2013. "Delivering High-quality Cancer Care: Charting a New Course for a System in Crisis (2013)." Washington, DC: The National Academies Press.

<sup>6</sup>American Society of Clinical Oncology, 2014. The State of Cancer Care in America, 2014: A Report by the American Society of Clinical Oncology. [jop.ascopubs.org](http://jop.ascopubs.org). Accessed 9/11/2014.

<sup>7</sup>American Cancer Society. Cancer Facts and Figures. Atlanta: American Cancer Society; 2013.

<sup>8</sup>Table 2. Projections of the Population by Selected Age Groups and Sex for the United States: 2015 to 2060. Source: U.S. Census Bureau, Population Division, Release date: December 2012.

<sup>9</sup>National Center for Health Statistics. Health, United States, 2013: With Special Feature on Prescription Drugs. Hyattsville, MD. 2014.

<sup>10</sup>Newcomer, Lee, Gould, Page, Donelan and Perkins. Changing Physician Incentives for Affordable, Quality Cancer Care: Results of an Episode Payment Model. *Journal of Oncology Practice*. 2014.

<sup>11</sup>Jacobson, Price, et al. How Medicare's Payment Cuts for Cancer Chemotherapy Drugs Changed Patterns of Treatment. *Health Affairs* (Millwood) 29: 1394-1402, 2010.

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<sup>14</sup>ASCO. Consolidated Payments For Oncology Care. May 2014.

<sup>15</sup>Reeder Claiborne and Gordon Debra. Managing Oncology Costs. *The American Journal of Managed Care*, Vol. 12, No. 1, SUP.

<sup>16</sup>Warren Joan, et al., Evaluation of Trends in the Cost of Initial Cancer Treatment. *Journal of the National Cancer Institute*, Vol. 100, Issue 12, June 18, 2008.

<sup>17</sup>Balogh Erin, et al., Rapporteurs. "Delivering Affordable Cancer Care in the 21st Century; Workshop Summary." Institute of Medicine, National Cancer Policy Forum-Board of Health Care Services, 2013.

<sup>18</sup>Community Oncology Alliance. "FACT SHEET: Patient Access to Oral Oncolytics."

<sup>19</sup>Harlan LC, et al., Insurance Status and the Use of Guideline Therapy in the Treatment of Selected Cancers. *Journal of Clinical Oncology*, 2005 Dec 20; 23(36):9079-88.

<sup>20</sup>Loy Bryan, et al. Cincinnati's Adoption of a Web-based Portal to Promote Reportable Evidence-based Care. *J Clin Oncol* 32, 2014 (suppl 30; abstr 121).



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