

MILLIMAN RESEARCH REPORT

The cost burden of blood cancer care in Medicare

A longitudinal analysis of Medicare Advantage and Fee for Service patients diagnosed with blood cancer

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Executive Summary

Survival of older patients with blood cancers has improved since 2000 as more efficacious, less toxic therapies have been introduced.ⁱ However, as more effective treatments for blood cancer patients have become available, health care costs for newly diagnosed blood cancer patients have risen. These costs vary depending on factors such as blood cancer type, demographics, selected treatments as well as insurance coverage and benefit design. This analysis focuses on understanding the impact of these factors and the drivers of health care costs for newly diagnosed Medicare blood cancer patients.

In a prior study, Milliman reported on the health care costs incurred by commercially insured patients with newly diagnosed blood cancer.ⁱⁱ To complement the findings of the prior study, in this study, we analyze the health care costs incurred by Medicare beneficiaries with newly diagnosed blood cancer including acute leukemia, chronic leukemia, lymphoma, multiple myeloma, and bone marrow disorders. Similar to our prior study, we summarize total health care expenditures from month of diagnosis through up to three years following diagnosis. We report total allowed spending (amounts paid by both Medicare and the patient combined) and patient total out-of-pocket costs (sum of deductibles, copays, and coinsurance amounts) incurred for all medical and prescription drug services reported.

We analyzed the CMS 100% Medicare Research Identifiable Part A, B and D Fee for Service (FFS) beneficiary database (~35 million enrollees annually) and our proprietary Medicare Advantage database for members with Part D coverage (MAPD) (~ 2 million enrollees annually). We identified 35,877 FFS and 1,898 MAPD patients with newly diagnosed blood cancer in 2015. We identified several key findings for these Medicare populations including:

Blood cancer care is very expensive to the healthcare system (Sections: II.a, II.c., II.e)

For actively treated blood cancer patients, average allowed spending incurred during the two years following diagnosis was \$200,409 per FFS patient and \$165,967 per MAPD patient.

- Costs were highest in the first year following diagnosis, particularly in the month of diagnosis. The average allowed costs for patients in year one was almost two times higher than costs incurred in year two: \$131,406 vs \$69,004 (FFS) and \$114,751 vs \$51,216 (MAPD).
- The magnitude of spending varied widely by cancer type. Average allowed spending incurred during the two years following diagnosis ranged from \$309,408 (FFS) and \$255,652 (MAPD) per patient for acute leukemia to \$189,143 (FFS) and \$147,372 (MAPD) for chronic leukemia.

Blood cancer allowed spending is driven by anticancer drug therapy (Section II.e)

Among actively treated blood cancer patients, 93% of MAPD patients and 92% of FFS patients receive anticancer drug therapy within the first 90 days after diagnosis.

- Anticancer drug therapy contributes 53% (\$72,692) of FFS and 55% (\$64,968) of MAPD average allowed spending in the first year after diagnosis.
- Some patients incurred very high anticancer drug therapy allowed spending. At the 90th cost percentile among acute leukemia patients who utilize, we identified average allowed spending per patient of \$142,570 Part B and \$12,928 Part D (FFS) and \$122,307 Part B and \$20,373 Part D (MAPD) on anticancer drug therapy in the first year after diagnosis.
- Spending on Part B anticancer drug therapy is significantly higher than spending on Part D anticancer drug therapy in the first year after diagnosis: \$53,524 vs \$19,167 (FFS) and \$49,375 vs \$15,593 (MAPD) average allowed spending.
- For patients receiving certain combination therapies—anticancer drug therapy in both Part B and Part D—in the first year after diagnosis (3.4% for FFS patients and 4.3% for MAPD patients), anticancer drug therapy spending was very high: \$106,371 for FFS patients and \$104,021 for MAPD patients.

Patient out-of-pocket (OOP) costs are very high (Sections: II.b, II.d, II.f)

For actively treated blood cancer patients, average OOP costs for year one and two were \$17,084 and \$8,295 respectively per FFS patient and \$6,896 and \$2,603 respectively per MAPD patient.

- Some patients incurred very high OOP anticancer drug therapy costs. For example, at the 90th cost percentile for chronic leukemia patients, we identified \$14,899 Part B and \$10,076 Part D (FFS) and \$8,942 Part B and \$2,652 Part D (MAPD) average OOP costs per patient for anticancer drug therapy in the first year after diagnosis.
- For those who used anticancer drug therapy, over half of the average OOP costs in the first year following diagnosis was for anticancer drug therapy and was significantly higher for FFS vs MAPD: \$10,796 (FFS) and \$4,240 (MAPD) average OOP costs per patient for anticancer drug therapy.

The dynamic of higher cost sharing for FFS beneficiaries is influenced by several benefit design elements for Medicare Advantage (MA), FFS and Part D plans. Under an MA plan, members have an OOP cost sharing maximum for certain medical services (\$6,700 in 2015, the year of diagnosis in this study) while no such OOP maximum exists under the FFS Part A or B benefit. For FFS members with high cost Part B treatments, the cost sharing burden can be substantial as the beneficiary is responsible for a typical 20% copayment without protection from a maximum out of pocket cap. The Part D prescription drug benefit under a MAPD plan and under a PDP plan also introduces cost sharing burden for members with high cost prescription drug treatments since many of these members reach and enter the catastrophic zone which has no cap on out of pocket payments. These benefit design dynamics produce a significant OOP cost sharing burden for MAPD members and more so for FFS beneficiaries with newly diagnosed blood cancer.

Less than half of newly diagnosed blood cancer patients receive active treatment for their blood cancer (Section II.c)

For newly diagnosed blood cancer patients, 45% of the MAPD population and 41% of the FFS population received active treatment for their blood cancer within 90 days of diagnosis. Active treatment included anticancer drug agents, radiation oncology therapy, or stem cell/bone marrow transplants.

Treatment rates varied widely by cancer type, with the lowest rates of active treatment among bone marrow disorder patients, 15% (FFS) and 19% (MAPD), and much higher rates of active treatment among multiple myeloma patients 58% (FFS) and 59% (MAPD).

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It is not possible to capture all factors that may be significant. We present national average data for MAPD beneficiaries based on Milliman's own 2014-2016 consolidated database and for FFS beneficiaries based on the CMS 100% Medicare Research Identifiable Part A, B and D Fee for Service (FFS) beneficiary database for 2014-2017. Findings for particular populations and for different time periods will vary. In particular, the blood cancer treatment landscape is evolving, and the impact of recent novel therapies and patent expirations may affect current or future costs. We hope the outcomes presented in this study will inform payers, patients, advocacy groups and policymakers alike.

Background

According to recent data from the National Cancer Institute (NCI) Surveillance, Epidemiology, and End Results (SEER) Program registry, lymphoma, myeloma, and leukemia are projected to account for over 175,000 new cancer cases in 2019 - 10% of all expected new cancer cases and over 9% of cancer related deaths.ⁱⁱⁱ Medicare patients, particularly the aged, are subject to a higher incidence of blood cancer diagnosis. Seven in every 100,000 people under age 65 received a leukemia diagnosis, based on SEER's 2012-2016 registry data, as compared to 63 in every 100,000 people 65 or older. Similarly, less than 3 in 100,000 received a diagnosis of myeloma in the younger population versus 36 per 100,000 people for ages 65 and older.

Substantial healthcare costs are associated with treatment of patients with blood cancer and in particular for the Medicare population, and these costs continue to increase. One study found the average lifetime costs of a chronic lymphocytic leukemia (CLL) Medicare patient (average mean observation period 39.4 months) was reported to be \$87,151 compared to \$47,642 for matched controls (1999-2007).^{iv} Another study on CLL Medicare patients reported high and increasing costs of treating CLL as per-person lifetime cost of CLL treatment for patients initiating oral therapy in 2011, 2014 and 2016 was \$147,000, \$331,000 and \$604,000 respectively and patient OOP (OOP) cost sharing of \$9,200, \$27,000 and \$57,000 respectively.^v A study examining costs for newly diagnosed acute myeloid leukemia (AML) patients using SEER data and linked Medicare claims (1997-2007) reported all-cause healthcare costs of \$96,078 with a median survival of 7.0 months.^{vi} Another study of newly diagnosed AML Medicare patients, using the SEER and linked Medicare claims (2006-2013), identified mean costs (net of cost sharing) of \$85,734 for induction therapy and \$28,843 for subsequent inpatient consolidation cycles.^{vii} A study of chronic myeloid leukemia Medicare patients newly starting on oral anticancer agents, using SEER and linked Part D data (2007-2012), identified monthly oral anticancer drug spend between \$3632 and \$8492 and 40% of patients without drug subsidies incurring OOP payments higher than \$913 per 30 day supply.^{viii} A study of multiple myeloma patients identified in MarketScan commercial and Medicare supplemental claims data reported average costs (2015 dollars) of over \$22,000 per patient per month during the first line of treatment and over \$47,000 per patient per month in months of third lines of treatment.^{ix}

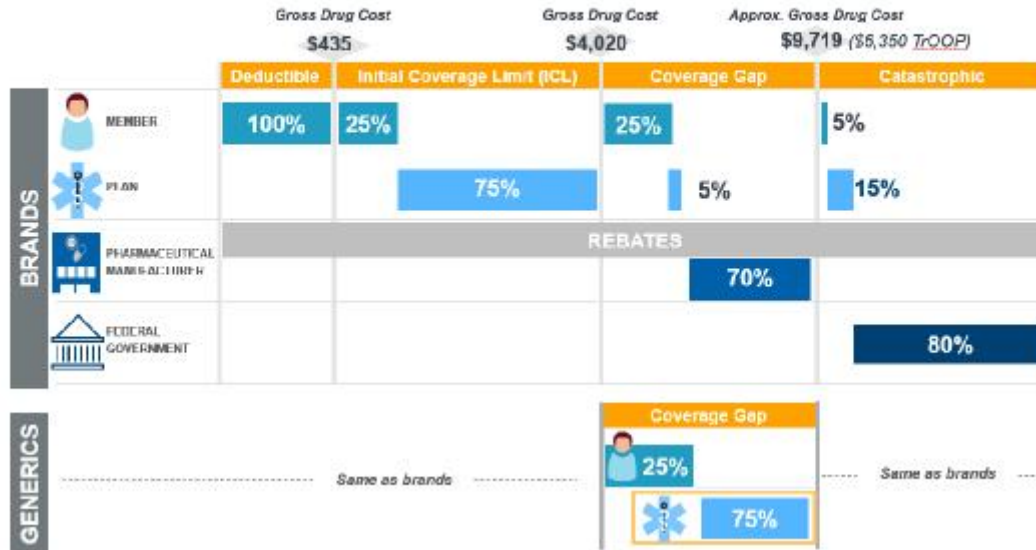
Along with the substantial healthcare costs associated with treatment of patients with blood cancer comes substantial OOP costs for patients. In particular, because of the Medicare Part A, B and D benefit design, the OOP burden can be greater for Medicare beneficiaries compared to commercially insured patients. For those enrolled in MA, beneficiaries are afforded some protection from high Part A and B OOP annual costs because of the federally mandated annual maximum out-of-pocket (MOOP) costs which in 2015 (the year of diagnosis used for this analysis) was \$6,700. For those enrolled in Fee for Service (FFS) plans, no MOOP exists for Part A and B cost sharing. Many FFS beneficiaries purchase supplemental insurance to offset this burden, while others have employer sponsored benefits or are dually eligible with Medicaid coverage for most OOP costs. According to a report by the Kaiser Family Foundation, 23% of Medicare FFS beneficiaries in 2015 were without supplemental coverage, where 59% had Medigap or employer-sponsored insurance, and 18% were dually eligible for Medicaid.^x Some beneficiaries qualify for Patient Assistance Programs (PAPs) or State Pharmaceutical Assistance Programs (SPAPs) and some products might be offset by manufacturer rebates. Such aid is not reflected in the out of pocket amounts reported in these analyses.

For Part D coverage, both MAPD and FFS are subject to the same coverage structure (at minimum) although some MAPD plans may offer lower annual deductibles. After meeting deductibles, all Medicare beneficiaries enrolled in Part D plans move along the same phases of coverage throughout the year as they incur more prescription costs (as measured by gross drug cost). Based on year specific thresholds, patients will face 25% cost sharing while they are in the initial coverage and coverage gap phases. After accruing approximately \$9,000 (based on the 2020 standard benefit design) in gross drug costs, patients move into the catastrophic phase where cost sharing is reduced to 5% until end of calendar year. Most treated blood cancer patients will reach catastrophic phase in the year of diagnosis. Figure 1 provides a demonstration of Part D phases of coverage.

FIGURE 1: EXAMPLE OF PART D DEFINED STANDARD BENEFIT

2020 Defined Standard Benefit

NLI Patient



Medicare affords some cost offsets for low income patients. Beneficiaries may qualify for Medicaid dual coverage which offsets medical cost sharing after Medicare pays their share. While the income levels to qualify for Medicaid vary by state, all patients who are eligible for dual coverage also qualify for the federal low income subsidy (LICS) for Part D cost sharing. In this analysis, we explore and compare allowed spending for both low income (LI) and non-low income (NLI) patients while patient OOP costs are only summarized for NLI.

The purpose of this study is to quantify the total allowed spending and cost sharing burden incurred by Medicare beneficiaries following a blood cancer diagnosis, and examine how these compare among MA members and traditional Medicare FFS beneficiaries. We first summarize annual costs and mortality for prevalent blood cancer patients in 2017. We then summarize treatment and costs for newly diagnosed blood cancer patients in 2014 and follow these patients until the end of 2016 for MAPD and 2017 for FFS patients. We additionally focus on anticancer drug therapies, split by those covered under the Part B benefit from those covered under the pharmacy Part D benefit. Throughout, we summarize blood cancers as a whole but also distinguish among five main types: acute leukemia, chronic leukemia, bone marrow disorders, lymphoma, and multiple myeloma. We present allowed spending (which includes amounts paid by both payer and patient combined) and cost sharing amounts which reflect the gross cost sharing amounts and not the amount net of any supplemental coverage.

Findings

I. INCIDENCE OF BLOOD CANCER

We identified 1,898 MAPD and 35,877 FFS incident blood cancer patients in 2015, with a total incidence rate of 199 and 192 per 100,000 beneficiaries, rates slightly lower than SEER's 65 and older rates.^{xi} Slightly lower incidence rates are commonly identified in claims data compared to survey/clinical data.

Figure 2 presents the sample size after identification of the 2015 incident blood cancer patient populations. Green cells indicate the count of the qualified primary analysis, or denominator, population. Orange cells indicate the count of newly identified blood cancer patients, or study population. Newly diagnosed blood cancer patients were identified among Medicare beneficiaries who reported continuous enrollment with both medical and pharmacy (Part D) benefits between January 2014 and January 2015. Patients enrolled in Medicare's FFS End State Renal Disease (ESRD) program at any point in the analysis period, 2014-2017, were excluded. Patients were required to be identified as having blood cancer in index year 2015 by reporting a blood cancer diagnosis code on one acute inpatient, observation, or emergency room claim or two or more outpatient professional evaluation and management claims. The date of service on the first identifying claim occurring in 2015 was designated each patient's index date (or date of diagnosis). We removed patients whose index claims reported diagnosis codes indicating remission or relapse or patients who reported indications of cancer or cancer treatments in the year leading up to diagnosis. For cancers other than acute leukemia, where the mortality rate is very high, we further required patients to report a second qualified claim with a blood cancer diagnosis code within 60 days following index.

FIGURE 2: SELECTION OF ANALYSIS COHORT – NEWLY DIAGNOSED BLOOD CANCER PATIENTS IN 2015

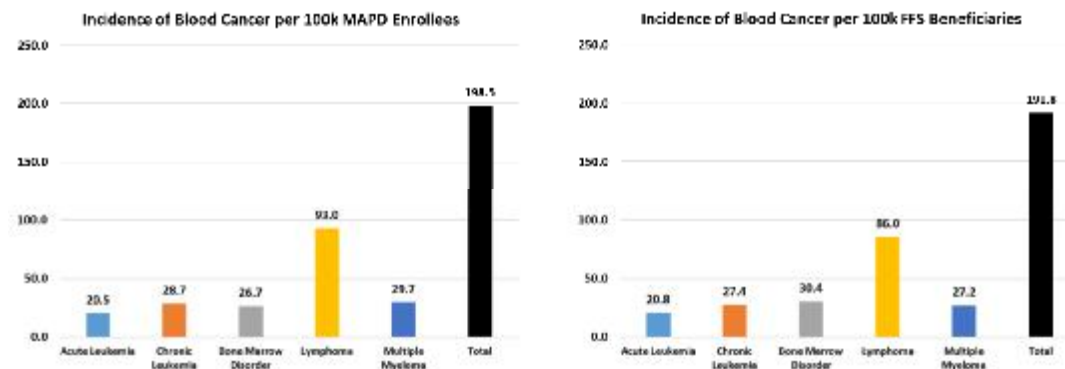
| Population Derivation Step | MAPD | FFS |
|---|--------------|---------------|
| Data quality screens and enrollment in Part D in 2015 | 2,502,568 | 22,018,533 |
| Denominator population: continuous qualified enrollment 1/2014 - 1/2015 | 956,359 | 19,059,684 |
| Denominator population: not enrolled in Medicare's ESRD program during 2014-2017 | | 18,703,736 |
| Has a blood cancer diagnosis in 2015 | 14,766 | 317,666 |
| First diagnosis in 2015 was not a code for relapse or remission | 14,048 | 299,952 |
| No prior cancer diagnosis or treatment one year prior to the index date | 3,003 | 58,635 |
| Has a second qualified blood cancer claim within 60 days of the index date* | 1,898 | 35,877 |

* Not required for acute leukemia patients

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Both MAPD and FFS cohorts had similar distributions of cancer type across the five blood cancer types with lymphoma having the highest incidence. Figure 3 provides incidence rates per 100,000 beneficiaries by cancer type.

FIGURE 3: NEWLY DIAGNOSED CANCER PATIENTS IN 2015



I.a. Characteristics of MAPD and FFS study populations

In Figure 4, we provide 2015 characteristics of the MAPD and FFS denominator population and blood cancer study population including Medicare eligibility status. We differentiate between dual (low income – Medicare and Medicaid coverage) and non-dual beneficiaries which can impact cost sharing as dual beneficiaries have no or very low cost sharing. We exclude Medicare dual eligible patients from summaries of patient OOP costs since Medicaid covers their cost sharing. While dual eligibility is not readily identified in the data set for MAPD beneficiaries, we are able to empirically identify those who qualify for Part D low income subsidies by examining the amounts of patient cost sharing paid. The rate of low income incident blood cancer patients are similar (26% FFS vs 24% for MAPD).

FIGURE 4: MAPD VS FFS 2015 POPULATION CHARACTERISTICS

| | MAPD | | FFS | |
|------------------------------------|------------------------|------------------|------------------------|------------------|
| | Denominator Population | Study Population | Denominator Population | Study Population |
| Patient Count | 956,359 | 1,898 | 18,703,736 | 35,877 |
| Average Age | 74.0 | 76.3 | 71.9 | 76.5 |
| % Female | 57.4% | 44.9% | 58.9% | 52.0% |
| % Aged (vs. Disabled) ¹ | 88.2% | 91.8% | 71.8% | 80.7% |
| % Low income ² | 16.7% | 23.6% | 33.9% | 25.5% |

¹ For MAPD, aged patients are identified by ages 65 folder as of 2015. For FFS, aged patients were identified based on original reason for enrollment code.

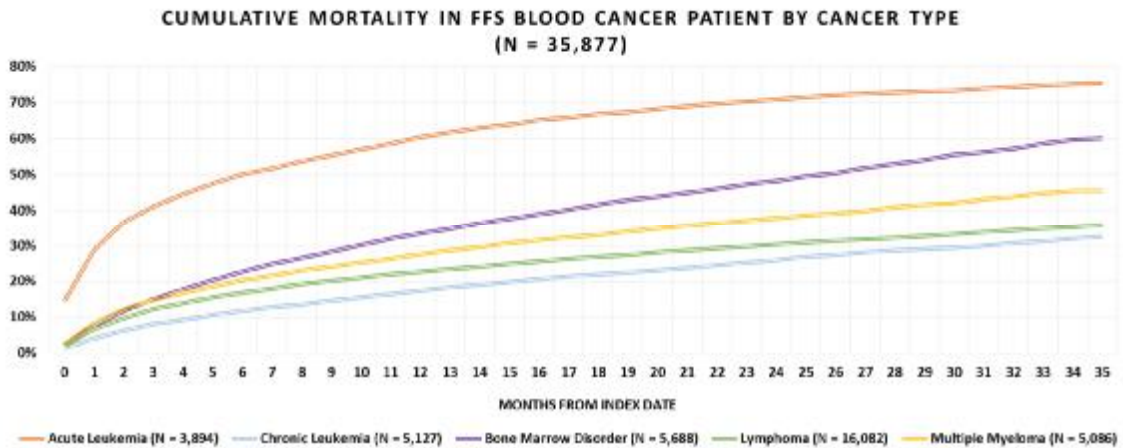
² For MAPD, low income was imputed based on specific cost share amounts paid on Part D drugs.

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

I.b. Mortality

Based on the FFS dataset, which provides mortality information, we analyzed mortality rates across cancer types and Medicare enrollment types. Figure 5 provides three-year mortality rates for each of the cancer types. Overall three-year mortality across all blood cancers was approximately 40%. Mortality is highest for acute leukemia (75% by month 35) followed by bone marrow disorder (60% by month 35). Mortality was lowest for chronic leukemia (35% by month 35).

FIGURE 5: CUMULATIVE 3-YEAR MORTALITY BY CANCER TYPE - FFS



Source: 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

II. BLOOD CANCER SPENDING FOLLOWING A BLOOD CANCER DIAGNOSIS

In the following sections, we report the allowed spending (includes amounts paid for healthcare services by both payer and patient combined) and OOP spending for three cohorts of newly diagnosed blood cancer patients:

1. Total population of newly diagnosed blood cancer patients
2. Newly diagnosed blood cancer patients who had *anticancer treatment* (anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants) within 90 days of index diagnosis
3. Patients in cohort 2 that had *anticancer drug agents* within 90 days of index diagnosis (93% of the *actively treated* blood cancer population for MAPD and 92% for FFS)

Figure 6 below provides the sample size counts of patients in each of these cohorts.

FIGURE 6: SUMMARY OF BLOOD CANCER COHORTS

| Patient Cohort | MAPD | | FFS | |
|---|---------------|---------------|---------------|---------------|
| | Patient Count | % | Patient Count | % |
| Total Blood Cancer Patients | 1,898 | 100.0% | 35,877 | 100.0% |
| Acute Leukemia | 196 | 10.3% | 3,894 | 10.9% |
| Chronic Leukemia | 274 | 14.4% | 5,127 | 14.3% |
| Bone Marrow Disorder | 255 | 13.4% | 5,688 | 15.9% |
| Lymphoma | 889 | 46.8% | 16,082 | 44.8% |
| Multiple Myeloma | 284 | 15.0% | 5,086 | 14.2% |
| Blood Cancer Patients Receiving Anticancer Therapy* within 90 days of Diagnosis | 830 | 43.7% | 13,872 | 38.7% |
| Acute Leukemia | 84 | 4.4% | 1,477 | 4.1% |
| Chronic Leukemia | 65 | 3.4% | 1,112 | 3.1% |
| Bone Marrow Disorder | 48 | 2.5% | 809 | 2.3% |
| Lymphoma | 468 | 24.7% | 7,688 | 21.4% |
| Multiple Myeloma | 165 | 8.7% | 2,786 | 7.8% |
| Blood Cancer Patients Receiving Anticancer Drug Agents** within 90 days of Diagnosis | 772 | 40.7% | 12,759 | 35.6% |
| Acute Leukemia | 81 | 4.3% | 1,394 | 3.9% |
| Chronic Leukemia | 63 | 3.3% | 1,082 | 3.0% |
| Bone Marrow Disorder | 48 | 2.5% | 762 | 2.1% |
| Lymphoma | 425 | 22.4% | 6,906 | 19.2% |
| Multiple Myeloma | 155 | 8.2% | 2,615 | 7.3% |

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

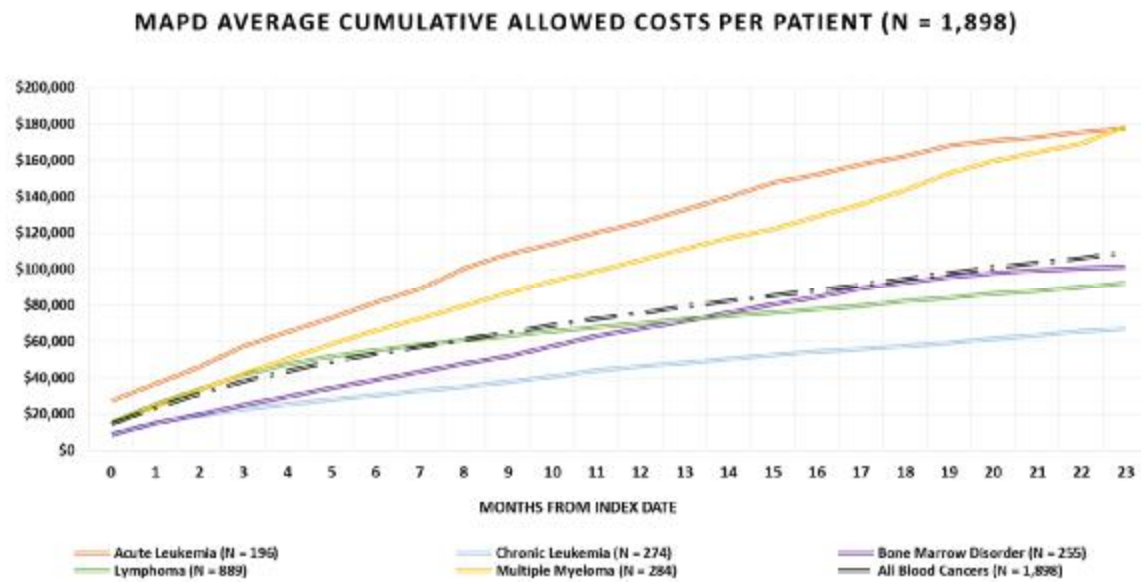
* Anticancer therapy includes anticancer drug agents, radiation oncology, and stem cell/bone marrow transplants.

** Anticancer drug agents include "Part B Anticancer Agents", "Part D Anticancer Agents", and "Chemotherapy DRG Inpatient Admits".

II.a. Total population of newly diagnosed blood cancer patients - Allowed Spending

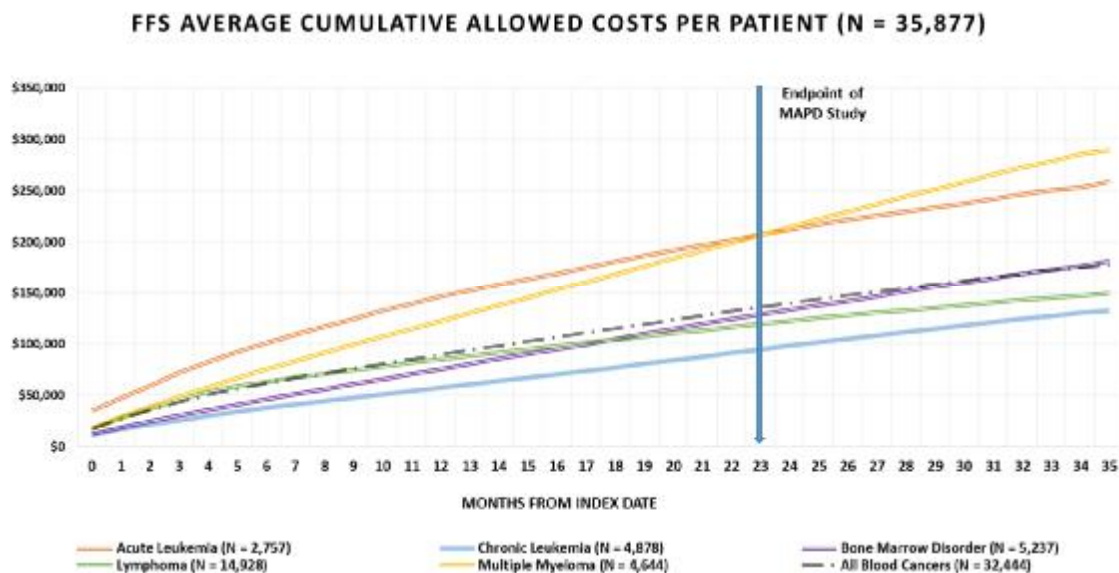
Our data sources allowed us to follow MAPD patients for up to 24 months following diagnosis and FFS patients for up to 36 months. After 24 months, FFS patients incurred almost \$136,000 in total healthcare expenditures on average and MAPD patients incurred slightly less at \$109,000. (Figures 7A and 7B) FFS patients incurred an average \$178,000 after three years. In both populations, acute leukemia patients incurred the highest costs through month 23 (\$176k for MAPD; \$207k for FFS) followed by multiple myeloma FFS patients who incurred the highest costs on average through month 35 (\$290k for multiple myeloma vs \$259k for acute leukemia).

FIGURE 7A: AVERAGE CUMULATIVE ALLOWED SPENDING PER INCIDENT BLOOD CANCER PATIENT - MAPD



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

FIGURE 7B: AVERAGE CUMULATIVE ALLOWED SPENDING PER INCIDENT BLOOD CANCER PATIENT - FFS



Source: 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

Figure 8 compares average allowed spending of MAPD blood cancer patients to FFS. FFS patients incur consistently higher allowed spending than MAPD patients. The largest difference is found among chronic leukemia patients, who incur cumulative allowed spending that is 41% higher on average for FFS patients compared to MAPD patients in the two years following diagnosis.

FIGURE 8: COMPARISON OF MAPD AND FFS ALLOWED SPENDING PER PATIENT

| Average Spending per Patient | MAPD | FFS | FFS/MAPD |
|------------------------------|-----------|-----------|----------|
| All Blood Cancers | | | |
| Month of diagnosis | \$14,691 | \$17,719 | 1.21 |
| Cumulative Year 1 | \$72,519 | \$85,272 | 1.18 |
| Cumulative Year 2 | \$109,298 | \$135,894 | 1.24 |
| Cumulative Year 3 | N/A | \$178,143 | N/A |
| Acute Leukemia | | | |
| Month of diagnosis | \$27,253 | \$35,202 | 1.29 |
| Cumulative Year 1 | \$120,320 | \$139,416 | 1.16 |
| Cumulative Year 2 | \$177,543 | \$207,385 | 1.17 |
| Cumulative Year 3 | N/A | \$258,694 | N/A |
| Chronic Leukemia | | | |
| Month of diagnosis | \$9,166 | \$11,568 | 1.26 |
| Cumulative Year 1 | \$43,919 | \$54,091 | 1.23 |
| Cumulative Year 2 | \$67,072 | \$94,857 | 1.41 |
| Cumulative Year 3 | N/A | \$132,369 | N/A |
| Bone Marrow Disorder | | | |
| Month of diagnosis | \$8,848 | \$12,286 | 1.39 |
| Cumulative Year 1 | \$62,993 | \$70,804 | 1.12 |
| Cumulative Year 2 | \$101,310 | \$128,618 | 1.27 |
| Cumulative Year 3 | N/A | \$181,637 | N/A |
| Lymphoma | | | |
| Month of diagnosis | \$15,272 | \$17,208 | 1.13 |
| Cumulative Year 1 | \$67,807 | \$81,687 | 1.20 |
| Cumulative Year 2 | \$92,541 | \$119,488 | 1.29 |
| Cumulative Year 3 | N/A | \$149,358 | N/A |
| Multiple Myeloma | | | |
| Month of diagnosis | \$14,779 | \$18,223 | 1.23 |
| Cumulative Year 1 | \$99,176 | \$114,739 | 1.16 |
| Cumulative Year 2 | \$178,496 | \$207,163 | 1.16 |
| Cumulative Year 3 | N/A | \$289,559 | N/A |

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

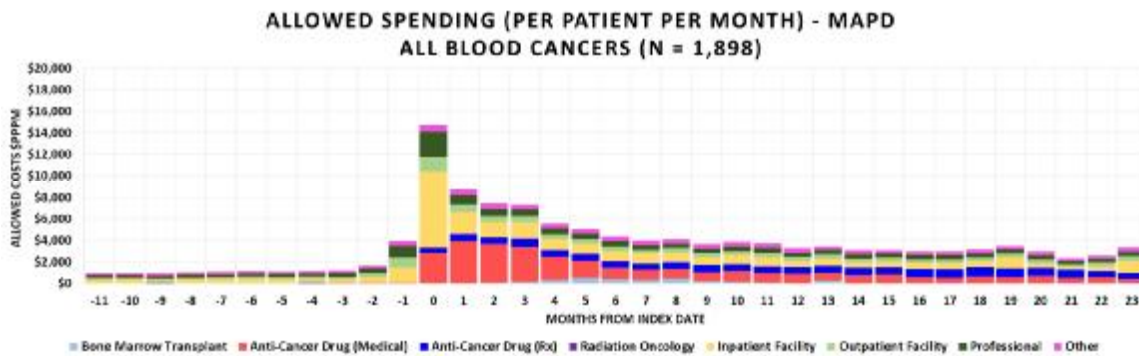
Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

We examined the month by month distribution of costs by key services from the diagnosis month through month 35 after the diagnosis month. We identified allowed spending associated with three main types of blood cancer treatments: anticancer drug therapy (distinguished between those covered by Part B, provider-administered prescription drugs and Part D, (self-administered prescription drugs), transplants including both bone marrow and stem cell, and radiation oncology. In addition to these treatments we provide costs by inpatient hospital, outpatient hospital, professional, and all other. Please refer to Appendix A for a complete description of the types of claims included in each category and the methodology section for details on how these claims were identified and assigned.

Month of diagnosis was the most costly for all blood cancer patients with an average allowed spend of \$14,700 for MAPD and \$17,719 for FFS patients. (Figures 9A and 9B) Inpatient hospital admissions, excluding those billed under chemotherapy MS-DRGs, was the largest contributor in the month of diagnosis; 48% for MAPD

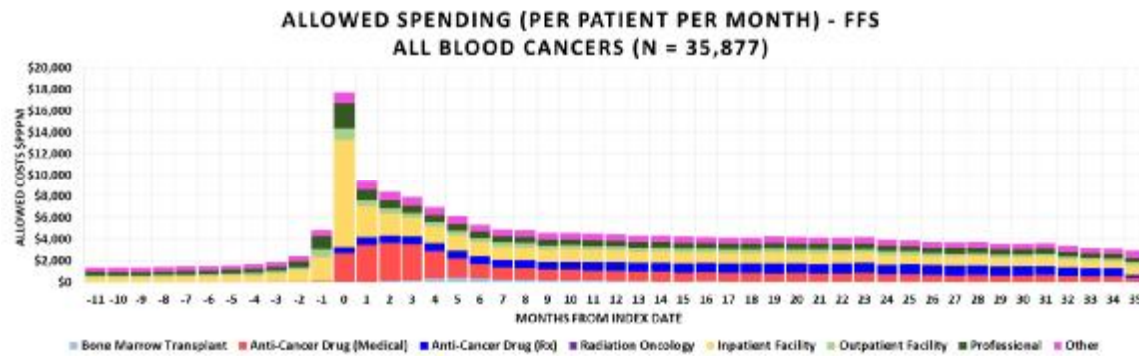
blood cancer patients and 60% for FFS blood cancer patients. In subsequent months, anticancer drug therapy contributed the most to average monthly costs, contributing 38-56% of total monthly costs in the first 12 months following diagnosis. While allowed spending levels decrease over time, they don't return to "before diagnosis" levels (months -11 to -2) during this study period.

FIGURE 9A: MAPD ALLOWED SPENDING PER BLOOD CANCER PATIENT PER MONTH, BY TYPE OF SERVICE (2015-2016)



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

FIGURE 9B: FFS ALLOWED SPENDING PER BLOOD CANCER PATIENT PER MONTH, BY TYPE OF SERVICE (2015-2017)



Source: 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

While month of diagnosis is the most costly in terms of allowed spending, the composition and persistence of costs vary across cancer types. Appendix B provides the monthly allowed spending for each individual cancer for both MAPD and FFS. We highlight key findings from these figures below.

- **Acute leukemia and multiple myeloma are the highest cost blood cancers.** In the month of diagnosis, acute leukemia patients incur an average allowed spend of \$35,000 (FFS) and multiple myeloma patients incur \$18,000 (FFS). Both cancers incur higher average monthly costs in the year following diagnosis ranging between \$6,000 and \$10,000. By comparison, the less expensive cancers, chronic leukemia and bone marrow disorder, incur an average month of diagnosis cost close to \$12,000 (FFS), with subsequent months in the first year ranging from \$4,000 to \$6,000.
- **Anticancer drug therapy is used across all cancers but cost varies by cancer.** Anticancer drug therapies paid through Medicare's medical benefit (Part B) are higher than those covered by Part D therapies overall and for most blood cancers. However, chronic leukemia and multiple myeloma patients incurred more costs from Part D anticancer drug therapies which persisted throughout the study years.

- **Transplants are incurred predominantly by acute leukemia and multiple myeloma patients.**
Payments for these treatments peak around month 5 and contribute as much as 14% (FFS) and 23% (MAPD) of monthly allowed spend when present.

We compared these monthly findings across MAPD and FFS. Figure 10 provides the average allowed spending per patient per month for both the month of diagnosis and average monthly spend for the remainder of year 1 across cancer types. We report on inpatient facility, outpatient facility, and anticancer drug therapy which demonstrated the greatest variation of average monthly costs between FFS and MAPD. FFS patients incurred higher monthly average inpatient costs per patient, than MAPD, particularly in month of diagnosis. In contrast, MAPD patients incurred more costs in month of diagnosis for services billed by outpatient facilities. Anticancer drug therapy monthly allowed spending did not significantly vary between MAPD and FFS patients.

FIGURE 10: A COMPARISON OF MAPD TO FFS AVERAGE MONTHLY ALLOWED SPENDING BY SERVICE TYPE

| Monthly Patient Allowed Spending | Inpatient Facility | | Outpatient Facility | | Anticancer Drug Therapy (Parts B and D) | | All Other | | Total | | |
|----------------------------------|--------------------|----------|---------------------|---------|---|---------|-----------|---------|----------|----------|------------|
| | MAPD | FFS | MAPD | FFS | MAPD | FFS | MAPD | FFS | MAPD | FFS | FFS / MAPD |
| All Blood Cancers | | | | | | | | | | | |
| Month of Diagnosis | \$7,036 | \$10,059 | \$1,359 | \$1,053 | \$3,236 | \$3,173 | \$3,060 | \$3,434 | \$14,691 | \$17,719 | 1.21 |
| Year 1 Monthly Average* | \$1,122 | \$1,542 | \$477 | \$426 | \$2,571 | \$2,674 | \$1,285 | \$1,653 | \$5,455 | \$6,294 | 1.15 |
| Year 2 Monthly Average | \$595 | \$1,006 | \$358 | \$339 | \$1,376 | \$1,662 | \$814 | \$1,216 | \$3,142 | \$4,223 | 1.34 |
| Acute Leukemia | | | | | | | | | | | |
| Month of Diagnosis | \$17,483 | \$23,327 | \$1,149 | \$727 | \$4,800 | \$6,587 | \$3,820 | \$4,561 | \$27,253 | \$35,202 | 1.29 |
| Year 1 Monthly Average* | \$1,588 | \$2,833 | \$832 | \$598 | \$3,796 | \$3,564 | \$2,420 | \$2,870 | \$8,636 | \$9,865 | 1.14 |
| Year 2 Monthly Average | \$1,355 | \$1,819 | \$487 | \$493 | \$2,465 | \$1,655 | \$1,426 | \$1,743 | \$5,733 | \$5,710 | 1.00 |
| Chronic Leukemia | | | | | | | | | | | |
| Month of Diagnosis | \$4,971 | \$6,861 | \$917 | \$689 | \$1,135 | \$1,504 | \$2,142 | \$2,515 | \$9,166 | \$11,568 | 1.26 |
| Year 1 Monthly Average* | \$859 | \$988 | \$276 | \$298 | \$1,335 | \$1,575 | \$760 | \$1,042 | \$3,231 | \$3,903 | 1.21 |
| Year 2 Monthly Average | \$312 | \$781 | \$264 | \$268 | \$807 | \$1,424 | \$592 | \$919 | \$1,975 | \$3,392 | 1.72 |
| Bone Marrow Disorder | | | | | | | | | | | |
| Month of Diagnosis | \$4,194 | \$7,300 | \$817 | \$641 | \$1,655 | \$1,520 | \$2,183 | \$2,825 | \$8,848 | \$12,286 | 1.39 |
| Year 1 Monthly Average* | \$1,459 | \$1,857 | \$474 | \$404 | \$1,579 | \$1,434 | \$1,429 | \$1,677 | \$4,941 | \$5,372 | 1.09 |
| Year 2 Monthly Average | \$748 | \$1,552 | \$492 | \$387 | \$1,565 | \$1,325 | \$1,061 | \$1,558 | \$3,866 | \$4,823 | 1.25 |
| Lymphoma | | | | | | | | | | | |
| Month of Diagnosis | \$6,312 | \$8,838 | \$1,722 | \$1,426 | \$3,962 | \$3,401 | \$3,276 | \$3,544 | \$15,272 | \$17,208 | 1.13 |
| Year 1 Monthly Average* | \$977 | \$1,358 | \$443 | \$433 | \$2,591 | \$2,764 | \$1,057 | \$1,497 | \$5,068 | \$6,052 | 1.19 |
| Year 2 Monthly Average | \$482 | \$809 | \$279 | \$314 | \$614 | \$943 | \$682 | \$1,091 | \$2,057 | \$3,156 | 1.53 |
| Multiple Myeloma | | | | | | | | | | | |
| Month of Diagnosis | \$6,636 | \$10,070 | \$1,280 | \$954 | \$3,334 | \$3,370 | \$3,529 | \$3,829 | \$14,779 | \$18,223 | 1.23 |
| Year 1 Monthly Average* | \$1,307 | \$1,738 | \$612 | \$477 | \$4,035 | \$4,477 | \$1,838 | \$2,173 | \$7,792 | \$8,864 | 1.14 |
| Year 2 Monthly Average | \$853 | \$1,092 | \$568 | \$402 | \$3,902 | \$4,753 | \$1,049 | \$1,452 | \$6,372 | \$7,699 | 1.21 |

* Summary of 11 months following but not including month of diagnosis

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

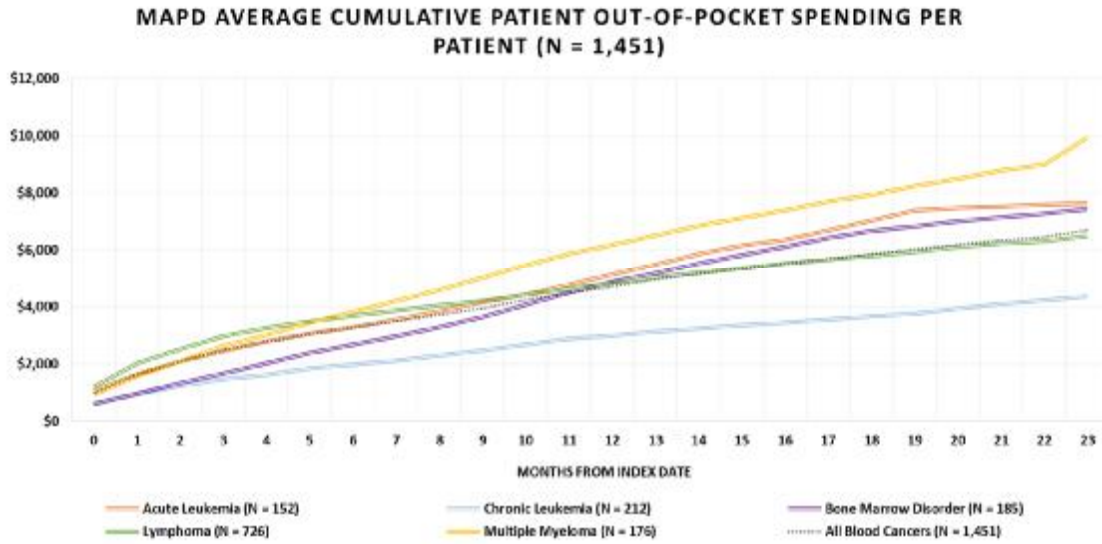
Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

II.b. Total population of newly diagnosed blood cancer patients - OOP Spending

With the substantial allowed costs incurred by patients newly diagnosed with blood cancer, patients who do not qualify for government subsidies can accumulate significant OOP spending. Figures 11A and 11B provide the cumulative patient OOP spending in the years of analysis for non-low income (NLI) patients. After 24 months,

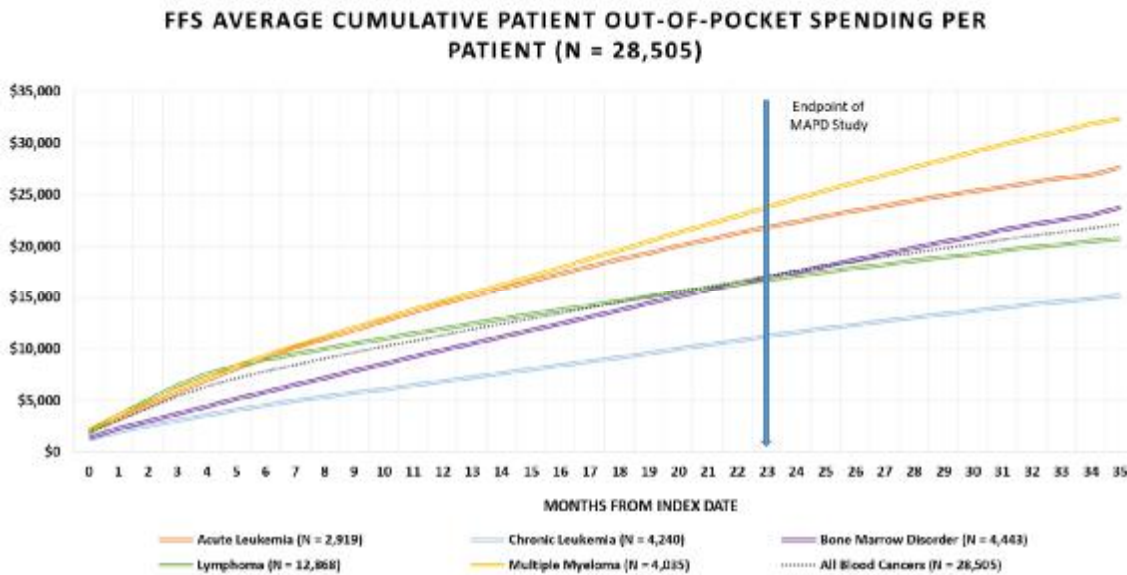
NLI FFS patients incurred more than twice the amount of patient OOP spending as NLI MAPD blood cancer patients (\$17,142 for FFS as compared to \$6,717 for MAPD). After three years, NLI FFS patients incurred an average cumulative \$22,154 in patient OOP spending.

FIGURE 11A: AVERAGE CUMULATIVE PATIENT OUT-OF-POCKET COSTS PER INCIDENT BLOOD CANCER PATIENT - MAPD



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees
 Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

FIGURE 11B: AVERAGE CUMULATIVE PATIENT OUT-OF-POCKET COSTS PER INCIDENT BLOOD CANCER PATIENT - FFS



Source: 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

As of the end of the second year, month 23, acute leukemia and multiple myeloma patients on average incur the most patient OOP spending among NLI blood cancer patients (FFS: \$23,828 for multiple myeloma and \$21,852 for acute leukemia; MAPD: \$9,936 for multiple myeloma and \$7,644 for acute leukemia). Chronic leukemia was the least costly cancer type in terms of patient OOP spending, with NLI FFS patients incurring an average

\$11,224 during the two years following diagnosis (\$15,140 after three years) and NLI MAPD patients incurring \$4,379 on average during the two years following diagnosis.

Figure 12 provides a comparison of NLI MAPD monthly average patient OOP spending to NLI FFS at month of diagnosis, and subsequent available years following diagnosis. NLI FFS patients persistently incur more patient OOP spending, with the largest difference occurring among NLI FFS acute leukemia patients who after one year incur 185% more and after two years two years incur 186% on average more than NLI MAPD patients.

FIGURE 12: COMPARISON OF MAPD AND FFS PATIENT OUT-OF-POCKET SPENDING

| Average Spending per Patient | MAPD | FFS | FFS/MAPD |
|------------------------------|---------|----------|----------|
| All Blood Cancers | | | |
| Month of diagnosis | \$992 | \$1,816 | 1.83 |
| Cumulative Year 1 | \$4,496 | \$10,787 | 2.40 |
| Cumulative Year 2 | \$6,717 | \$17,142 | 2.55 |
| Cumulative Year 3 | N/A | \$22,154 | N/A |
| Acute Leukemia | | | |
| Month of diagnosis | \$1,065 | \$2,078 | 1.95 |
| Cumulative Year 1 | \$4,767 | \$13,574 | 2.85 |
| Cumulative Year 2 | \$7,644 | \$21,852 | 2.86 |
| Cumulative Year 3 | N/A | \$27,657 | N/A |
| Chronic Leukemia | | | |
| Month of diagnosis | \$588 | \$1,268 | 2.16 |
| Cumulative Year 1 | \$2,881 | \$6,492 | 2.25 |
| Cumulative Year 2 | \$4,379 | \$11,224 | 2.56 |
| Cumulative Year 3 | N/A | \$15,140 | N/A |
| Bone Marrow Disorder | | | |
| Month of diagnosis | \$623 | \$1,409 | 2.26 |
| Cumulative Year 1 | \$4,494 | \$9,214 | 2.05 |
| Cumulative Year 2 | \$7,452 | \$16,970 | 2.28 |
| Cumulative Year 3 | N/A | \$23,784 | N/A |
| Lymphoma | | | |
| Month of diagnosis | \$1,201 | \$1,976 | 1.64 |
| Cumulative Year 1 | \$4,640 | \$11,507 | 2.48 |
| Cumulative Year 2 | \$6,505 | \$16,793 | 2.58 |
| Cumulative Year 3 | N/A | \$20,800 | N/A |
| Multiple Myeloma | | | |
| Month of diagnosis | \$938 | \$2,144 | 2.28 |
| Cumulative Year 1 | \$5,866 | \$13,785 | 2.35 |
| Cumulative Year 2 | \$9,936 | \$23,828 | 2.40 |
| Cumulative Year 3 | N/A | \$32,350 | N/A |

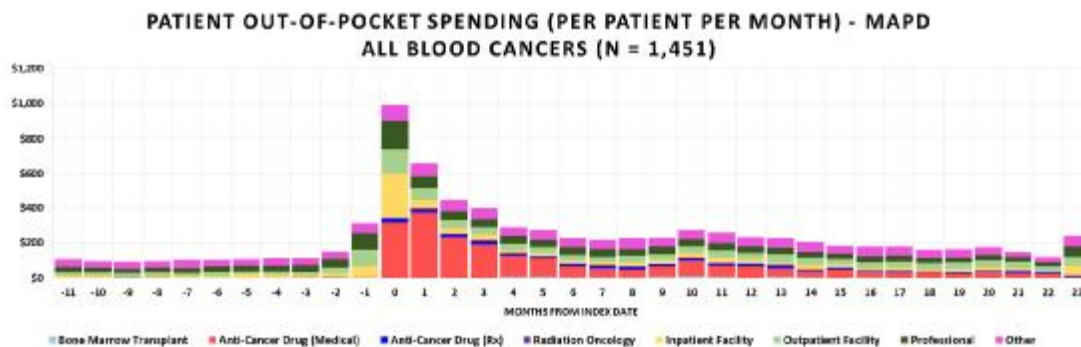
Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

In the previous section, we presented the distribution of monthly allowed spending across service types. Figures 13A and 13B provide patient OOP spending by services over time. As with allowed spending, month of diagnosis incurs the highest cost with NLI MAPD patients incurring an average \$1,036 and NLI FFS patients incurring an average \$1,816. Non-chemotherapy inpatient admissions and Part B medical anticancer drug therapy are the

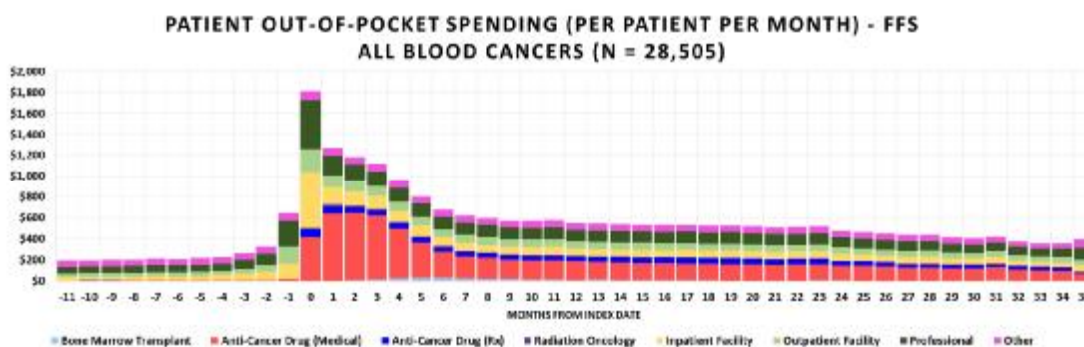
largest drivers of patient OOP spending in the month of diagnosis. In later months, Part B medical anticancer drug therapy persists as the largest or among the largest contributors to patient OOP spending.

FIGURE 13A: MAPD PATIENT OUT-OF-POCKET SPENDING PER BLOOD CANCER PATIENT PER MONTH, BY TYPE OF SERVICE (2015-2016)



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees
Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

FIGURE 13B: FFS PATIENT OUT-OF-POCKET SPENDING PER BLOOD CANCER PATIENT PER MONTH, BY TYPE OF SERVICE (2015-2017)



Source: 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

Appendix C provides monthly patient OOP spending for each cancer type. Key takeaways from this analysis are as follows:

- Acute leukemia and multiple myeloma patients incur the most patient OOP spending.** In month of diagnosis, NLI FFS acute leukemia patients incur \$2,078 and NLI MAPD patients incur \$1,065. In the same month, multiple myeloma NLI FFS patients incur \$2,144 and NLI MAPD patients incur \$928. In contrast, chronic leukemia and bone marrow disorder are the least costly, with \$588 and \$623 OOP spend for NLI MAPD patients in the month of diagnosis respectively and \$1,268 and \$1,409 OOP spend for NLI FFS patients in the month of diagnosis respectively.
- While anticancer drug therapy drives patient OOP spending, most cancer cohorts incur higher patient OOP spending on Part B anticancer drug therapies compared to Part D anticancer drug therapies.** Figure 14 below compares MAPD and FFS average patient OOP spending on Part B Medical and Part D anticancer drug therapy. Multiple myeloma patients report the highest OOP costs on Part D anticancer drug therapy with a monthly average of \$348 for NLI FFS and \$327 for NLI MAPD in the month of diagnosis. In contrast, other cancers incur far more OOP cost on medical Part B

anticancer therapy with acute leukemia being the most costly in month of diagnosis with \$410 for NLI FFS and \$316 for NLI MAPD.

The monthly comparison of average monthly costs is provided in Figure 14 below. Similar to the findings of the monthly allowed spending analysis (**Figure 10**), FFS patients reported higher average monthly costs on inpatient facility admissions. FFS patients also reported higher average monthly OOP spending on outpatient facility encounters and anticancer drug therapy services, a finding that persisted across cancer types and for overall monthly average costs across all services.

FIGURE 14: A COMPARISON OF MAPD TO FFS AVERAGE MONTHLY PATIENT OUT-OF-POCKET SPENDING BY SERVICE TYPE

| Monthly Patient Allowed Spending | Inpatient Facility | | Outpatient Facility | | Anticancer Drug Therapy (Parts B and D) | | All Other | | Total | | |
|----------------------------------|--------------------|-------|---------------------|-------|---|-------|-----------|-------|---------|---------|------------|
| | MAPD | FFS | MAPD | FFS | MAPD | FFS | MAPD | FFS | MAPD | FFS | FFS / MAPD |
| All Blood Cancers | | | | | | | | | | | |
| Month of Diagnosis | \$259 | \$531 | \$138 | \$221 | \$335 | \$492 | \$260 | \$572 | \$992 | \$1,816 | 1.83 |
| Year 1 Monthly Average* | \$27 | \$103 | \$40 | \$84 | \$150 | \$309 | \$115 | \$341 | \$332 | \$837 | 2.52 |
| Year 2 Monthly Average | \$18 | \$70 | \$38 | \$66 | \$52 | \$213 | \$87 | \$181 | \$195 | \$530 | 2.71 |
| Acute Leukemia | | | | | | | | | | | |
| Month of Diagnosis | \$561 | \$805 | \$83 | \$152 | \$181 | \$379 | \$241 | \$743 | \$1,065 | \$2,078 | 1.95 |
| Year 1 Monthly Average* | \$32 | \$141 | \$48 | \$118 | \$152 | \$420 | \$122 | \$394 | \$355 | \$1,072 | 3.02 |
| Year 2 Monthly Average | \$42 | \$107 | \$42 | \$96 | \$100 | \$268 | \$118 | \$227 | \$302 | \$698 | 2.31 |
| Chronic Leukemia | | | | | | | | | | | |
| Month of Diagnosis | \$177 | \$480 | \$106 | \$140 | \$96 | \$220 | \$208 | \$428 | \$588 | \$1,268 | 2.16 |
| Year 1 Monthly Average* | \$23 | \$78 | \$27 | \$60 | \$75 | \$153 | \$87 | \$188 | \$213 | \$480 | 2.26 |
| Year 2 Monthly Average | \$12 | \$60 | \$22 | \$54 | \$13 | \$131 | \$71 | \$149 | \$118 | \$394 | 3.33 |
| Bone Marrow Disorder | | | | | | | | | | | |
| Month of Diagnosis | \$170 | \$574 | \$71 | \$129 | \$157 | \$279 | \$225 | \$426 | \$623 | \$1,409 | 2.26 |
| Year 1 Monthly Average* | \$41 | \$140 | \$50 | \$77 | \$119 | \$262 | \$140 | \$235 | \$350 | \$714 | 2.04 |
| Year 2 Monthly Average | \$28 | \$113 | \$48 | \$73 | \$98 | \$232 | \$116 | \$229 | \$290 | \$647 | 2.23 |
| Lymphoma | | | | | | | | | | | |
| Month of Diagnosis | \$246 | \$440 | \$181 | \$304 | \$499 | \$624 | \$275 | \$608 | \$1,201 | \$1,976 | 1.64 |
| Year 1 Monthly Average* | \$21 | \$88 | \$38 | \$87 | \$166 | \$303 | \$107 | \$416 | \$332 | \$895 | 2.69 |
| Year 2 Monthly Average | \$15 | \$57 | \$36 | \$61 | \$36 | \$153 | \$79 | \$171 | \$167 | \$441 | 2.64 |
| Multiple Myeloma | | | | | | | | | | | |
| Month of Diagnosis | \$242 | \$628 | \$117 | \$195 | \$267 | \$675 | \$313 | \$646 | \$938 | \$2,144 | 2.28 |
| Year 1 Monthly Average* | \$41 | \$125 | \$50 | \$95 | \$212 | \$514 | \$153 | \$340 | \$456 | \$1,074 | 2.36 |
| Year 2 Monthly Average | \$20 | \$74 | \$62 | \$79 | \$118 | \$487 | \$107 | \$197 | \$307 | \$837 | 2.72 |

* Summary of 11 months following but not including month of diagnosis

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

II.c. Newly diagnosed blood cancer patients receiving anticancer therapy within 90 days of index diagnosis - Allowed Spending

Despite receiving a blood cancer diagnosis, not every patient chooses or is a candidate for traditional anticancer therapies, including anticancer drug therapy, bone marrow/stem cell transplants, and radiation oncology therapy. Figure 15 compares the rate at which newly diagnosed blood cancer patients receive any of these types of treatments within 90 days of diagnosis, among patients who survive 90 days post diagnosis index date. Overall, 45% of MAPD and 41% of FFS surviving blood cancer patients receive treatment in this timeframe. Chronic leukemia reported the lowest treatment rates in this timeframe, 24% for MAPD and 22% for FFS patients. Multiple myeloma patients reported the highest treatment rates with 59% for MAPD and 58% for FFS. We did not observe statistically meaningful differences in treatment rates between MAPD and FFS. A sensitivity analysis

expanding the time period to 180 days following diagnosis did not produce meaningfully different results. It is important to note that some patients who were identified as non-treated still incur costs on either adjuvant care, such as blood transfusions, or novel therapies by way of clinical trials that are not readily identifiable in the data.

FIGURE 15: COMPARISON OF MAPD TO FFS TREATMENT RATES WITHIN 90 DAYS OF INDEX DIAGNOSIS

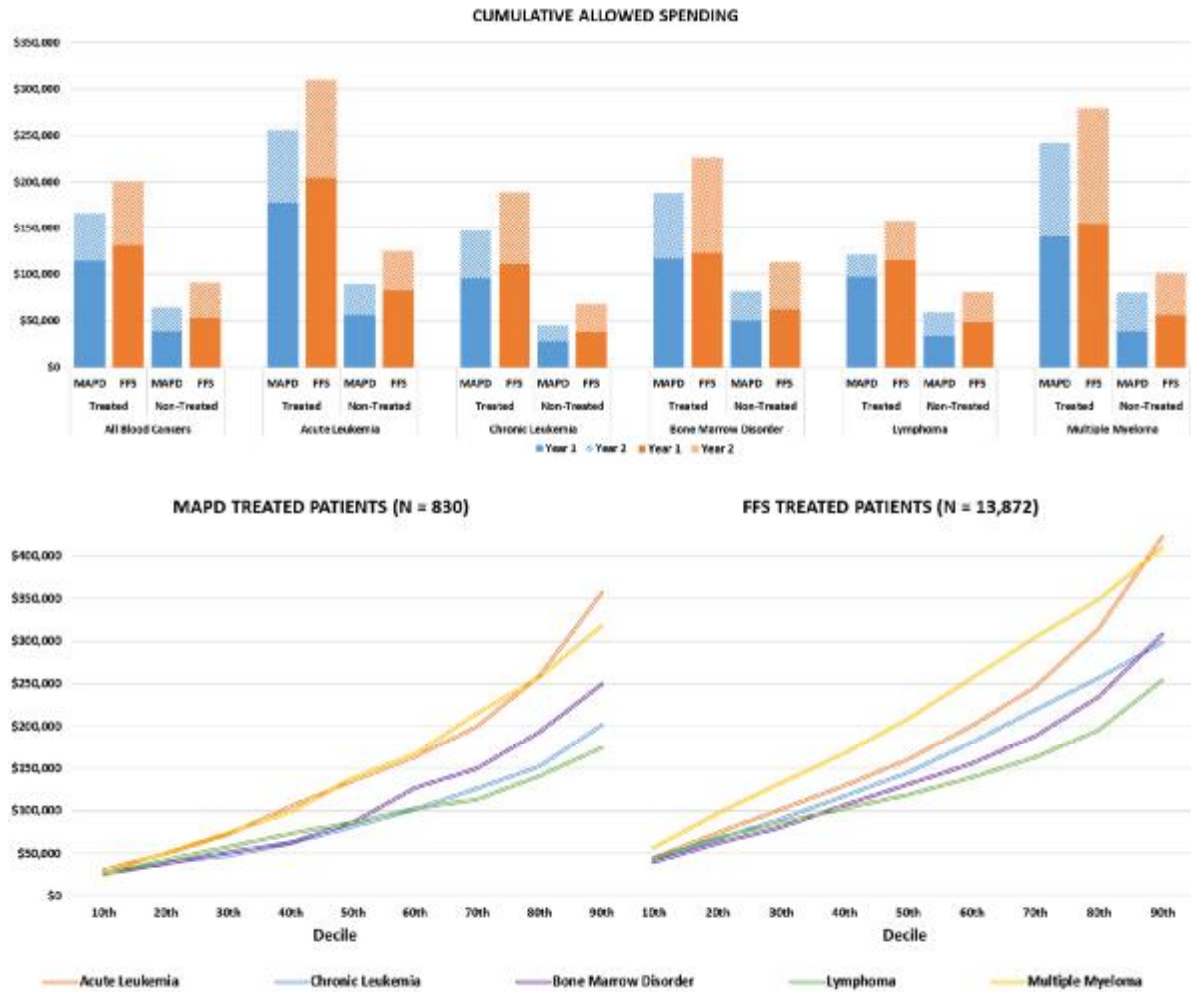
| Cancer Type | Treated | | | | Non-Treated | | | |
|----------------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|
| | MAPD | | FFS | | MAPD | | FFS | |
| | Patient Count | % | Patient Count | % | Patient Count | % | Patient Count | % |
| Acute Leukemia | 76 | 52% | 1,358 | 49% | 69 | 48% | 1,399 | 51% |
| Chronic Leukemia | 62 | 24% | 1,082 | 22% | 198 | 76% | 3,796 | 78% |
| Bone Marrow Disorder | 45 | 19% | 777 | 15% | 191 | 81% | 4,460 | 85% |
| Lymphoma | 446 | 54% | 7,508 | 50% | 374 | 46% | 7,420 | 50% |
| Multiple Myeloma | 154 | 59% | 2,711 | 58% | 108 | 41% | 1,933 | 42% |
| Total | 783 | 45% | 13,436 | 41% | 940 | 55% | 19,008 | 59% |

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Treated patients received anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants within 90 days of diagnosis. Patients were required to have at least three months of continuous coverage after their diagnosis date.

Figure 16 compares the cumulative per patient allowed spending for patients who do receive active treatment within the first 90 days to those who do not receive treatment (refer to Appendix D, Figure D1 for decile details). Across all blood cancers, patients who are treated incur on average between 2.5 (MAPD) and 3 times (FFS) more in allowed spending in the first year following diagnosis and between 2.2 (MAPD) and 2.5 times (FFS) more during the second year. The FFS blood cancer patients have consistently higher allowed costs for treated and untreated patients compared to the MAPD blood cancer patients.

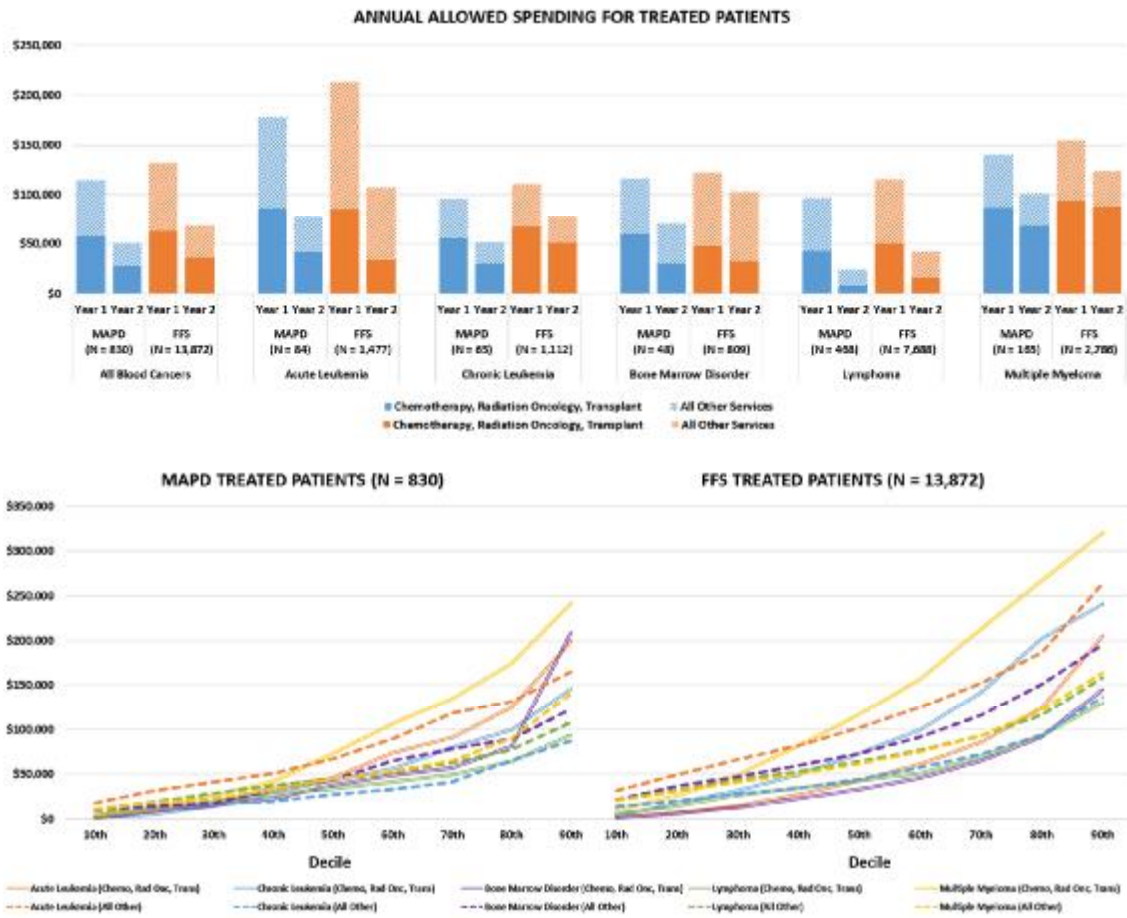
FIGURE 16: MAPD AND FFS CUMULATIVE ALLOWED SPENDING – COMPARISON OF TREATED AND NON-TREATED POPULATION



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.
 Treated patients received anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants within 90 days of diagnosis.
 No continuous coverage requirements were applied.

Figure 17 provides the cost contribution of anticancer therapies to total allowed spending (refer to Appendix D, Figure D2 for decile details). This graph reports the average annual cumulative allowed spending per treated patient in years 1 and 2 following diagnosis. In the first year following diagnosis, anticancer treatments contribute almost half of total allowed spending across all blood cancers.

FIGURE 17: COMPARISON OF MAPD TO FFS ANNUAL ALLOWED SPENDING FOR TREATED PATIENTS



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

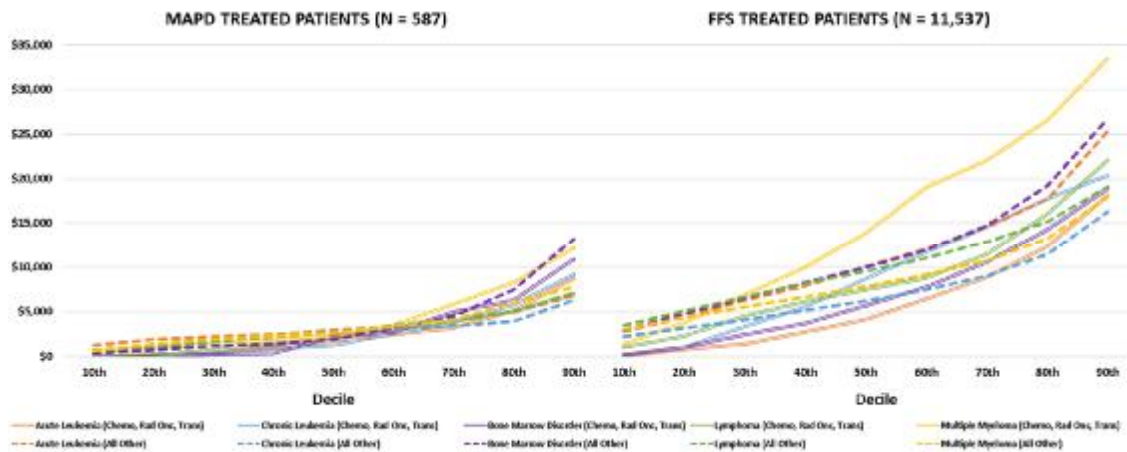
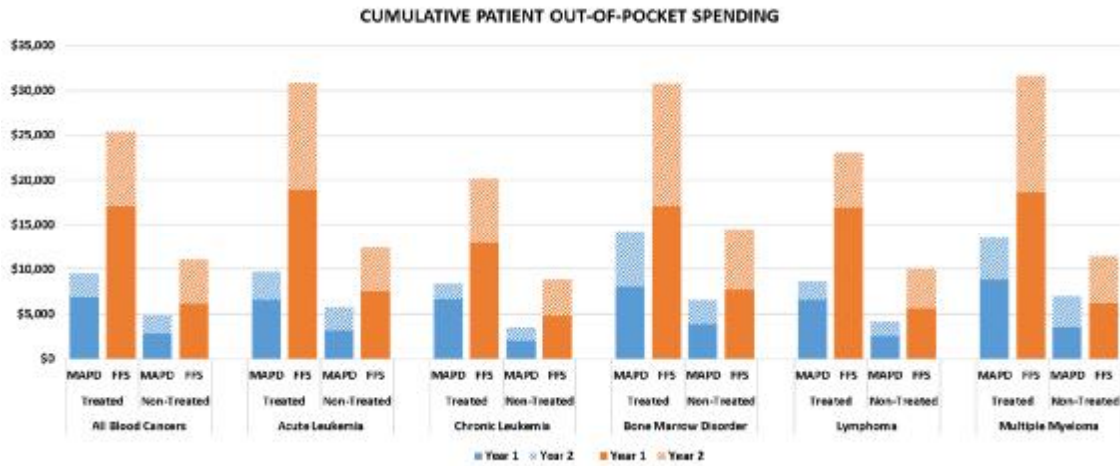
Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

Treated patients received anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants within 90 days of diagnosis. No continuous coverage requirements were applied.

II.d. Newly diagnosed blood cancer patients receiving anticancer therapy within 90 days of index diagnosis - OOP Spending

In a previous section, we noted that FFS patients pay more on average in OOP spending than MAPD patients. This difference is more evident among treated patients. Figure 18 compares the cumulative OOP spending in the two years following diagnosis (refer to Appendix E, Figure E1 for decile details).

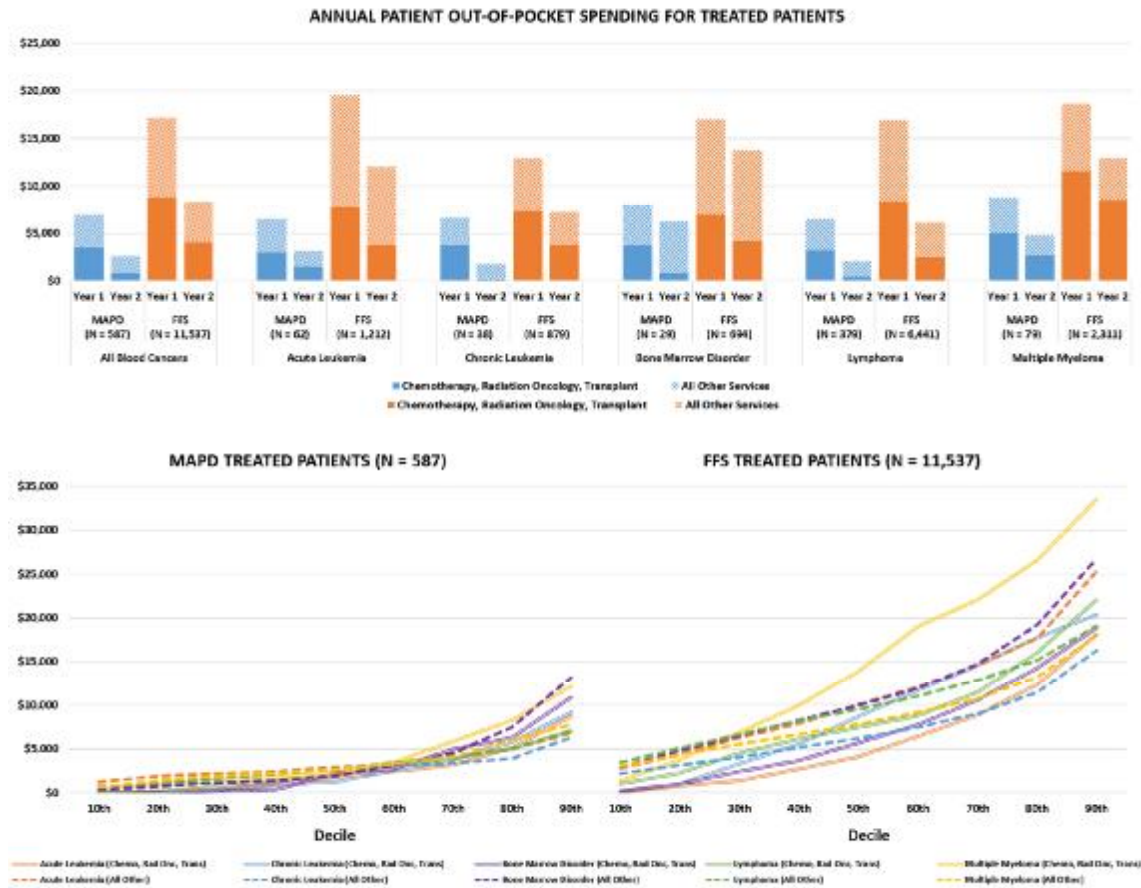
FIGURE 18: MAPD AND FFS CUMULATIVE PATIENT OUT-OF-POCKET SPENDING IN YEARS 1 AND 2 FOLLOWING DIAGNOSIS – COMPARISON OF TREATED AND NON-TREATED POPULATION



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance. Treated patients received anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants within 90 days of diagnosis. No continuous coverage requirements were applied.

Similar to Figure 18, Figure 19 presents anticancer therapy cost contribution to total patient OOP costs in years 1 and 2 following diagnosis (refer to Appendix E, Figure E2 for decile details). Anticancer therapy contributes a similar amount to patient OOP spending as noted for allowed spending. Across all blood cancers, treated MAPD patients' anticancer therapy contributes 52% to allowed spending compared to 45% for patient OOP costs. Treated FFS patients' anticancer therapy contributes 50% to allowed costs compared to 50% for patient OOP costs.

FIGURE 19: COMPARISON OF MAPD TO FFS ANNUAL PATIENT OUT-OF-POCKET SPENDING FOR TREATED PATIENTS IN YEARS 1 AND 2 FOLLOWING DIAGNOSIS



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance. Treated patients received anticancer drug therapy, radiation oncology therapy, or stem cell/bone marrow transplants within 90 days of diagnosis. No continuous coverage requirements were applied.

II.e. Newly diagnosed blood cancer patients receiving anticancer drug agents within 90 days of diagnosis - Allowed Spending

Anticancer drug therapy was the most utilized anticancer therapy among treated patients (93% of MAPD and 92% of FFS patients who receive anticancer therapy in the first 90 days following diagnosis). Anticancer drug therapy allowed spending is incurred for services beyond chemotherapy, immunotherapy and hormonal agents, including administration costs, antiemetic, hematopoietic, and adjuvant (including blood transfusion) therapies. The majority of these costs are paid through the medical Part B benefit. For patients who received anticancer drug agents during the first 90 days following diagnosis, we summarized the average allowed costs per patient per year for each of these components. In Figure 20, we summarize average allowed costs per blood cancer patient per year. We calculated average allowed costs for Part B anticancer drug therapy for patients who receive medical Part B anticancer drug agents within 90 days, average allowed costs for Part D anticancer drug therapy for those that receive prescription drug Part D anticancer drug agents, and average allowed costs for both Part B and Part D anticancer drug therapy for those who receive both within 90 days. These cohorts are not mutually exclusive. We additionally report how much anticancer drug therapy contributes to average total allowed costs and we provide average months of exposure and average months reporting anticancer drug therapy claims for the contributing populations.

FIGURE 20: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY ALLOWED SPENDING (12 MONTHS AFTER DIAGNOSIS)

| Patient Cohort | MAPD | | FFS | |
|--|---------------|---------------|---------------|---------------|
| | Patient Count | % | Patient Count | % |
| Patients with Only Part B Anticancer Agents* | 590 | 31.1% | 9,791 | 27.3% |
| Patients with Only Part D Anticancer Agents* | 100 | 5.3% | 1,753 | 4.9% |
| Patients with Part B and Part D Anticancer Agents* | 82 | 4.3% | 1,215 | 3.4% |
| Patients with No Anticancer Agents* | 1,126 | 59.3% | 23,118 | 64.4% |
| Total Patient Population | 1,898 | 100.0% | 35,877 | 100.0% |

| | Patients with any Part B Anticancer Agents* | | Patients with any Part D Anticancer Agents* | | Patients with Part B and Part D Anticancer Agents* | | | |
|---|---|------------------|---|------------------|--|----------|------------------|----------|
| | MAPD | FFS | MAPD | FFS | MAPD | | FFS | |
| | Part B | Part B | Part D | Part D | Part B | Part D | Part B | Part D |
| Patient Count | 672 | 11,006 | 182 | 2,968 | 82 | | 1,215 | |
| % of Patient Population | 35.4% | 30.7% | 9.6% | 8.3% | 4.3% | | 3.4% | |
| Avg. Months of Exposure in Year | 9.9 | 10.6 | 10.2 | 10.6 | 10.4 | | 10.9 | |
| Avg. Months with an Anticancer Agent Claim | 5.3 | 5.8 | 6.9 | 7.2 | 8.2 | | 8.5 | |
| <u>Anticancer Drug Therapy:</u> | | | | | | | | |
| Part B Anticancer Agents | \$37,832 | \$37,489 | N/A | N/A | \$34,309 | N/A | \$33,083 | N/A |
| Part D Anticancer Agents | N/A | N/A | \$58,420 | \$68,484 | N/A | \$57,546 | N/A | \$58,288 |
| Chemotherapy DRG Inpatient Admits | \$3,824 | \$7,235 | N/A | N/A | \$5,937 | N/A | \$5,679 | N/A |
| Hematopoietic Agents | \$8,271 | \$8,413 | \$173 | \$684 | \$1,777 | \$365 | \$2,474 | \$897 |
| Adjuvant Therapies | \$2,268 | \$3,589 | \$27 | \$14 | \$1,732 | \$34 | \$2,934 | \$16 |
| Drug Administration | \$3,207 | \$3,294 | N/A | N/A | \$2,097 | N/A | \$2,651 | N/A |
| Anti-emetics | \$717 | \$779 | \$84 | \$112 | \$91 | \$134 | \$225 | \$125 |
| Anticancer Sub-Total | \$56,119 | \$60,799 | \$58,704 | \$69,294 | \$45,942 | \$58,079 | \$47,045 | \$59,326 |
| Remaining Anticancer Spending** | \$8,931 | \$10,158 | \$23,438 | \$23,792 | N/A | N/A | N/A | N/A |
| Total Anticancer Spending | \$65,050 | \$70,957 | \$82,141 | \$93,086 | \$104,021 | | \$106,371 | |
| Total Across All Services | \$120,585 | \$137,313 | \$141,364 | \$156,226 | \$183,915 | | \$187,191 | |
| % Anticancer Drug Therapy | 53.9% | 51.7% | 58.1% | 59.6% | 56.6% | | 56.8% | |

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

*Summaries based on patients who receive anticancer drug therapy within the first 90 days following diagnosis. Chemotherapy treatment includes "Part B Anticancer Agents", "Part D Anticancer Agents", and "Inpatient Admits with Chemotherapy DRGs". Patients in cohorts are not mutually exclusive.

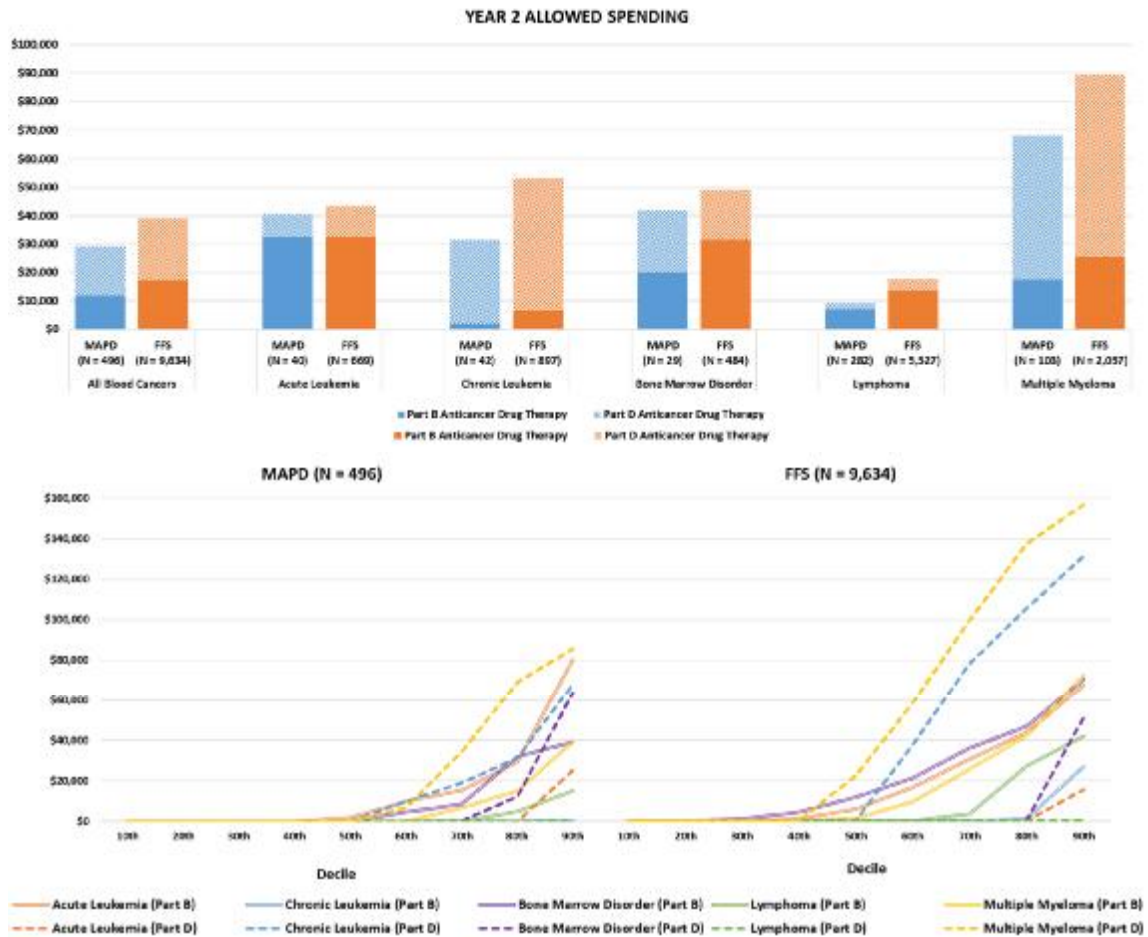
**Remaining anticancer spending includes Part D anticancer drug therapies for the patient cohort with any Part B anticancer agents and Part B anticancer drug therapies for the patient cohort with any Part D anticancer agents.

Anticancer drug therapy contributes 54% for MAPD and 52% for FFS to total allowed spending among those patients who utilize Part B anticancer drug agents. Anticancer drug therapy contributes more to average allowed spending among patients who utilize Part D anticancer drugs - 58% for MAPD and 60% for FFS. FFS patients receiving anticancer drug therapy incur more allowed costs on anticancer drug therapies when compared to MAPD (MAPD: \$65,050 vs FFS: \$70,957 for patients who are administered Part B anticancer drug agents; and MAPD: \$82,141 vs FFS: \$93,086 for patients who are administered Part D anticancer drug agents). The majority of these costs are contributed by the anticancer agent. FFS patients incur allowed costs that are similar to MAPD patients for Part B medical anticancer agents (\$37,489 and \$37,832 respectively), but higher costs than MAPD for Part D therapies (\$68,484 vs \$58,420).

Figure 21A and 21B present the average allowed costs on anticancer drug therapy per patient per year in the first and second year following diagnosis for patients who incur anticancer drug therapy in the first 90 days after index diagnosis (refer to Appendix D, Figures D3 and D4 for decile details). We provide separate findings for each cancer type. FFS patients incur more allowed costs on anticancer drug therapy across all cancer types compared to MAPD patients.

In addition we provide the distribution of anticancer drug therapy costs by decile. The distribution shows the very high costs a portion of each cancer type cohort incurs.

FIGURE 21B: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY ALLOWED SPENDING (YEAR 2 FOLLOWING DIAGNOSIS) – BY CANCER TYPE



Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

Summaries based on patients who receive anticancer drug agents within the first 90 days following diagnosis. Anticancer drug agents include "Part B Anticancer Agents", "Part D Anticancer Agents", and "Chemotherapy DRG Inpatient Admits".

II.f. Newly diagnosed blood cancer patients receiving anticancer DRUG therapy within 90 days of diagnosis - OOP Spending

We performed a similar comparison across the individual components of anticancer drug therapy for average patient OOP spending, excluding the LI FFS and MAPD population. (Figure 22) FFS patients pay more on average for anticancer drug therapy, particularly Part B anticancer drug therapy, than MAPD patients. For Part B anticancer drug utilizers, NLI MAPD patients accrued almost \$3,105 of patient OOP costs as compared to \$7,477 paid by NLI FFS utilizing patients. FFS patients accrued almost two times more OOP costs for Part D anticancer drug therapy than MAPD patients - \$4,767 for FFS vs \$2,117 for MAPD.

FIGURE 22: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY PATIENT OUT-OF-POCKET SPENDING (YEAR 2 FOLLOWING DIAGNOSIS)

| Patient Cohort† | MAPD | | FFS | |
|--|---------------|---------------|---------------|---------------|
| | Patient Count | % | Patient Count | % |
| Patients with Only Part B Anticancer Agents* | 482 | 33.2% | 8,231 | 28.9% |
| Patients with Only Part D Anticancer Agents* | 34 | 2.3% | 1,399 | 4.9% |
| Patients with Part B and Part D Anticancer Agents* | 23 | 1.6% | 995 | 3.5% |
| Patients with No Anticancer Agents* | 912 | 62.9% | 17,880 | 62.7% |
| Total Patient Population | 1,451 | 100.0% | 28,505 | 100.0% |

| | Patients with any Part B Anticancer Agents* | | Patients with any Part D Anticancer Agents* | | Patients with Part B and Part D Anticancer Agents* | | | |
|---|---|-----------------|---|-----------------|--|----------------|-----------------|----------------|
| | MAPD | FFS | MAPD | FFS | MAPD | | FFS | |
| | Part B | Part B | Part D | Part D | Part B | Part D | Part B | Part D |
| Patient Count | 505 | 9,226 | 57 | 2,394 | 23 | | 995 | |
| % of Patient Population | 34.8% | 32.4% | 3.9% | 8.4% | 1.6% | | 3.5% | |
| Avg. Months of Exposure in Year | 9.7 | 10.7 | 9.9 | 10.7 | 9.8 | | 10.9 | |
| Avg. Months with an Anticancer Agent Claim | 5.1 | 5.8 | 5.4 | 7.2 | 6.8 | | 8.6 | |
| Anticancer Drug Therapy: | | | | | | | | |
| Part B Anticancer Agents | \$3,105 | \$7,477 | N/A | N/A | \$2,591 | N/A | \$6,977 | N/A |
| Part D Anticancer Agents | N/A | N/A | \$2,117 | \$4,767 | N/A | \$2,421 | N/A | \$4,176 |
| Chemotherapy DRG Inpatient Admits | \$104 | \$138 | N/A | N/A | \$292 | N/A | \$63 | N/A |
| Hematopoietic Agents | \$599 | \$1,743 | \$17 | \$23 | \$80 | \$23 | \$496 | \$35 |
| Adjuvant Therapies | \$52 | \$486 | \$8 | \$4 | \$0 | \$10 | \$351 | \$5 |
| Drug Administration | \$229 | \$660 | N/A | N/A | \$90 | N/A | \$549 | N/A |
| Anti-emetics | \$62 | \$154 | \$18 | \$18 | \$7 | \$34 | \$51 | \$25 |
| Anticancer Sub-Total | \$4,151 | \$10,658 | \$2,159 | \$4,813 | \$3,059 | \$2,488 | \$8,486 | \$4,240 |
| Remaining Anticancer Spending** | \$216 | \$761 | \$1,448 | \$4,391 | N/A | N/A | N/A | N/A |
| Total Anticancer Spending | \$4,367 | \$11,418 | \$3,607 | \$9,204 | \$5,547 | | \$12,726 | |
| Total Across All Services | \$7,292 | \$18,660 | \$6,399 | \$15,745 | \$8,803 | | \$20,558 | |
| % Anticancer Drug Therapy | 59.9% | 61.2% | 56.4% | 58.5% | 63.0% | | 61.9% | |

Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance.

*Summaries based on patients who receive anticancer drug agents within the first 90 days following diagnosis. Anticancer drug agents include "Part B Anticancer Agents", "Part D Anticancer Agents", and "Chemotherapy DRG Inpatient Admits". Patients in cohorts are not mutually exclusive.

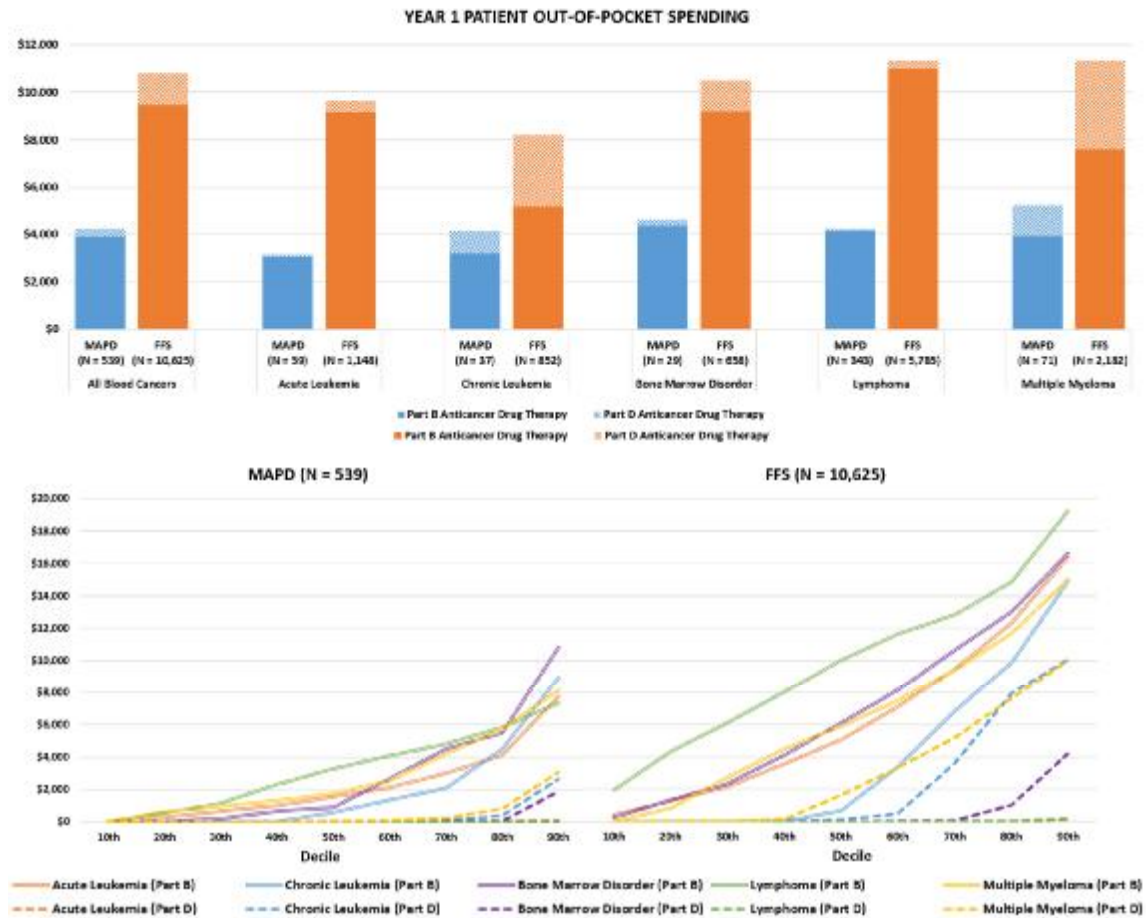
**Remaining anticancer spending includes Part D anticancer drug therapies for the patient cohort with any Part B anticancer agents and Part B anticancer drug therapies for the patient cohort with any Part D anticancer agents.

†The patient cohort for patient out-of-pocket spending differs from the patient cohort for allowed spending due to the omission of LIS patients from the out-of-pocket analysis.

For Part B anticancer drug utilizers, anticancer drug therapy contributes more, as a percentage of total OOP spending, than it does to total allowed spending (59.9% MAPD/61.2% FFS for patient OOP vs 53.9% MAPD/51.7% FFS for allowed spending). Figures 23A and 23B presents the annual allowed spending per patient accrued on anticancer drug therapy (see Appendix E, Figures E3 and E4 for decile details). Part B anticancer drug therapy drives the majority of patient out-of-pocket spending across cancer types related to anticancer drug therapy. The FFS OOP spend for these service is also consistently and substantially higher than MAPD across cancer types.

In addition we provide the distribution of anticancer drug therapy costs by decile. The distribution shows the very high costs a portion of each cancer type cohort incurs.

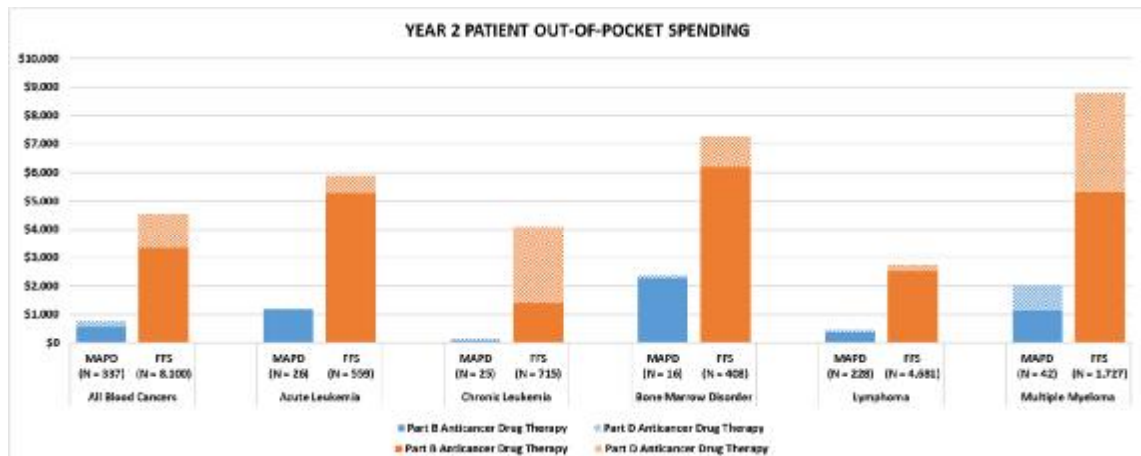
FIGURE 23A: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY PATIENT OUT-OF-POCKET SPENDING (FIRST 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE

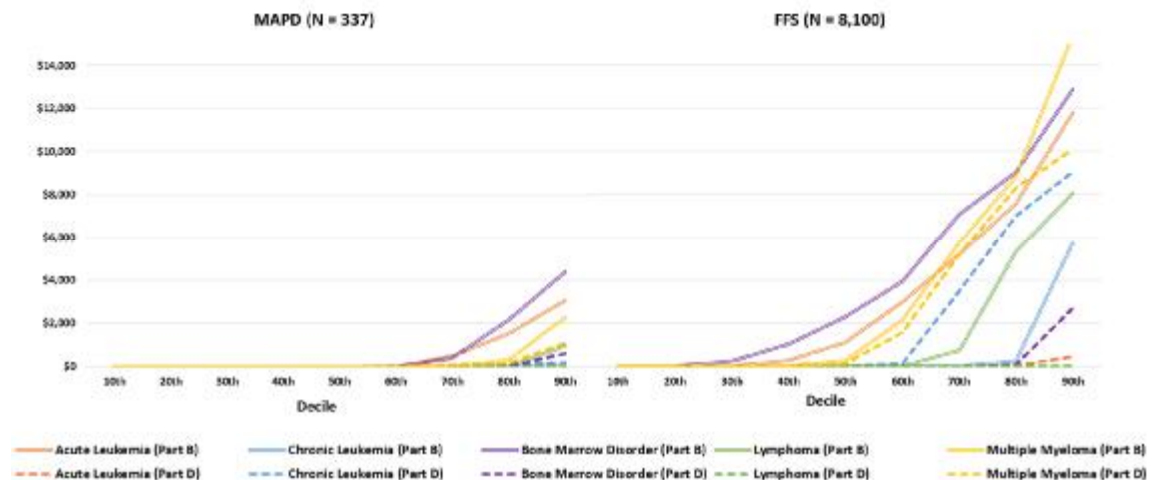


Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance. Summaries based on patients who receive anticancer drug agents within the first 90 days following diagnosis. Anticancer drug agents include "Part B Anticancer Agents", "Part D Anticancer Agents", and "Chemotherapy DRG Inpatient Admits".

FIGURE 23B: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY PATIENT OUT-OF-POCKET SPENDING (SECOND 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE





Source: 2014-2016 Milliman Consolidated data set of MAPD enrollees and 2014-2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Patient out-of-pocket spending reflects amounts paid for healthcare services by the patient including deductibles, copays, and coinsurance. Summaries based on patients who receive anticancer drug agents within the first 90 days following diagnosis. Anticancer drug agents include "Part B Anticancer Agents", "Part D Anticancer Agents", and "Chemotherapy DRG Inpatient Admits".

Discussion

Allowed health care spending for newly diagnosed blood cancer care quickly accumulates to high levels for both insurers and patients during the first years after a cancer diagnosis. Allowed spending is particularly high for newly diagnosed blood cancer patients starting active treatment (anticancer drug therapy, radiation oncology services, or bone marrow/stem cell transplants) within the first three months after diagnosis - approximately 45% of the MAPD and 41% of the FFS patient population. The average allowed spending in the first two years following diagnosis for actively treated patients was \$200,409 per FFS patient and \$165,967 per MAPD patient. Allowed spending for patients in year one was around twice the spending incurred in year two (\$131,406 vs \$69,004 for FFS patients and \$114,751 vs \$51,216 for MAPD patients).

While blood cancer patients with Medicare utilize a wide variety of services following diagnosis, allowed spending is largely driven by services associated with anticancer drug therapy. Of those actively treated within 90 days of diagnosis, 92% FFS and 93% MAPD newly diagnosed blood cancer patients received anticancer drug therapy. There is a significantly higher average allowed spending on Part B vs Part D anticancer drug therapy: \$53,524 vs \$19,167 (FFS) and \$49,375 vs \$15,593 (MAPD) in the first year following diagnosis. Some patients incur extremely high costs for drug therapy. At the 90th cost percentile, acute leukemia patients, for example, accrued \$142,570 Part B and \$12,928 Part D (FFS) and \$122,307 Part B and \$20,373 Part D (MAPD) average allowed spending in the first year after diagnosis (**Figure 21A**).

Along with high allowed spending, blood cancer patients incur high OOP costs. Those costs are higher for FFS compared to MAPD patients. Among non-low income, actively treated patients, average OOP costs were \$17,084 in year one and \$8,295 in year two per FFS patient versus \$6,896 in year one and \$2,603 in year two per MAPD patient. Patient OOP spending on anticancer drug therapy during year one was particularly high for FFS vs MAPD - patients incurred an average \$10,796 vs \$4,240 average OOP costs and at the 90th percentile cost percentile, chronic leukemia patients, for example, incurred an average \$14,899 Part B and \$10,076 Part D (FFS) and \$8,942 Part B and \$2,652 Part D (MAPD) (**Figure 23A**). The higher OOP spend for FFS patients is driven by the dynamic that Part B drugs contribute most of the anticancer drug therapy spend and FFS beneficiaries have no OOP maximum for Part B covered services. Medicare Advantage patients are afforded some protection from extreme OOP costs by way of a federally mandated maximum out-of-pocket cap for certain services. Some FFS beneficiaries do have the option to enroll in supplemental insurance, Medigap, to offset out-of-pocket burden, although Medigap issuers in most states are allowed to refuse sale to and medically underwrite premiums for people with pre-existing conditions like cancer. Other FFS beneficiaries have employer sponsored benefits. While we cannot identify enrollment in supplemental insurance in the data used for this analysis, the literature reports that nearly one quarter (23%) of Medicare FFS beneficiaries do not have supplemental

coverage^x. Those newly diagnosed blood cancer patients without supplemental insurance face a significant OOP cost burden. With the reportedly low median income of households with people ages 65 and older (\$38,515 in 2015), such OOP costs can be considerably challenging for many. ^{xii}

Federal legislative and regulatory changes have been proposed to address high drug costs incurred by the Medicare program and by Medicare patients which could ease the burden for payers and blood cancer patients. In the interim, the cost burden to both Medicare payers and patients will likely increase as more efficacious novel therapies are introduced and survival of blood cancer patients improves, and the high out-of-pocket burden for Medicare enrollees diagnosed with blood cancer will likely continue.

Limitations

Data limitations inherent to the use of real-world data that might have affected these results include:

- The MAPD results are based on analysis of the 2014-2016 Milliman consolidated database for Medicare Advantage with Part D beneficiaries. The FFS results are based on analysis of the 2014-2017 CMS Innovator Research data. Different data and time periods can produce different results, particularly since new therapies are constantly being introduced. Individual patient experience will likely differ from these population averages. Changes in treatment patterns and technology occurring after these time periods are not captured in these results.
- For MAPD, we observed patients for their duration in the database and did not attempt to identify deaths. In particular, patients requiring hospice are required to transfer to a FFS benefit structure as these benefits are not covered under MAPD plans. It is possible people exiting this database may bias results for this cohort's analysis.
- Care patterns and spending vary significantly by region, so regional healthcare systems may exhibit patterns that vary from these national averages.
- Patient OOP costs summarized in this report reflect the total responsibility of a patient's cost share as per their selected Medicare benefit coverage. Summary of these costs are restricted to NLI beneficiaries since subsidized beneficiaries pay little to none of these costs. Patient OOP costs do not reflect discounts on services such as coupons or rebates, supplemental insurance such as Medigap, or other forms of financial assistance such as Patient Assistance Programs.

Sources and Methodology

DATA SOURCES

Milliman Consolidated Healthcare Database

The Milliman Consolidated Health Cost Guidelines Source Database contains proprietary historical claims experience from several of Milliman's Health Cost Guideline (HCG) data contributors. The database contains annual enrollment and paid medical and pharmacy claims for over 2.8 million individuals covered by Medicare Advantage and Part D. We used three years of data to produce the longitudinal study (2014-2016) and 2017, which became available late into this work, for the annual prevalence analysis. We included patients with continuous medical and pharmacy enrollment from 2014 through January 2015 to allow for a one-year lookback period to identify first diagnosis.

CMS 100% Medicare Research Identifiable Database for Parts A, B, and D

This data set contains all Medicare Parts A, B, and D paid claims incurred by Medicare fee-for-service (FFS) beneficiaries. Information includes county of residence, diagnosis codes, procedure codes, DRG codes, site of service information, beneficiary age, eligibility status and an indicator for HMO enrollment. We used four years of data to produce the longitudinal study (2014-2017) and 2017 for the annual prevalence analysis. We included

patients with continuous medical and pharmacy enrollment from 2014 through January 2015 to allow for a one-year lookback period to identify first diagnosis.

METHODOLOGY

Identification of 2017 prevalent blood cancer patient population

We performed a summary of the prevalent blood cancer population for 2017. The results of this analysis can be found in Appendix F. For these analyses, we identified patients who reported a blood cancer diagnosis in 2017. Cancer patients were required to meet the following conditions:

- Continuous enrollment in Parts A, B, and D in all months of 2017 coverage.
- For FFS patients, no months of enrollment in Medicare's End State Renal Disease (ESRD) program.

Cancer patients were identified as individuals with cancer ICD-10 codes (provided in Appendix G, Tables G3, G4, G7, G10, and G12) in any position on qualified claims, which are described in the table in Figure 24. Patients were required to have a cancer ICD-10 diagnosis code in any position on one inpatient, one observation, or one emergency department visit, or two or more non-acute inpatient or outpatient evaluation and management services that occurred on different dates of service. Patients identified as more than one of the five blood cancer categories in the year were assigned to the cancer identified on the latest available qualified claim. Qualified claims were identified by the Current Procedural Terminology (CPT), Healthcare Common Procedure Coding System (HCPCS), or Revenue codes shown in Figure 24.

FIGURE 24: QUALIFIED CLAIMS REVIEWED FOR BLOOD CANCER DIAGNOSIS CODES

| Claims Type | CPT/HCPCS Code | Revenue Code |
|----------------------|---|--|
| Outpatient | 99201-99205, 99211-99215, 99241-99245, 99341-99345, 99347-99350, 99381-99387, 99391-99397, 99401-99404, 99411, 99412, 99429, 99455, 99456, G0402, G0438, G0439, G0463, G0466-G0468, T1015 | 0510-0517, 0519-0523, 0526-0529, 0982, 0983 |
| Non-acute inpatient | 99304-99310, 99315, 99316, 99318, 99324-99328, 99334-99337 | 0118, 0128, 0138, 0148, 0158, 0190-0194, 0199, 0524, 0525, 0550-0552, 0559 |
| Acute inpatient | 99221-99223, 99231-99233, 99238, 99239, 99251-99255, 99291, 99468, 99469, 99471, 99472, 99475-99480 | 010x, 0110-0115, 0117, 0119-0125, 0127, 0129-0135, 0137, 0139-0145, 0147, 0149-0155, 0157, 0159-0160, 0164, 0166-0175, 0179, 0200-0204, 0206-0214, 0219, 0720-0722 |
| Observation | 99217-99220, 99224-99226, G0378, G0379 | |
| Emergency department | 99281-99285, G0380-G0384 | 0450-0452, 0456, 0459, 0981 |

Identification of 2015 incident blood cancer patient population

For this analysis we identified patients with an initial cancer diagnosis in 2015. The date of service for the earliest identifying cancer claim in 2015 was designated as the patient's index date (date of diagnosis). If the identifying cancer claim was a facility claim, we used the admission date, when available, or the claim from date. Otherwise, the line-level date of service was used.

We first identified the prevalent blood cancer population using 2015 claims and ICD-9 and ICD-10 blood cancer diagnosis codes using a process similar but not identical to the 2016 analysis. Patients were required to have a

cancer diagnosis code in any position on one inpatient, one observation, or one emergency department visit in 2015 or two or more non-acute inpatient or outpatient evaluation and management services that occurred within twelve months of each other, where the first of which had to occur in 2015. Patients identified as more than one of the five blood cancer categories in the year were assigned to the cancer identified on the latest available qualified claim in 2015. Qualified claims were identified by the CPT, HCPCS, or Revenue codes as reported in Figure 26 above.

Cancer patients for this analysis were excluded if they met any of the following criteria:

- Not enrolled in a plan with both medical (Parts A and B) and pharmacy (Part D) coverage for 13 continuous months from January 2014 through January 2015.
- The first qualifying claim reported a diagnosis code indicating relapse or remission were excluded from this analysis (only available on leukemia and multiple myeloma codes). Diagnosis codes indicating relapse or remission are flagged in Appendix G.
- The index date claim was not followed by a second identifying qualified claims within 60 days of the index date.

Among those patients who qualified, we reviewed all claims incurred within the 12 months leading up to the index date. If the patient received a radiation oncology service, direct anticancer drug treatment (refer to Appendix G), chemotherapy administration, or if the patient was diagnosed as having cancer of any type (even outside of blood cancer) during that time, the patient was excluded. A patient was determined to have been diagnosed with cancer other than blood cancer if that person reported a cancer ICD-9 or ICD-10 diagnosis code (**Figure 25**) in any position on one inpatient, observation, ER visit, or two or more non-acute inpatient or outpatient evaluation and management claims on different dates of service. A patient was determined to have been diagnosed with blood cancer if that person reported a cancer ICD-9 or ICD-10 diagnosis code in any position on any one qualified claim.

FIGURE 25: ICD-9 AND ICD-10 CANCER DIAGNOSIS CODES USED TO ELIMINATE PATIENTS PREVIOUSLY DIAGNOSED WITH CANCER

| ICD-9 Diagnosis Code | Description |
|----------------------|---|
| 140.xx-172.xx | Primary malignant neoplasms, not lymphatic or hematopoietic |
| 174.xx-195.xx | Primary malignant neoplasms, not lymphatic or hematopoietic |
| 196.xx-198.xx | Secondary malignant neoplasms (i.e., metastatic) |
| 199.xx | Malignant neoplasms, unknown site |
| 209.0x-209.3x | Neuroendocrine tumors |
| 230.xx-234.xx | Carcinoma in situ |

| ICD-10 Diagnosis Code | Description |
|--------------------------|---|
| C000-C439 | Primary malignant neoplasms, not lymphatic or hematopoietic |
| C450-C499, C50011-C768 | Primary malignant neoplasms, not lymphatic or hematopoietic |
| C770-C799, C7B00-C7B09 | Secondary malignant neoplasms (i.e., metastatic) |
| C800-C802 | Malignant neoplasms, unknown site |
| C49A0-C4A9, C7A00-C7A098 | Neuroendocrine tumors |
| D0000-D099 | Carcinoma in situ |

Patients remained in the study through the earlier of their departure from the data or the end of study period; 2016 for MAPD and 2017 for FFS.

Medicare enrollment type and low income status assignment

MAPD and FFS patients were identified by their Medicare enrollment type (aged or disabled). Because original reason for entering Medicare is not available on the CHSD data, MAPD patients were identified as aged if they were 65 or older at the beginning of 2014. All other MAPD patients were considered disabled. The Medicare enrollment type for FFS patients was assigned based on each patient's original reason for entering Medicare (aged or disabled).

Part D Low Income Subsidy (LIS) patients were identified in each calendar year after diagnosis for both MAPD (2015 and 2016) and FFS (2015, 2016, and 2017) patients. MAPD patients were identified as LIS based on their prescription drug copays in 2016. Patients with copays equal to Part D subsidy copays (\$1.20, \$2.65, \$3.60, \$6.60) were considered LIS. For FFS patients, Part D LIS was assigned based on the Part D LIS eligibility status on the majority of calendar months in 2015. In the event of a tie, Part D LIS eligibility was assigned based on the patient's last month of eligibility in 2015.

For the FFS patient population, dual eligibility was determined in the index year (2015). Patients who were dual eligible for the majority of calendar months in 2015 were identified as Medicare dual eligible patients throughout the study. Patients with an equal number of non-dual months as dual months in 2015 were assigned based on their dual status in their last month of eligibility in 2015. Dual status was not available for MAPD patients.

Service category assignment

We assigned claims to the various service categories following the below hierarchy. Detailed descriptions of the types of services included in each category are summarized in Appendix A and supporting code lists are identified in Appendix H when referenced.

1. *Transplant*. Includes all services incurred within 30 days of a transplant procedure (to include patient conditioning), services incurred during the inpatient or outpatient procedure, and services incurred in the 100 days after discharge of inpatient procedure or through date of outpatient procedure.^{xiii,xiv} (See Appendix H, Tables H15, H16, H17, and H18.)
2. *Anticancer drug therapy*. Includes all claims lines associated with anticancer drug treatments (chemotherapy, immunotherapy, and other biologic agents) and supportive care including:
 - a. Physician- and prescription-administered chemotherapy, immunotherapy, and biologic agents. (See Appendix H, Tables H1 and H3.)
 - b. Inpatient admissions for chemotherapy Medicare Severity Diagnosis-Related Groups (MS-DRGs). (See Appendix H, Table H2.)
 - c. Drug administration. (See Appendix H, Table H4.)
 - d. Adjuvant therapy. (See Appendix H, Tables H6 and H7.)
 - i. Blood transfusions are included in this category (See Appendix H, Tables H19 and H20).
 - e. Hematopoietic agents. (See Appendix H, Tables H8 and H9.)
 - f. Antiemetics:^{xv}
 - For office-administered antiemetics (see Appendix H, Table H10) and antiemetic claims lines when administered within one day of a physician-administered chemotherapy drug (see Appendix H, Table H1) or within 30 days of a fill of a chemotherapy prescription (see Appendix H, Table H3).
 - For pharmacy-administered antiemetics (see Appendix H, Table H11), antiemetic claims lines when prescription is filled from within 14 days before through seven days after a

physician-administered chemotherapy service (see Appendix H, Table H1) or within 30 days of a fill of a chemotherapy prescription (see Appendix H, Table H3).

3. *Radiation oncology*. Includes claims reporting at least one radiation oncology treatment. (See Appendix H, Tables H12, H13, and H14.)
4. *Inpatient hospital*. Includes claims for all remaining acute and non-acute (i.e., skilled nursing facility) inpatient admissions billed by the inpatient facility.
5. *Outpatient hospital*. Includes all remaining claims billed by an outpatient hospital or ambulatory surgical center.
6. *Professional services*. Includes all remaining services billed by professionals, across all sites of care. Professionals to include surgeons, oncologists and other specialists, primary care physicians, nurse practitioners and physician assistants, therapists, and other healthcare providers who bill separately from or independently of facility claims.
7. *Other*. Includes all remaining services incurred in each time period.

Appendix A: Service Category Descriptions

| | |
|---|--|
| <p>Bone Marrow Transplant</p> <p>All costs incurred within 30 days prior to 100 days following an inpatient or outpatient bone marrow transplant procedure.</p> | <p>Radiation Oncology</p> <p>Outpatient facility and professional claims reporting a Revenue code of 0333 or a radiation oncology procedure code.</p> |
| <p>Anticancer Drug Therapy (Part B)</p> <ul style="list-style-type: none"> • Physician-administered anticancer target drugs: Chemotherapy, immunotherapy, and biologic agents. • Professional chemotherapy administration. • Inpatient facility admissions for chemotherapy. • Hematopoietic agents. • Chemotherapy adjuncts. • Antiemetics. • Adjuvant therapy including blood transfusions. <p>Anticancer Drug Therapy (Part D)</p> <ul style="list-style-type: none"> • Prescription-administered anticancer target drugs: Chemotherapy, immunotherapy, and biologic agents. | <p>Inpatient Facility</p> <ul style="list-style-type: none"> • Acute inpatient admissions excluding those billed under chemotherapy MS-DRGs. <ul style="list-style-type: none"> ○ Medical admissions ○ Surgical (cancer and non-cancer-related) admissions ○ Radiation oncology services if administered as part of an inpatient stay ○ Anticancer drug therapy services if administered as part of an inpatient stay not billed under a chemotherapy MS-DRG • Non-acute inpatient admissions <ul style="list-style-type: none"> ○ Inpatient rehabilitation facility (IRF), long-term acute care facility (LTAC), and skilled nursing facility (SNF) stays ○ Radiation oncology services if administered as part of an inpatient stay ○ Anticancer drug therapy services if administered as part of an inpatient stay not billed under a chemotherapy MS-DRG |
| <p>Outpatient Facility</p> <p>All non-chemotherapy and non-radiation oncology services billed by a hospital outpatient facility or ambulatory surgical center.</p> <ul style="list-style-type: none"> • Outpatient surgery (cancer and non-cancer-related) • Emergency room visits not resulting in an inpatient admission • Radiology (excluding radiation oncology), laboratory, and pathology services • All other facility fees (operating room [OR], nursing, anesthesia, durable medical equipment, prosthetics, orthotics, and supplies [DMEPOS], etc.) | <p>Professional Services</p> <p>All non-chemotherapy and radiation oncology-related services billed by medical professionals</p> <ul style="list-style-type: none"> • Inpatient professional services • Emergency room professional services • Surgical and anesthesia professional services • Observation, urgent care, and office visits • Professional charges related to radiology (excluding radiation oncology), laboratory, and pathology services |
| <p>Other Services</p> <ul style="list-style-type: none"> • Home Health • Transportation • Other Drugs and Administration • Hospice • Vision • DMEPOS | |

Appendix B: Monthly Allowed Spending by Blood Cancer

FIGURE B1: MAPD ALLOWED SPENDING PER ACUTE LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

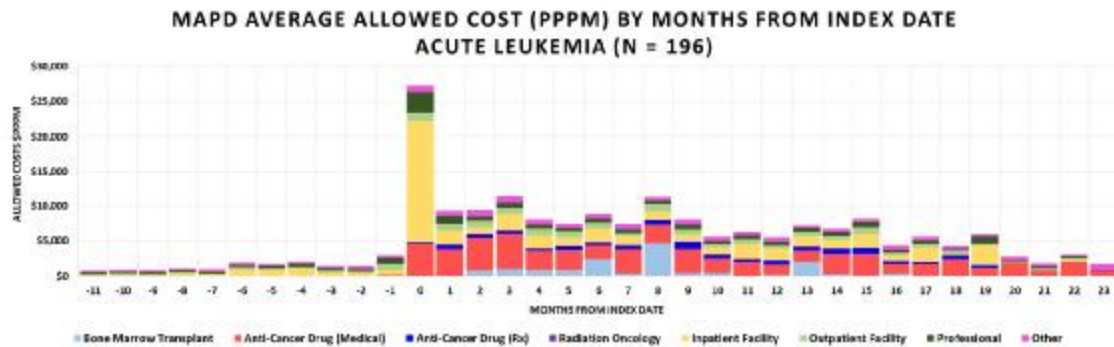


FIGURE B2: MAPD ALLOWED SPENDING PER CHRONIC LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

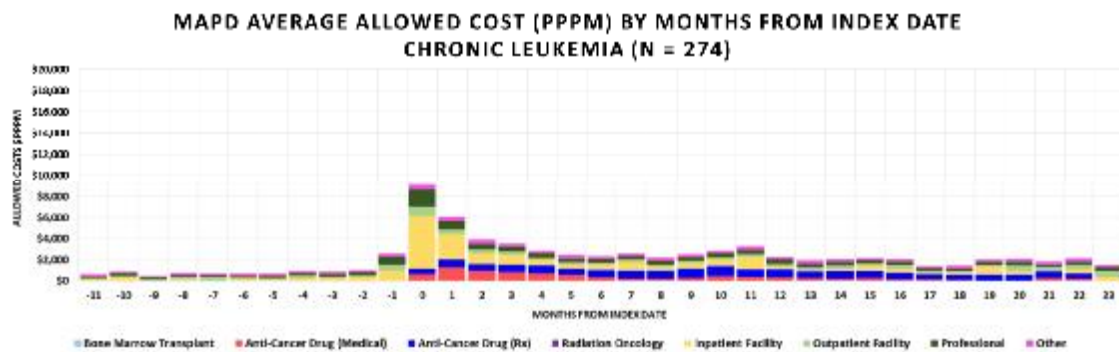


FIGURE B3: MAPD ALLOWED SPENDING PER BONE MARROW DISORDER PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

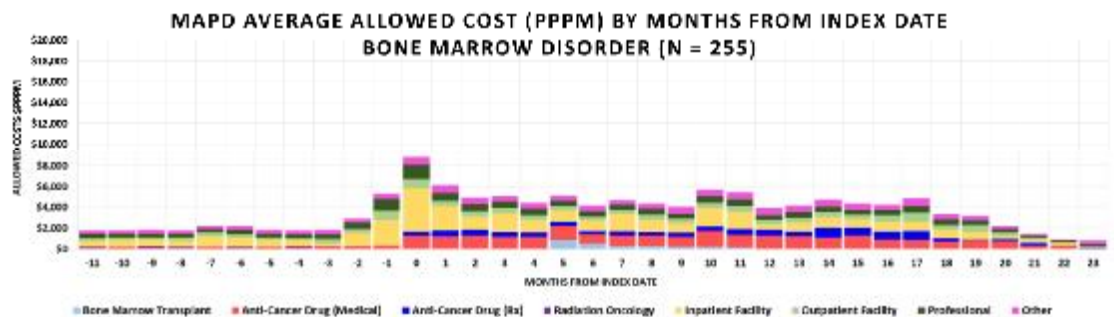


FIGURE B4: MAPD ALLOWED SPENDING PER LYMPHOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

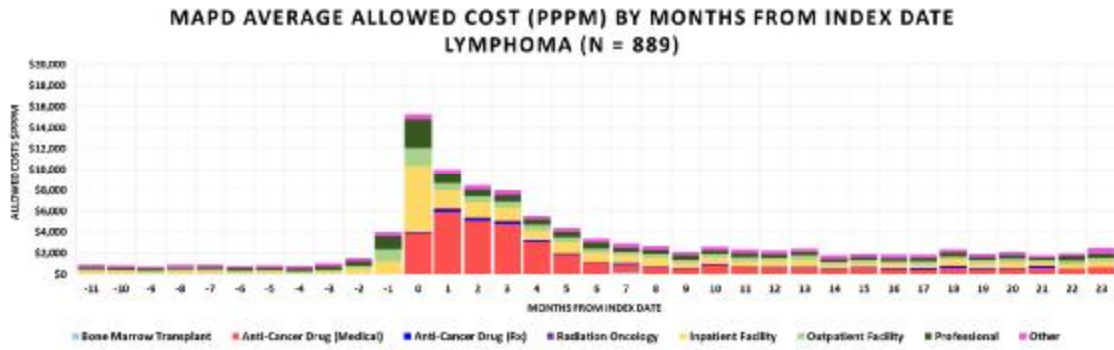


FIGURE B5: MAPD ALLOWED SPENDING PER MULTIPLE MYELOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

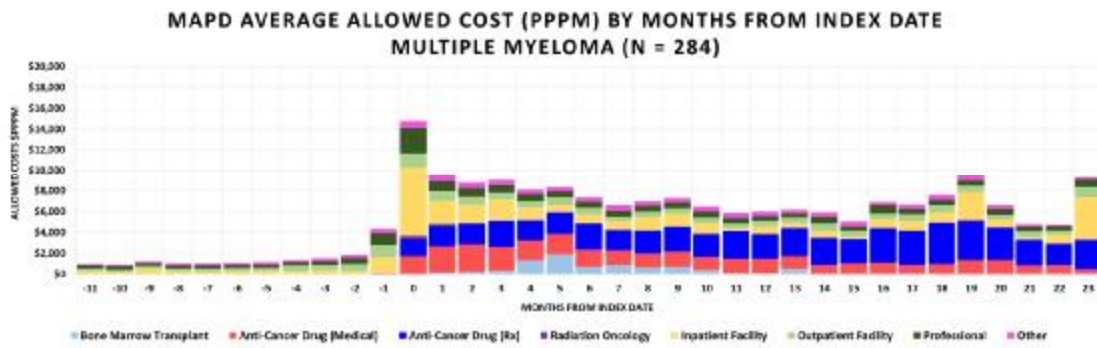


FIGURE B6: FFS ALLOWED SPENDING PER ACUTE LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

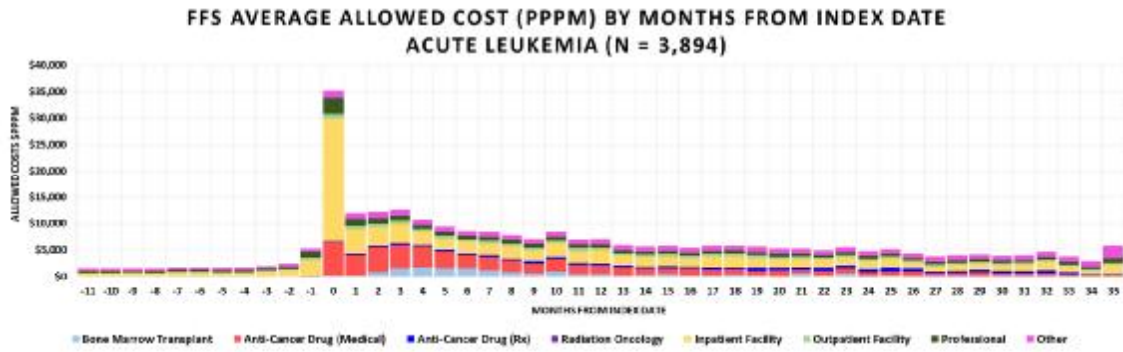


FIGURE B7: FFS ALLOWED SPENDING PER CHRONIC LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

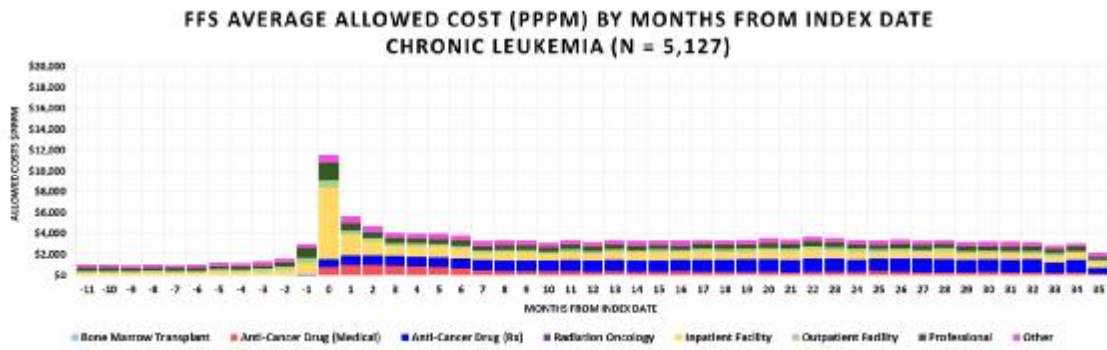


FIGURE B8: FFS ALLOWED SPENDING PER BONE MARROW DISORDER PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

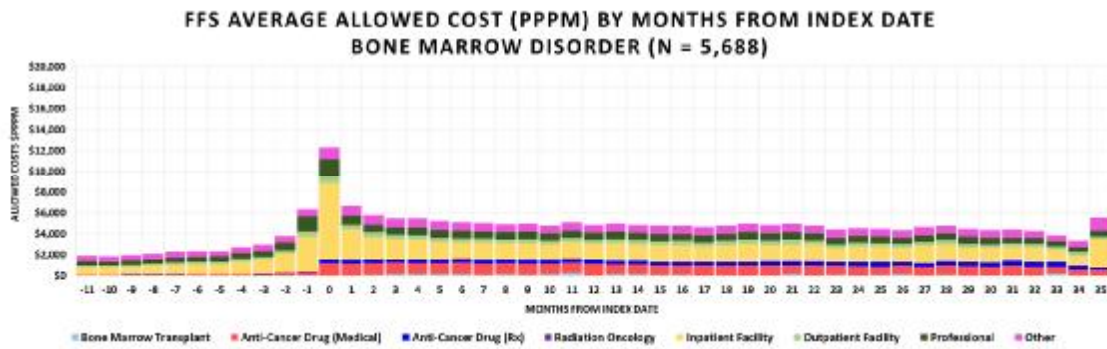


FIGURE B9: FFS ALLOWED SPENDING PER LYMPHOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

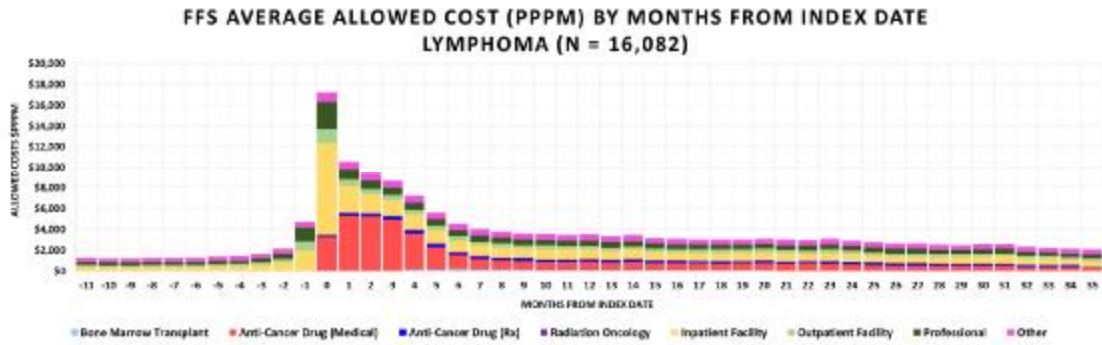
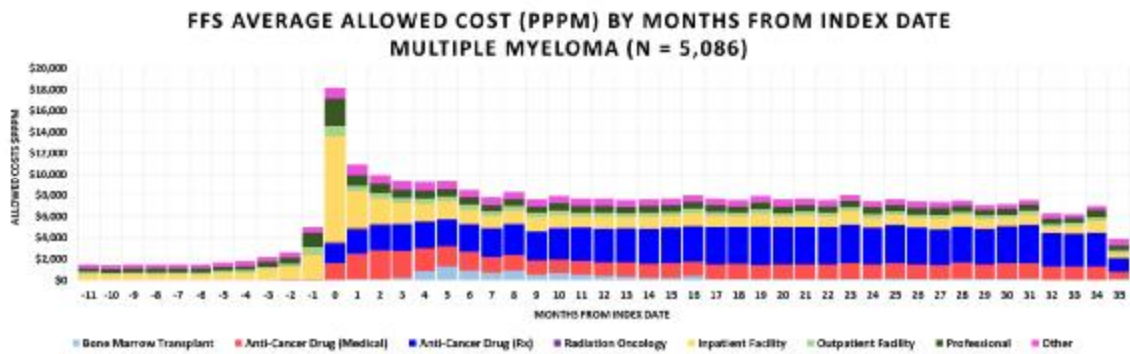


FIGURE B10: FFS ALLOWED SPENDING PER MULTIPLE MYELOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)



Appendix C: Monthly Patient Out-of-Pocket Costs by Blood Cancer

FIGURE C1: MAPD PATIENT OUT-OF-POCKET SPENDING PER ACUTE LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

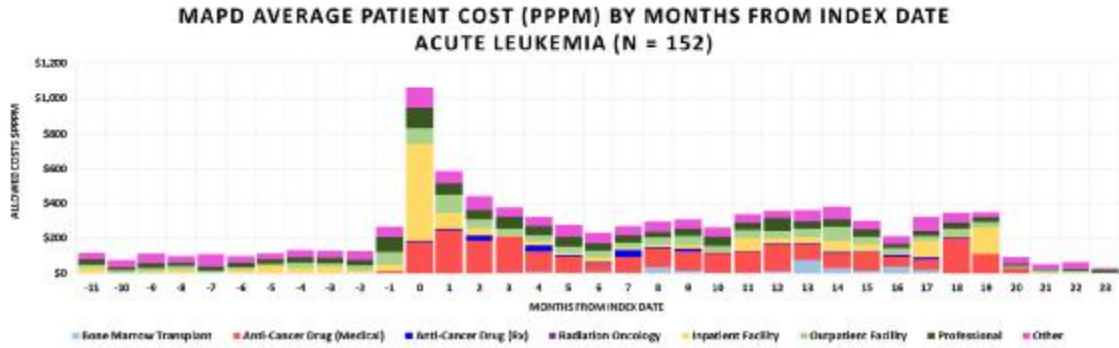


FIGURE C2: MAPD PATIENT OUT-OF-POCKET SPENDING PER CHRONIC LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

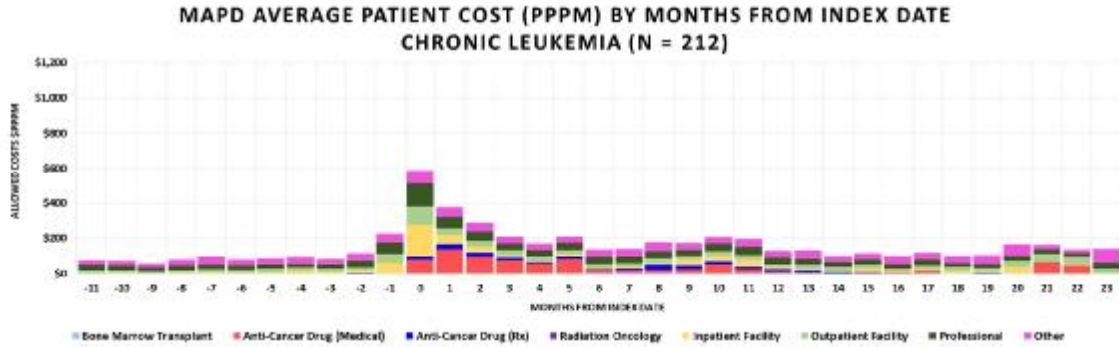


FIGURE C3: MAPD PATIENT OUT-OF-POCKET SPENDING PER BONE MARROW DISORDER PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

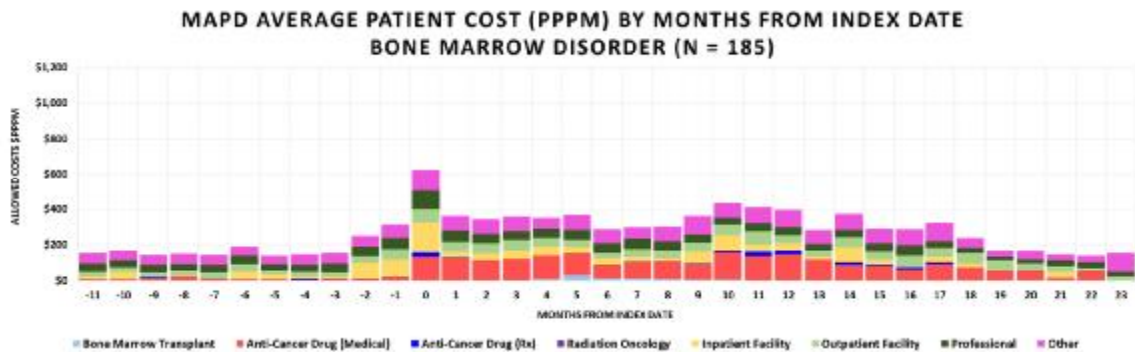


FIGURE C4: MAPD PATIENT OUT-OF-POCKET SPENDING PER LYMPHOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

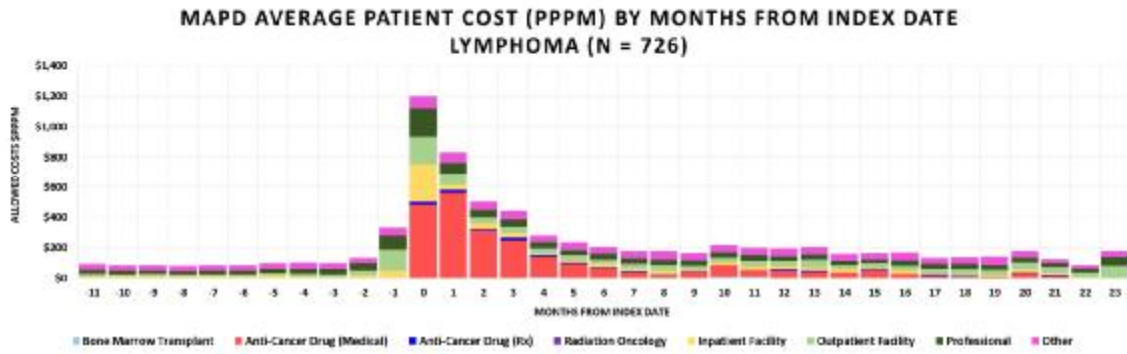


FIGURE C5: MAPD PATIENT OUT-OF-POCKET SPENDING PER MULTIPLE MYELOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2016)

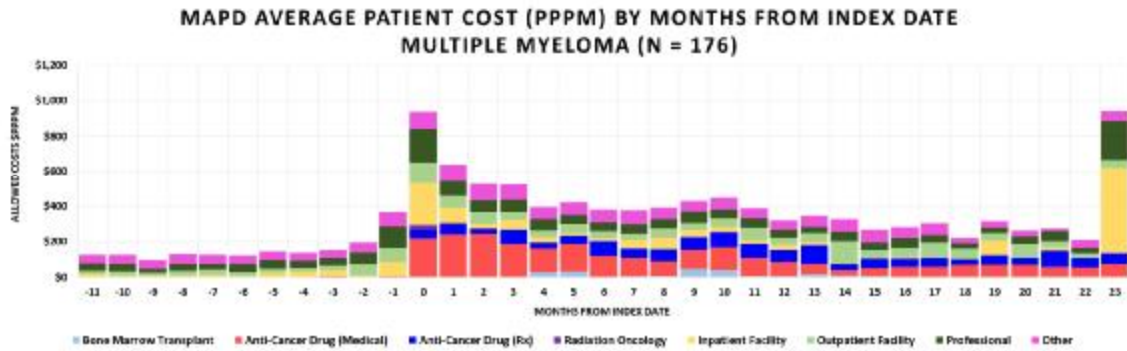


FIGURE C6: FFS PATIENT OUT-OF-POCKET SPENDING PER ACUTE LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

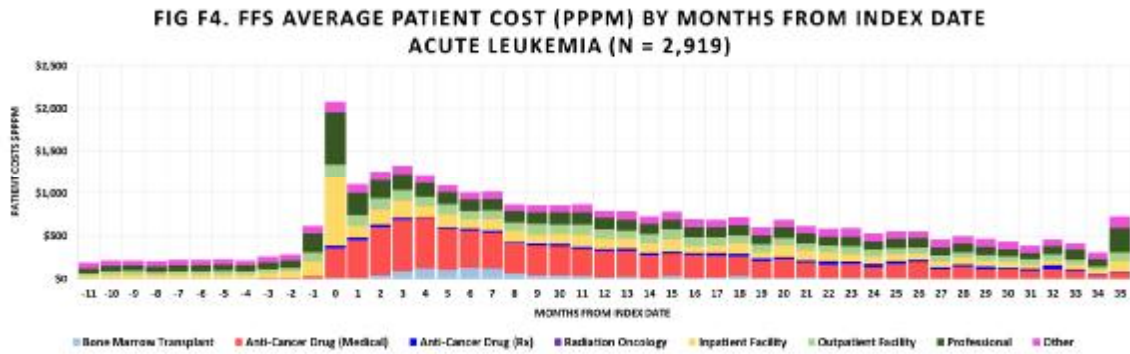


FIGURE C7: FFS PATIENT OUT-OF-POCKET SPENDING PER CHRONIC LEUKEMIA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

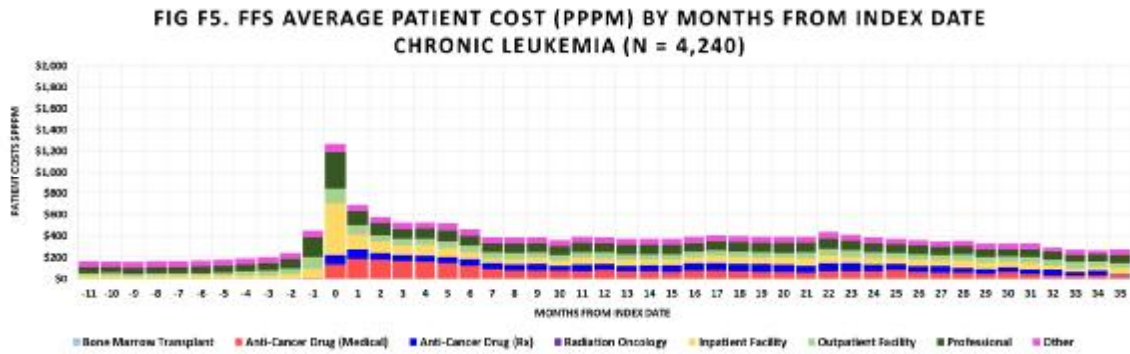


FIGURE C8: FFS PATIENT OUT-OF-POCKET SPENDING PER BONE MARROW DISORDER PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

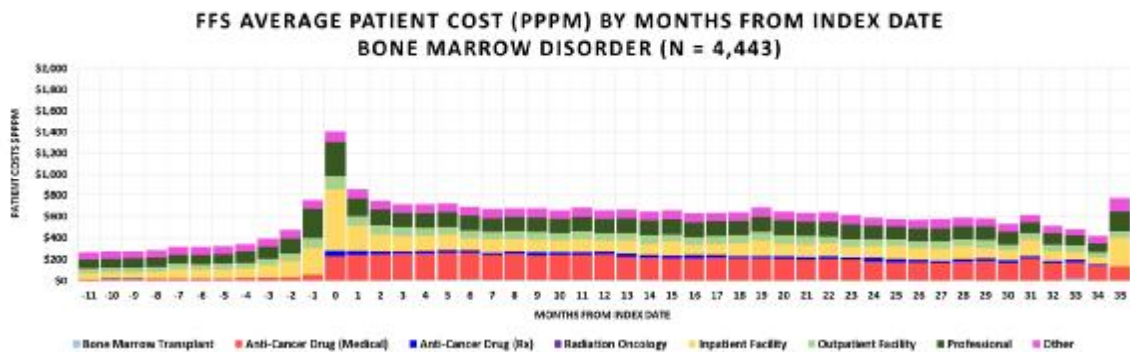


FIGURE C9: FFS PATIENT OUT-OF-POCKET SPENDING PER LYMPHOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)

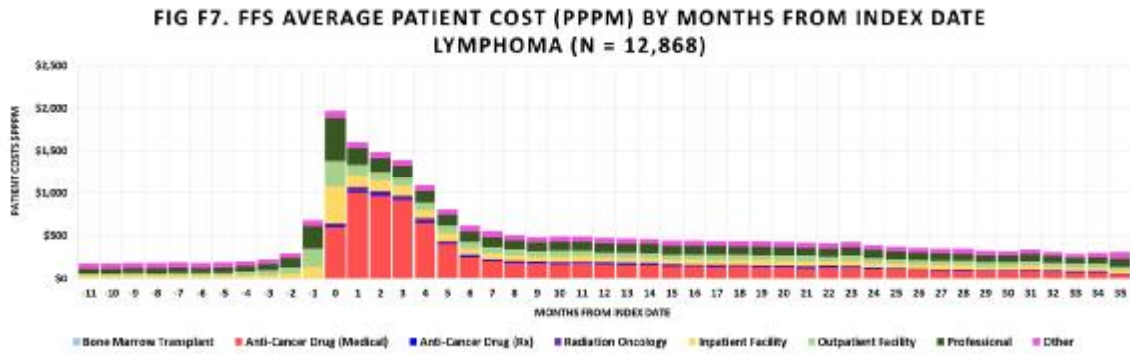
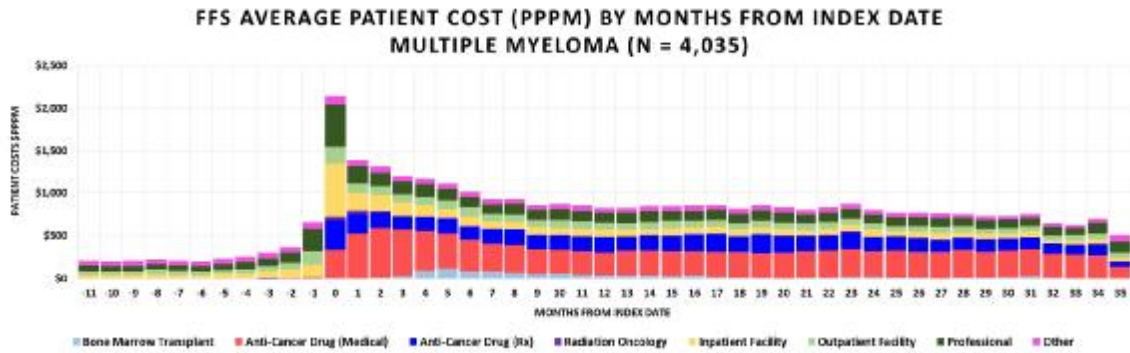


FIGURE C10: FFS PATIENT OUT-OF-POCKET SPENDING PER MULTIPLE MYELOMA PATIENT PER MONTH, BY TYPE OF SERVICE (2014-2017)



Appendix D: Annual Allowed Cost Deciles for Actively Treated Patients

FIGURE D1: MAPD AND FFS CUMULATIVE ALLOWED SPENDING DECILES –TREATED POPULATION

| Cancer Type | Decile | | | | | | | | |
|----------------------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD: | | | | | | | | | |
| Acute Leukemia | \$30,819 | \$49,943 | \$72,055 | \$105,307 | \$135,607 | \$164,016 | \$200,027 | \$259,549 | \$356,272 |
| Chronic Leukemia | \$28,137 | \$39,022 | \$46,781 | \$61,876 | \$81,680 | \$102,062 | \$126,590 | \$152,469 | \$201,183 |
| Bone Marrow Disorder | \$26,022 | \$38,311 | \$51,616 | \$62,371 | \$86,002 | \$127,411 | \$149,768 | \$193,446 | \$249,610 |
| Lymphoma | \$25,446 | \$41,991 | \$57,798 | \$73,304 | \$86,234 | \$102,316 | \$113,014 | \$140,653 | \$174,560 |
| Multiple Myeloma | \$27,824 | \$50,795 | \$74,213 | \$98,585 | \$138,539 | \$167,047 | \$215,406 | \$257,344 | \$317,950 |
| FFS: | | | | | | | | | |
| Acute Leukemia | \$44,817 | \$74,144 | \$102,052 | \$129,914 | \$160,752 | \$200,261 | \$246,179 | \$314,747 | \$422,432 |
| Chronic Leukemia | \$44,034 | \$67,005 | \$90,423 | \$117,411 | \$145,429 | \$181,039 | \$218,957 | \$257,115 | \$298,582 |
| Bone Marrow Disorder | \$40,180 | \$61,514 | \$80,967 | \$106,958 | \$130,933 | \$155,861 | \$188,640 | \$234,919 | \$308,591 |
| Lymphoma | \$45,003 | \$68,176 | \$86,620 | \$102,500 | \$119,274 | \$139,069 | \$163,233 | \$195,750 | \$254,410 |
| Multiple Myeloma | \$57,104 | \$96,667 | \$132,832 | \$167,995 | \$208,476 | \$256,856 | \$304,363 | \$349,152 | \$409,667 |

FIGURE D2: MAPD AND FFS CUMULATIVE ALLOWED SPENDING DECILES –TREATED POPULATION BY SERVICE CATEGORY

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Chemo, Rad Onc, Trans): | | | | | | | | | |
| Acute Leukemia | \$2,342 | \$8,943 | \$17,717 | \$35,054 | \$45,917 | \$73,855 | \$91,033 | \$125,069 | \$199,628 |
| Chronic Leukemia | \$1,227 | \$5,694 | \$14,770 | \$29,831 | \$42,849 | \$55,936 | \$79,577 | \$99,463 | \$145,934 |
| Bone Marrow Disorder | \$804 | \$8,805 | \$15,210 | \$22,645 | \$37,246 | \$48,252 | \$56,808 | \$81,583 | \$208,813 |
| Lymphoma | \$3,936 | \$10,542 | \$19,725 | \$27,454 | \$33,718 | \$40,849 | \$49,195 | \$64,186 | \$93,667 |
| Multiple Myeloma | \$5,122 | \$12,115 | \$26,689 | \$42,268 | \$73,433 | \$106,154 | \$134,657 | \$174,447 | \$241,470 |
| MAPD (All Other): | | | | | | | | | |
| Acute Leukemia | \$17,355 | \$31,233 | \$41,031 | \$51,157 | \$67,238 | \$89,349 | \$118,112 | \$131,568 | \$165,365 |
| Chronic Leukemia | \$9,352 | \$12,333 | \$16,505 | \$19,620 | \$27,204 | \$32,661 | \$41,052 | \$65,479 | \$87,554 |
| Bone Marrow Disorder | \$10,981 | \$14,729 | \$17,493 | \$32,114 | \$43,448 | \$64,804 | \$78,120 | \$89,568 | \$122,552 |
| Lymphoma | \$10,620 | \$18,949 | \$28,542 | \$37,166 | \$44,129 | \$51,454 | \$62,433 | \$77,596 | \$108,244 |
| Multiple Myeloma | \$11,101 | \$17,910 | \$22,846 | \$32,698 | \$43,867 | \$52,738 | \$64,750 | \$90,156 | \$140,275 |
| FFS (Chemo, Rad Onc, Trans): | | | | | | | | | |
| Acute Leukemia | \$1,530 | \$6,928 | \$14,715 | \$27,204 | \$42,607 | \$61,476 | \$85,668 | \$124,117 | \$205,414 |
| Chronic Leukemia | \$3,552 | \$17,268 | \$31,634 | \$49,723 | \$72,762 | \$100,162 | \$142,227 | \$202,510 | \$240,816 |
| Bone Marrow Disorder | \$775 | \$6,637 | \$13,322 | \$22,583 | \$33,312 | \$45,929 | \$64,737 | \$91,327 | \$145,298 |
| Lymphoma | \$5,637 | \$14,666 | \$26,255 | \$34,872 | \$42,531 | \$50,837 | \$69,148 | \$93,225 | \$130,409 |
| Multiple Myeloma | \$10,263 | \$25,578 | \$49,638 | \$81,820 | \$116,756 | \$157,093 | \$213,326 | \$267,116 | \$320,470 |
| FFS (All Other): | | | | | | | | | |
| Acute Leukemia | \$31,555 | \$49,691 | \$66,475 | \$81,969 | \$102,235 | \$125,015 | \$152,745 | \$186,972 | \$263,520 |
| Chronic Leukemia | \$13,659 | \$19,963 | \$27,584 | \$34,720 | \$44,506 | \$57,611 | \$72,556 | \$94,172 | \$136,723 |
| Bone Marrow Disorder | \$21,022 | \$36,482 | \$47,413 | \$59,781 | \$72,811 | \$91,794 | \$116,109 | \$151,139 | \$195,667 |
| Lymphoma | \$20,586 | \$32,534 | \$43,371 | \$53,190 | \$63,840 | \$76,562 | \$93,151 | \$115,959 | \$158,509 |
| Multiple Myeloma | \$20,665 | \$30,566 | \$41,103 | \$50,126 | \$62,236 | \$75,394 | \$93,162 | \$121,978 | \$163,604 |

FIGURE D3: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY ALLOWED SPENDING DECILES (FIRST 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Part B): | | | | | | | | | |
| Acute Leukemia | \$4,024 | \$9,911 | \$20,173 | \$36,119 | \$48,004 | \$55,793 | \$75,511 | \$105,071 | \$122,307 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$440 | \$3,633 | \$13,621 | \$28,823 | \$47,918 | \$65,783 |
| Bone Marrow Disorder | \$0 | \$1,322 | \$3,166 | \$20,037 | \$21,799 | \$26,955 | \$48,723 | \$58,641 | \$83,870 |
| Lymphoma | \$7,064 | \$19,415 | \$27,110 | \$35,775 | \$45,547 | \$56,765 | \$64,014 | \$76,570 | \$96,741 |
| Multiple Myeloma | \$0 | \$3,064 | \$6,800 | \$16,760 | \$25,696 | \$33,242 | \$42,206 | \$56,382 | \$73,445 |
| MAPD (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$6 | \$13 | \$27 | \$66 | \$143 | \$20,373 |
| Chronic Leukemia | \$0 | \$11 | \$41 | \$315 | \$2,256 | \$10,045 | \$32,999 | \$73,245 | \$113,625 |
| Bone Marrow Disorder | \$0 | \$8 | \$17 | \$50 | \$92 | \$192 | \$2,749 | \$14,376 | \$67,987 |
| Lymphoma | \$0 | \$2 | \$10 | \$17 | \$26 | \$41 | \$68 | \$122 | \$366 |
| Multiple Myeloma | \$21 | \$83 | \$286 | \$3,761 | \$9,869 | \$26,775 | \$49,123 | \$80,690 | \$115,900 |
| FFS (Part B): | | | | | | | | | |
| Acute Leukemia | \$6,269 | \$13,342 | \$25,169 | \$37,946 | \$49,648 | \$61,698 | \$77,490 | \$101,795 | \$142,570 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$249 | \$3,172 | \$15,603 | \$32,769 | \$49,034 | \$80,321 |
| Bone Marrow Disorder | \$1,491 | \$6,802 | \$11,667 | \$20,349 | \$31,410 | \$41,532 | \$53,434 | \$66,219 | \$84,669 |
| Lymphoma | \$12,369 | \$24,235 | \$34,647 | \$45,794 | \$55,990 | \$63,592 | \$70,528 | \$85,025 | \$107,952 |
| Multiple Myeloma | \$275 | \$4,575 | \$13,179 | \$22,108 | \$29,069 | \$36,034 | \$45,055 | \$56,416 | \$73,232 |
| FFS (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$6 | \$15 | \$27 | \$45 | \$83 | \$227 | \$12,928 |
| Chronic Leukemia | \$5 | \$20 | \$68 | \$378 | \$6,333 | \$40,586 | \$76,775 | \$106,565 | \$121,539 |
| Bone Marrow Disorder | \$0 | \$7 | \$17 | \$31 | \$55 | \$101 | \$401 | \$21,252 | \$63,397 |
| Lymphoma | \$0 | \$4 | \$11 | \$18 | \$28 | \$42 | \$67 | \$129 | \$2,661 |
| Multiple Myeloma | \$21 | \$64 | \$216 | \$10,867 | \$29,821 | \$49,521 | \$69,795 | \$95,361 | \$123,644 |

FIGURE D4: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY ALLOWED SPENDING DECILES (SECOND 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------|--------|------|---------|---------|----------|----------|----------|-----------|-----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Part B): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$59 | \$1,705 | \$9,793 | \$15,262 | \$29,293 | \$80,174 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$579 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$0 | \$0 | \$4,461 | \$8,558 | \$31,877 | \$39,379 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$4,876 | \$14,849 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$0 | \$0 | \$1 | \$6,722 | \$15,115 | \$39,233 |
| MAPD (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$9 | \$30 | \$25,111 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$190 | \$9,684 | \$18,961 | \$31,347 | \$67,797 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$5 | \$21 | \$36 | \$207 | \$12,077 | \$63,530 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$21 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$17 | \$120 | \$6,705 | \$34,460 | \$69,158 | \$85,590 |
| FFS (Part B): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$1,220 | \$5,970 | \$16,858 | \$30,465 | \$43,886 | \$67,610 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$1,216 | \$26,867 |
| Bone Marrow Disorder | \$0 | \$0 | \$1,204 | \$4,583 | \$11,853 | \$21,313 | \$36,254 | \$46,934 | \$70,146 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$3,501 | \$27,134 | \$42,104 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$0 | \$1,529 | \$9,754 | \$25,667 | \$42,367 | \$72,485 |
| FFS (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$5 | \$31 | \$190 | \$15,659 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$18 | \$480 | \$37,851 | \$78,357 | \$105,661 | \$131,533 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$0 | \$0 | \$20 | \$63 | \$341 | \$51,173 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$7 | \$96 |
| Multiple Myeloma | \$0 | \$0 | \$12 | \$109 | \$22,714 | \$58,760 | \$99,819 | \$137,585 | \$157,039 |

Appendix E: Annual Patient OOP Spending Deciles for Actively Treated Patients

FIGURE E1: MAPD AND FFS CUMULATIVE PATIENT OOP SPENDING DECILES –TREATED POPULATION

| Cancer Type | Decile | | | | | | | | |
|----------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD: | | | | | | | | | |
| Acute Leukemia | \$1,831 | \$2,411 | \$3,603 | \$4,123 | \$5,409 | \$6,897 | \$8,403 | \$10,218 | \$12,867 |
| Chronic Leukemia | \$840 | \$1,905 | \$3,093 | \$3,494 | \$4,916 | \$5,208 | \$6,800 | \$9,340 | \$12,733 |
| Bone Marrow Disorder | \$658 | \$699 | \$1,346 | \$3,060 | \$3,603 | \$7,160 | \$8,227 | \$11,968 | \$21,304 |
| Lymphoma | \$1,366 | \$2,318 | \$3,679 | \$4,479 | \$5,565 | \$6,768 | \$7,614 | \$9,085 | \$12,266 |
| Multiple Myeloma | \$2,398 | \$3,050 | \$3,953 | \$4,341 | \$5,615 | \$7,220 | \$10,138 | \$13,491 | \$16,530 |
| FFS: | | | | | | | | | |
| Acute Leukemia | \$3,668 | \$6,120 | \$9,426 | \$12,546 | \$16,367 | \$19,917 | \$23,919 | \$30,043 | \$39,018 |
| Chronic Leukemia | \$4,399 | \$7,473 | \$11,022 | \$13,778 | \$17,501 | \$20,452 | \$22,595 | \$25,300 | \$29,874 |
| Bone Marrow Disorder | \$4,719 | \$7,822 | \$10,839 | \$14,448 | \$18,434 | \$22,148 | \$26,335 | \$30,288 | \$40,279 |
| Lymphoma | \$6,439 | \$10,212 | \$13,326 | \$16,168 | \$18,579 | \$21,390 | \$24,422 | \$29,029 | \$36,075 |
| Multiple Myeloma | \$6,285 | \$11,326 | \$15,527 | \$19,952 | \$24,211 | \$28,261 | \$32,773 | \$38,444 | \$47,253 |

FIGURE E2: MAPD AND FFS CUMULATIVE PATIENT OOP SPENDING DECILES –TREATED POPULATION BY SERVICE CATEGORY

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Chemo, Rad Onc, Trans): | | | | | | | | | |
| Acute Leukemia | \$0 | \$193 | \$403 | \$1,000 | \$1,757 | \$2,390 | \$3,165 | \$5,056 | \$8,688 |
| Chronic Leukemia | \$4 | \$60 | \$261 | \$829 | \$1,216 | \$2,549 | \$3,769 | \$5,718 | \$9,175 |
| Bone Marrow Disorder | \$0 | \$0 | \$218 | \$361 | \$2,264 | \$2,722 | \$4,924 | \$6,306 | \$10,845 |
| Lymphoma | \$0 | \$138 | \$682 | \$1,360 | \$2,106 | \$3,208 | \$3,918 | \$5,004 | \$7,015 |
| Multiple Myeloma | \$450 | \$982 | \$1,363 | \$1,830 | \$2,372 | \$3,465 | \$5,792 | \$8,285 | \$12,151 |
| MAPD (All Other): | | | | | | | | | |
| Acute Leukemia | \$1,215 | \$1,875 | \$2,191 | \$2,422 | \$2,925 | \$3,261 | \$4,063 | \$4,951 | \$6,795 |
| Chronic Leukemia | \$700 | \$860 | \$1,699 | \$2,296 | \$2,676 | \$3,089 | \$3,371 | \$3,885 | \$6,260 |
| Bone Marrow Disorder | \$363 | \$687 | \$1,156 | \$1,346 | \$1,925 | \$3,176 | \$4,478 | \$7,424 | \$13,189 |
| Lymphoma | \$687 | \$1,123 | \$1,622 | \$2,218 | \$2,670 | \$3,459 | \$4,087 | \$5,046 | \$7,053 |
| Multiple Myeloma | \$617 | \$1,340 | \$1,883 | \$2,229 | \$2,618 | \$3,277 | \$4,069 | \$6,049 | \$7,792 |
| FFS (Chemo, Rad Onc, Trans): | | | | | | | | | |
| Acute Leukemia | \$24 | \$784 | \$1,395 | \$2,694 | \$4,120 | \$6,414 | \$8,851 | \$12,374 | \$18,109 |
| Chronic Leukemia | \$93 | \$974 | \$3,291 | \$5,520 | \$8,742 | \$11,687 | \$14,603 | \$17,792 | \$20,379 |
| Bone Marrow Disorder | \$154 | \$996 | \$2,383 | \$3,706 | \$5,660 | \$7,720 | \$10,595 | \$14,280 | \$18,877 |
| Lymphoma | \$1,011 | \$2,232 | \$4,482 | \$6,115 | \$7,476 | \$8,814 | \$11,497 | \$16,055 | \$22,060 |
| Multiple Myeloma | \$1,395 | \$3,735 | \$6,838 | \$9,990 | \$13,943 | \$19,015 | \$22,091 | \$26,598 | \$33,524 |
| FFS (All Other): | | | | | | | | | |
| Acute Leukemia | \$2,786 | \$4,338 | \$6,277 | \$7,893 | \$10,058 | \$12,091 | \$14,599 | \$17,673 | \$25,368 |
| Chronic Leukemia | \$2,169 | \$3,166 | \$4,041 | \$5,149 | \$6,196 | \$7,427 | \$9,039 | \$11,495 | \$16,321 |
| Bone Marrow Disorder | \$2,954 | \$4,802 | \$6,459 | \$8,242 | \$9,988 | \$11,878 | \$14,765 | \$19,240 | \$26,734 |
| Lymphoma | \$3,449 | \$5,078 | \$6,646 | \$8,178 | \$9,557 | \$11,026 | \$12,871 | \$15,187 | \$19,127 |
| Multiple Myeloma | \$3,039 | \$4,317 | \$5,503 | \$6,639 | \$7,839 | \$9,192 | \$10,722 | \$13,220 | \$17,965 |

FIGURE E3: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY PATIENT OOP SPENDING DECILES (FIRST 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------|---------|---------|---------|---------|----------|----------|----------|----------|----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Part B): | | | | | | | | | |
| Acute Leukemia | \$15 | \$294 | \$648 | \$1,000 | \$1,550 | \$2,139 | \$3,000 | \$4,134 | \$7,748 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$600 | \$1,363 | \$2,083 | \$4,514 | \$8,942 |
| Bone Marrow Disorder | \$0 | \$0 | \$200 | \$650 | \$900 | \$2,657 | \$4,487 | \$5,511 | \$10,836 |
| Lymphoma | \$0 | \$551 | \$1,162 | \$2,305 | \$3,257 | \$4,078 | \$4,791 | \$5,830 | \$7,326 |
| Multiple Myeloma | \$0 | \$616 | \$982 | \$1,304 | \$1,725 | \$2,561 | \$4,185 | \$5,733 | \$8,140 |
| MAPD (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$1 | \$3 | \$5 | \$14 | \$34 | \$71 |
| Chronic Leukemia | \$0 | \$0 | \$4 | \$6 | \$12 | \$37 | \$83 | \$385 | \$2,652 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$3 | \$8 | \$11 | \$35 | \$54 | \$1,906 |
| Lymphoma | \$0 | \$0 | \$3 | \$5 | \$9 | \$12 | \$18 | \$29 | \$48 |
| Multiple Myeloma | \$0 | \$4 | \$13 | \$22 | \$48 | \$96 | \$241 | \$799 | \$3,077 |
| FFS (Part B): | | | | | | | | | |
| Acute Leukemia | \$434 | \$1,306 | \$2,148 | \$3,578 | \$5,069 | \$7,092 | \$9,434 | \$12,325 | \$16,399 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$48 | \$691 | \$3,373 | \$6,829 | \$9,886 | \$14,899 |
| Bone Marrow Disorder | \$270 | \$1,332 | \$2,323 | \$4,110 | \$6,121 | \$8,126 | \$10,650 | \$13,038 | \$16,640 |
| Lymphoma | \$1,939 | \$4,342 | \$6,114 | \$8,017 | \$10,044 | \$11,633 | \$12,823 | \$14,869 | \$19,253 |
| Multiple Myeloma | \$2 | \$839 | \$2,716 | \$4,480 | \$5,904 | \$7,482 | \$9,405 | \$11,669 | \$15,008 |
| FFS (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$1 | \$4 | \$8 | \$14 | \$25 | \$46 | \$162 |
| Chronic Leukemia | \$0 | \$5 | \$13 | \$32 | \$103 | \$509 | \$3,607 | \$7,944 | \$10,076 |
| Bone Marrow Disorder | \$0 | \$1 | \$5 | \$8 | \$15 | \$29 | \$67 | \$1,029 | \$4,225 |
| Lymphoma | \$0 | \$1 | \$3 | \$6 | \$10 | \$16 | \$25 | \$43 | \$136 |
| Multiple Myeloma | \$6 | \$20 | \$47 | \$162 | \$1,635 | \$3,344 | \$5,177 | \$7,656 | \$9,971 |

FIGURE E4: PER PATIENT PER YEAR (PPY) ANTICANCER DRUG THERAPY PATIENT OOP SPENDING DECILES (SECOND 12 MONTHS AFTER DIAGNOSIS) – BY CANCER TYPE

| Cancer Type (Service Category) | Decile | | | | | | | | |
|--------------------------------|--------|------|-------|---------|---------|---------|---------|---------|----------|
| | 10th | 20th | 30th | 40th | 50th | 60th | 70th | 80th | 90th |
| MAPD (Part B): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$9 | \$472 | \$1,509 | \$3,051 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$20 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$402 | \$2,157 | \$4,383 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$951 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$318 | \$2,273 |
| MAPD (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$6 | \$21 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$12 | \$57 | \$186 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$0 | \$3 | \$9 | \$10 | \$15 | \$608 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$7 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$0 | \$0 | \$7 | \$77 | \$159 | \$1,076 |
| FFS (Part B): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$266 | \$1,115 | \$2,975 | \$5,190 | \$7,556 | \$11,790 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$240 | \$5,715 |
| Bone Marrow Disorder | \$0 | \$0 | \$249 | \$1,035 | \$2,291 | \$3,922 | \$7,065 | \$9,027 | \$12,901 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$724 | \$5,312 | \$8,046 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$0 | \$282 | \$2,160 | \$5,757 | \$8,828 | \$15,391 |
| FFS (Part D): | | | | | | | | | |
| Acute Leukemia | \$0 | \$0 | \$0 | \$0 | \$0 | \$1 | \$12 | \$43 | \$457 |
| Chronic Leukemia | \$0 | \$0 | \$0 | \$0 | \$10 | \$123 | \$3,507 | \$6,983 | \$9,071 |
| Bone Marrow Disorder | \$0 | \$0 | \$0 | \$0 | \$0 | \$5 | \$20 | \$71 | \$2,689 |
| Lymphoma | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$0 | \$28 |
| Multiple Myeloma | \$0 | \$0 | \$0 | \$19 | \$123 | \$1,564 | \$5,206 | \$8,313 | \$10,089 |

Appendix F: Prevalence of Blood Cancers

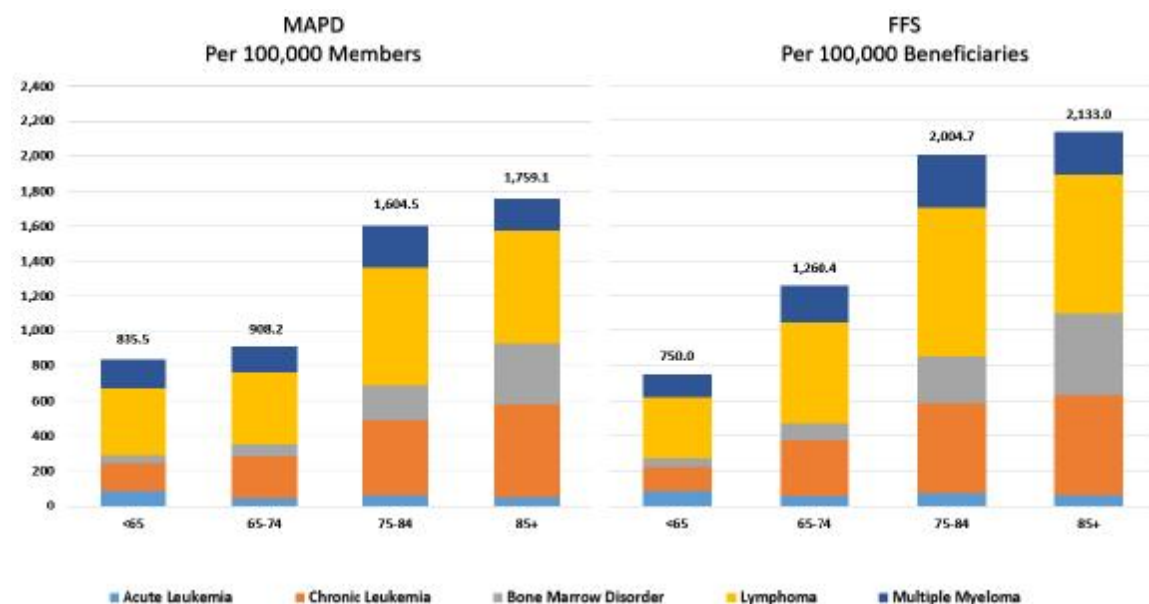
Based on our proprietary MAPD data and the Medicare 100% Part A, B and D data (see data source description), we conducted a snapshot analysis of MAPD and FFS Medicare patients with both new and existing blood cancer diagnoses in 2017 and a longitudinal analysis of MAPD and FFS Medicare patients newly diagnosed with blood cancer in 2015. The blood cancers we examined include acute leukemia, chronic leukemia, lymphoma, multiple myeloma, and bone marrow disorders (see methodology section and Appendix F for blood cancer type identification criteria and identification of newly diagnosed blood cancer patients).

We provide prevalence, incidence and mortality characteristics of these populations as well as cost details including all-cause total healthcare allowed spending (amount paid by payer and patient combined), patient OOP (OOP) spending (coinsurance, deductibles, and copays), and anticancer drug therapy spending.

PREVALENCE, MORTALITY, AND COST OF BLOOD CANCER IN MEDICARE

In 2017, we identified 25,494 MAPD and 325,979 FFS (with Part D) patients who were diagnosed with blood cancer for an overall prevalence of 1,209 per 100,000 MAPD enrollees and 1,476 per 100,000 FFS with Part D beneficiaries. Figure D1 provides prevalence rates by four major age categories: ages under 65 (disabled), 65-74 years old, 75-84 years old, and 85 and older. Prevalence of blood cancer in aggregate across all cancers increases with age but is relatively flat for acute leukemia and increases for multiple myeloma and lymphoma through age 75-84 and thereafter declines. The prevalence of blood cancer in aggregate across all blood cancers among the 85 and older population is more than twice that of those who are less than 65. Lymphoma is the most common of the blood cancers across all age groups.

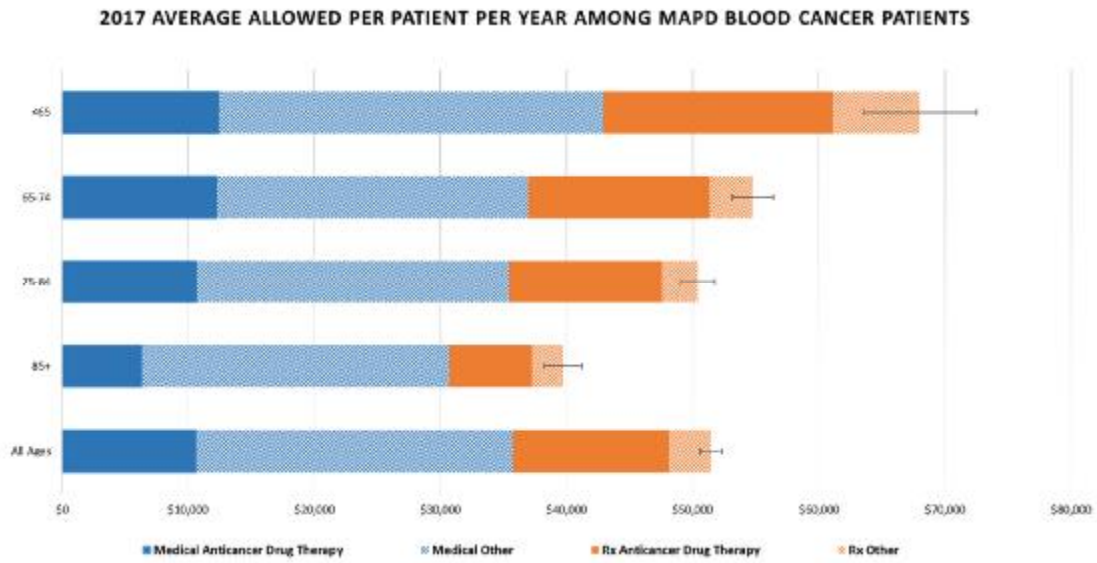
FIGURE F1: 2017 PREVALENCE OF BLOOD CANCER PER 100,000 MEDICARE LIVES



Source: 2017 Milliman Consolidated data set of MAPD enrollees and 2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

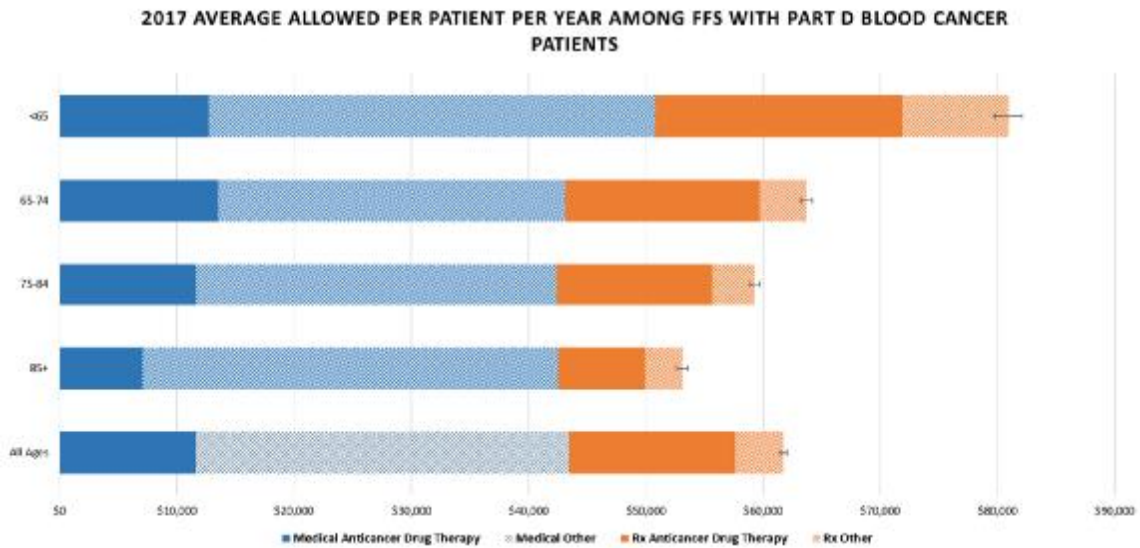
Despite higher prevalence rates of blood cancer among the 85 and older population, costs were lower among this older population compared to all other age cohorts. (Figures F2A and F2B) Anticancer drug therapy contributed less to overall spending for this age group compared to other age groups. The youngest patients reported the highest annual allowed spend with MAPD patients reporting an average of almost \$68,000 PPPY and FFS patients reporting an average of almost \$81,000 PPPY.

FIGURE F2A: 2017 AVERAGE ALLOWED SPENDING PER MAPD BLOOD CANCER PATIENT PER YEAR BY AGE



Source: 2017 Milliman Consolidated data set of MAPD enrollees
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

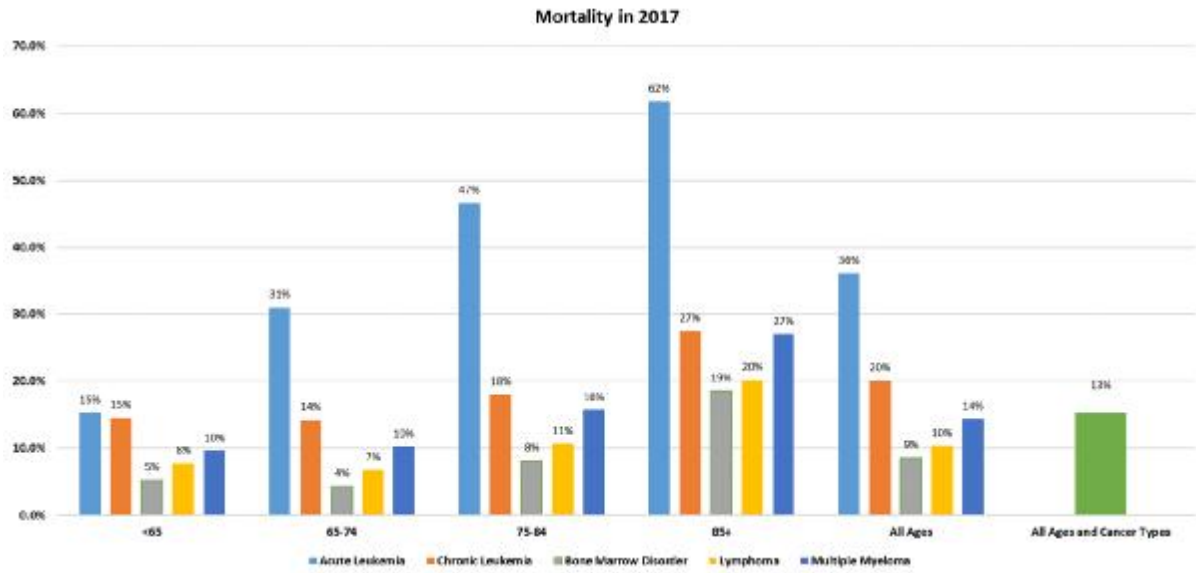
FIGURE F2B: 2017 AVERAGE ALLOWED SPENDING PER FFS WITH PART D BLOOD CANCER PATIENT PER YEAR BY AGE



Source: 2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries
 Allowed spending includes the amounts paid for healthcare services by both payer and patient combined.

We analyzed the annual mortality rates among FFS blood cancer patients. (Figure F3) 13.1% of the prevalent 2017 FFS blood cancer patients died in the study year. As expected, mortality increases with age for most blood cancers. Acute leukemia has the highest mortality rate across ages followed by chronic leukemia, multiple myeloma and lymphoma.

FIGURE F3: 2017 FFS BLOOD CANCER MORTALITY BY CANCER TYPE AND AGE



Source: 2017 CMS 100% Medicare Research Identifiable Dataset for FFS beneficiaries

Appendix G: ICD-9 and ICD-10 Blood Cancer Diagnosis Codes

G1: ICD-9 LEUKEMIA DIAGNOSIS CODES

| ICD-9 | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 20400 | 20401 | 20402 | 20410 | 20411 | 20412 | 20500 | 20501 | 20502 |
| 20510 | 20511 | 20512 | 20530 | 20531 | 20532 | 20600 | 20601 | 20602 |
| 20700 | 20701 | 20702 | 20720 | 20721 | 20722 | 20800 | 20801 | 20802 |

G2: ICD-9 LEUKEMIA DIAGNOSIS CODES INDICATING RELAPSE OR REMISSION

| ICD-9 | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 20401 | 20402 | 20411 | 20412 | 20501 | 20502 | 20511 | 20512 | 20531 |
| 20532 | 20601 | 20602 | 20701 | 20702 | 20721 | 20722 | 20801 | 20802 |

G3: ICD-10 ACUTE LEUKEMIA DIAGNOSIS CODES

| ICD-10 | | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| C9100 | C9101 | C9102 | C9130 | C9131 | C9132 | C9150 | C9151 | C9152 |
| C9160 | C9161 | C9162 | C91A0 | C91A1 | C91A2 | C9200 | C9201 | C9202 |
| C9230 | C9231 | C9232 | C9240 | C9241 | C9242 | C9250 | C9251 | C9252 |
| C9260 | C9261 | C9262 | C92A0 | C92A1 | C92A2 | C9300 | C9301 | C9302 |
| C9400 | C9401 | C9402 | C9420 | C9421 | C9422 | C9430 | C9431 | C9432 |
| C9500 | C9501 | C9502 | | | | | | |

G4: ICD-10 CHRONIC LEUKEMIA DIAGNOSIS CODES

| ICD-10 | | | | | |
|--------|-------|-------|-------|-------|-------|
| C9110 | C9111 | C9112 | C9210 | C9211 | C9212 |

G5: ICD-9 MULTIPLE MYELOMA DIAGNOSIS CODES

| ICD-9 | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|
| 20300 | 20301 | 20302 | 20310 | 20311 | 20312 | 20381 |

G6: ICD-9 MULTIPLE MYELOMA DIAGNOSIS CODES INDICATING RELAPSE OR REMISSION

| ICD-9 | | | | |
|-------|-------|-------|-------|-------|
| 20301 | 20302 | 20311 | 20312 | 20381 |

G7: ICD-10 MULTIPLE MYELOMA DIAGNOSIS CODES

| ICD-10 | | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| C9000 | C9001 | C9002 | C9010 | C9011 | C9012 | C9020 | C9021 | C9022 |
| C9030 | C9031 | C9032 | | | | | | |

G8: ICD-9 LYMPHOMA DIAGNOSIS CODES

| ICD-9 | | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
| 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
| 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 |
| 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 |
| 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 |
| 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 |
| 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 |
| 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 |
| 201.xx | 20200 | 20201 | 20202 | 20203 | 20204 | 20205 | 20206 | 20207 |
| 20208 | 20210 | 20211 | 20212 | 20213 | 20214 | 20215 | 20216 | 20217 |
| 20218 | 20220 | 20221 | 20222 | 20223 | 20224 | 20225 | 20226 | 20227 |
| 20228 | 20240 | 20241 | 20242 | 20243 | 20244 | 20245 | 20246 | 20247 |
| 20248 | 20270 | 20271 | 20272 | 20273 | 20274 | 20275 | 20276 | 20277 |
| 20278 | 20280 | 20281 | 20282 | 20283 | 20284 | 20285 | 20286 | 20287 |
| 20288 | 20380 | 20382 | 2733 | | | | | |

G9: ICD-9 LYMPHOMA DIAGNOSIS CODES INDICATING RELAPSE OR REMISSION

| ICD-9 | | | | | | | | |
|-------|--|--|--|--|--|--|--|--|
| 20382 | | | | | | | | |

G10: ICD-10 LYMPHOMA DIAGNOSIS CODES

| ICD-10 | | | | | | | | |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| C8100 | C8101 | C8102 | C8103 | C8104 | C8105 | C8106 | C8107 | C8108 |
| C8109 | C8110 | C8111 | C8112 | C8113 | C8114 | C8115 | C8116 | C8117 |
| C8118 | C8119 | C8120 | C8121 | C8122 | C8123 | C8124 | C8125 | C8126 |
| C8127 | C8128 | C8129 | C8130 | C8131 | C8132 | C8133 | C8134 | C8135 |
| C8136 | C8137 | C8138 | C8139 | C8140 | C8141 | C8142 | C8143 | C8144 |
| C8145 | C8146 | C8147 | C8148 | C8149 | C8170 | C8171 | C8172 | C8173 |
| C8174 | C8175 | C8176 | C8177 | C8178 | C8179 | C8190 | C8191 | C8192 |
| C8193 | C8194 | C8195 | C8196 | C8197 | C8198 | C8199 | C8200 | C8201 |
| C8202 | C8203 | C8204 | C8205 | C8206 | C8207 | C8208 | C8209 | C8210 |
| C8211 | C8212 | C8213 | C8214 | C8215 | C8216 | C8217 | C8218 | C8219 |
| C8220 | C8221 | C8222 | C8223 | C8224 | C8225 | C8226 | C8227 | C8228 |
| C8229 | C8230 | C8231 | C8232 | C8233 | C8234 | C8235 | C8236 | C8237 |
| C8238 | C8239 | C8240 | C8241 | C8242 | C8243 | C8244 | C8245 | C8246 |
| C8247 | C8248 | C8249 | C8250 | C8251 | C8252 | C8253 | C8254 | C8255 |
| C8256 | C8257 | C8258 | C8259 | C8260 | C8261 | C8262 | C8263 | C8264 |
| C8265 | C8266 | C8267 | C8268 | C8269 | C8280 | C8281 | C8282 | C8283 |
| C8284 | C8285 | C8286 | C8287 | C8288 | C8289 | C8290 | C8291 | C8292 |
| C8293 | C8294 | C8295 | C8296 | C8297 | C8298 | C8299 | C8300 | C8301 |
| C8302 | C8303 | C8304 | C8305 | C8306 | C8307 | C8308 | C8309 | C8310 |
| C8311 | C8312 | C8313 | C8314 | C8315 | C8316 | C8317 | C8318 | C8319 |
| C8330 | C8331 | C8332 | C8333 | C8334 | C8335 | C8336 | C8337 | C8338 |
| C8339 | C8350 | C8351 | C8352 | C8353 | C8354 | C8355 | C8356 | C8357 |
| C8358 | C8359 | C8370 | C8371 | C8372 | C8373 | C8374 | C8375 | C8376 |
| C8377 | C8378 | C8379 | C8380 | C8381 | C8382 | C8383 | C8384 | C8385 |
| C8386 | C8387 | C8388 | C8389 | C8390 | C8391 | C8392 | C8393 | C8394 |
| C8395 | C8396 | C8397 | C8398 | C8399 | C8400 | C8401 | C8402 | C8403 |
| C8404 | C8405 | C8406 | C8407 | C8408 | C8409 | C8410 | C8411 | C8412 |
| C8413 | C8414 | C8415 | C8416 | C8417 | C8418 | C8419 | C8440 | C8441 |
| C8442 | C8443 | C8444 | C8445 | C8446 | C8447 | C8448 | C8449 | C8460 |
| C8461 | C8462 | C8463 | C8464 | C8465 | C8466 | C8467 | C8468 | C8469 |
| C8470 | C8471 | C8472 | C8473 | C8474 | C8475 | C8476 | C8477 | C8478 |
| C8479 | C8490 | C8491 | C8492 | C8493 | C8494 | C8495 | C8496 | C8497 |
| C8498 | C8499 | C84A0 | C84A1 | C84A2 | C84A3 | C84A4 | C84A5 | C84A6 |
| C84A7 | C84A8 | C84A9 | C84Z0 | C84Z1 | C84Z2 | C84Z3 | C84Z4 | C84Z5 |
| C84Z6 | C84Z7 | C84Z8 | C84Z9 | C8510 | C8511 | C8512 | C8513 | C8514 |
| C8515 | C8516 | C8517 | C8518 | C8519 | C8520 | C8521 | C8522 | C8523 |
| C8524 | C8525 | C8526 | C8527 | C8528 | C8529 | C8580 | C8581 | C8582 |
| C8583 | C8584 | C8585 | C8586 | C8587 | C8588 | C8589 | C8590 | C8591 |
| C8592 | C8593 | C8594 | C8595 | C8596 | C8597 | C8598 | C8599 | C860 |
| C861 | C862 | C863 | C864 | C865 | C866 | C880 | C882 | C883 |
| C884 | C888 | C889 | C9140 | C9141 | C9142 | | | |

G11: ICD-9 BONE MARROW DISORDER DIAGNOSIS CODES

ICD-9

23872 23873 23874 23875

G12: ICD-10 BONE MARROW DISORDER DIAGNOSIS CODES

ICD-10

D460 D461 D4620 D4621 D4622 D464 D469 D46A D46B
D46C D46Z

Appendix H: Supporting Code Lists

H1: PHYSICIAN-ADMINISTERED ANTICANCER THERAPY, HCPCS

| HCPCS | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A9543 | A9545 | C9021 | C9025 | C9027 | C9131 | C9257 | C9259 | C9260 |
| C9265 | C9273 | C9276 | C9280 | C9284 | C9287 | C9289 | C9292 | C9295 |
| C9296 | C9297 | C9442 | C9449 | C9453 | C9455 | C9474 | C9475 | C9476 |
| C9477 | J0202 | J0594 | J0894 | J1930 | J1950 | J2353 | J2860 | J3315 |
| J7504 | J7511 | J9000 | J9001 | J9002 | J9010 | J9015 | J9017 | J9019 |
| J9020 | J9025 | J9027 | J9032 | J9033 | J9034 | J9035 | J9039 | J9040 |
| J9041 | J9042 | J9043 | J9045 | J9047 | J9050 | J9055 | J9060 | J9062 |
| J9065 | J9070 | J9080 | J9090 | J9091 | J9092 | J9093 | J9094 | J9095 |
| J9096 | J9097 | J9098 | J9100 | J9110 | J9120 | J9130 | J9140 | J9145 |
| J9150 | J9151 | J9155 | J9160 | J9165 | J9170 | J9171 | J9176 | J9178 |
| J9179 | J9181 | J9182 | J9185 | J9190 | J9200 | J9201 | J9205 | J9206 |
| J9207 | J9208 | J9211 | J9212 | J9213 | J9214 | J9215 | J9216 | J9217 |
| J9218 | J9228 | J9230 | J9245 | J9250 | J9260 | J9261 | J9262 | J9263 |
| J9264 | J9265 | J9266 | J9267 | J9268 | J9270 | J9271 | J9280 | J9290 |
| J9291 | J9293 | J9295 | J9299 | J9300 | J9301 | J9302 | J9303 | J9305 |
| J9306 | J9307 | J9308 | J9310 | J9315 | J9320 | J9328 | J9330 | J9340 |
| J9350 | J9351 | J9352 | J9354 | J9355 | J9360 | J9370 | J9371 | J9375 |
| J9380 | J9390 | J9395 | J9400 | J9999 | Q2017 | Q2043 | Q2048 | Q2049 |
| Q2050 | Q9979 | S0176 | J8610 | WW044 | WW068 | S0108 | WW045 | WW060 |
| WW034 | WW054 | WW053 | WW040 | WW041 | WW042 | WW043 | WW046 | WW069 |
| WW070 | WW071 | WW072 | WW073 | WW074 | WW075 | WW076 | WW077 | WW078 |
| WW064 | WW052 | WW056 | WW057 | C9016 | C9024 | C9028 | C9030 | C9031 |
| C9472 | C9480 | C9483 | C9485 | C9491 | C9492 | J1675 | J8510 | J8520 |
| J8521 | J8530 | J8560 | J8562 | J8565 | J8600 | J8700 | J8705 | J8999 |
| J9022 | J9023 | J9031 | J9202 | J9203 | J9219 | J9225 | J9285 | J9325 |
| J9357 | WW002 | WW003 | WW004 | WW005 | WW006 | WW007 | WW008 | WW009 |
| WW020 | WW030 | WW031 | WW032 | WW080 | WW081 | WW089 | WW090 | WW091 |
| WW093 | WW094 | WW096 | WW140 | | | | | |

H2: CHEMOTHERAPY INPATIENT ADMISSION, MS-DRGS

| MS DRGs | Description |
|---------|---|
| 837 | Chemo w acute leukemia as sdx or w high dose chemo agent w MCC |
| 838 | Chemo w acute leukemia as sdx w CC or high dose chemo agent |
| 839 | Chemo w acute leukemia as sdx w/o CC/MCC |
| 846 | Chemotherapy w/o acute leukemia as secondary diagnosis w MCC |
| 847 | Chemotherapy w/o acute leukemia as secondary diagnosis w CC |
| 848 | Chemotherapy w/o acute leukemia as secondary diagnosis w/o CC/MCC |

H3: PRESCRIPTION-ADMINISTERED ANTICANCER THERAPY DRUGS

| Generic Drug Names | | | |
|--|---|---|---|
| Abemaciclib | Abiraterone | Acalabrutinib | Ado-trastuzumab emtansine |
| Afatinib | Aldesleukin | Alectinib | Alemtuzumab |
| Altretamine | Anastrozole | Anti-thymocyte globulin, rabbit | Apalutamide |
| Arsenic trioxide | Asparaginase | Atezolizumab | Avelumab |
| Axitinib | Azacitidine | Bcg (bacillus calmette-guerin) live vax, intravesical | Bcg live vax, intravesical |
| Belinostat | Bendamustine | Bendamustine | Bevacizumab |
| Bexarotene | Bicalutamide | Bicalutamide | Bleomycin |
| Blinatumomab | Blinatumomab | Bortezomib | Bosutinib |
| Bosutinib | Brentuximab vedotin | Busulfan | Cabazitaxel |
| Cabozantinib | Cabozantinib | Capecitabine | Carboplatin |
| Carfilzomib | Carmustine | Ceritinib | Cetuximab |
| Chlorambucil | Cisplatin | Cladribine | Clofarabine |
| Cobimetinib | Copanlisib | Crizotinib | Cyclophosphamide |
| Cytarabine | Dabrafenib | Dacarbazine | Dactinomycin |
| Daratumumab | Dasatinib | Daunorubicin | Daunorubicin |
| Daunorubicin and cytarabine | Daunorubicin, liposomal | Decitabine | Degarelix |
| Denileukin diftitox | Dinutuximab | Docetaxel | Doxorubicin |
| Doxorubicin | Doxorubicin, liposomal | Durvalumab | Elotuzumab |
| Enasidenib | Enzalutamide | Epirubicin | Epirubicin |
| Equine thymocyte immune globulin | Eribulin | Erlotinib | Estramustine |
| Etoposide | Everolimus | Exemestane | Floxuridine |
| Fludarabine | Fluorouracil | Flutamide | Fulvestrant |
| Gefitinib | Gemcitabine | Gemcitabine | Gemtuzumab ozogamicin |
| Goserelin | Histrelin | Histrelin | Hydroxyurea cap 500 mg |
| Ibritumomab tiuxetan | Ibrutinib | Idarubicin | Idelalisib |
| Ifosfamide | Imatinib | Inotuzumab ozogamicin | Interferon, gamma 1-b |
| Ipilimumab | Irinotecan | Irinotecan | Ironotecan |
| Ixabepilone | Ixazomib | Lanreotide | Lapatinib |
| Lenalidomide | Lenvatinib | Letrozole | Letrozole |
| Letrozole and ribociclib | Leuprolide | Leuprolide | Leuprolide and norethindrone |
| Lomustine | Lutetium Lu 177 dotatate | Mechlorethamine | Melphalan |
| Mercaptopurine susp 2000 mg/100ml (20 mg/ml) | Mercaptopurine tab 50 mg | Methotrexate sodium for inj 1 gm | Methotrexate sodium inj 25 mg/ml |
| Methotrexate sodium inj pf 25 mg/ml | Methotrexate sodium tab 10 mg (base equiv) | Methotrexate sodium tab 15 mg (base equiv) | Methotrexate sodium tab 2.5 mg (base equiv) |
| Methotrexate sodium tab 5 mg (base equiv) | Methotrexate sodium tab 7.5 mg (base equiv) | Mitomycin | Mitotane |
| Mitoxantrone | Mitoxantrone | Necitumumab | Nelarabine |
| Neratinib | Nilotinib | Nilotinib | Nilutamide |
| Niraparib | Nivolumab | Obinutuzumab | Octreotide |
| Ofatumumab | Olaparib | Omacetaxine | Omacetaxine mepesuccinate for inj 3.5 mg |

| | | | |
|---|--|---|--|
| Osimertinib | Oxaliplatin | Paclitaxel | Palbociclib |
| Panitumumab | Panobinostat | Pazopanb | Pazopanb |
| Pegaspargase | Pembrolizumab | Pemetrexed | Pemetrexed |
| Pentostatin | Pertuzumab | Pomalidomide | Ponatinib |
| Ponatinib | Pralatrexate | Procarbazine | Ramucirumab |
| Regorafenib | Ribociclib | Rituximab | Rituximab and hyaluronidase Ruxolitinib phosphate tab 10 mg (base equivalent) |
| Romidepsin | Rucaparib Ruxolitinib phosphate tab 20 mg (base equivalent) | Ruxolitinib | |
| Ruxolitinib phosphate tab 15 mg (base equivalent) | | Ruxolitinib phosphate tab 25 mg (base equivalent) | Ruxolitinib phosphate tab 5 mg (base equivalent) |
| Siltuximab | Sipuleucel-t | Sonidegib | Sorafenib |
| Streptozocin | Sunitinib | Talimogene laherparepvec | Tamoxifen |
| Tamoxifen | Temozolomide | Temsirolimus | Teniposide |
| Thalidomide | Thioguanine | Thiotepa | Topotecan |
| Topotecan | Toremifene | Tositumomab | Trabectedin |
| Trametinib | Trastuzumab | Trifluridine/ tipiracil | Triptorelin |
| Triptorelin | Valrubicin | Vandetanib | Vemurafenib |
| Venetoclax | Vinblastine | Vincristine | Vinorelbine |
| Vismodegib | Vorinostat | Ziv-aflibercept | |

H4: ANTICANCER DRUG THERAPY ADMINISTRATION, HCPCS

| HCPCS | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 61517 | 96401 | 96402 | 96405 | 96406 | 96409 | 96410 | 96411 | 96413 |
| 96415 | 96416 | 96417 | 96420 | 96422 | 96423 | 96425 | 96440 | 96445 |
| 96446 | 96450 | 96542 | 96549 | G0498 | | | | |

H5: ANTICANCER DRUG THERAPY ADMINISTRATION, REVENUE CODES

| Revenue Codes | | |
|---------------|------|------|
| 0331 | 0332 | 0335 |

H6: ADJUVANT THERAPY, HCPCS

| HCPCS | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|
| J1190 | J9209 | J2783 | J0640 | J0207 | J2425 | J0641 | C9293 |

H7: PRESCRIPTION-ADMINISTERED ADJUVANT THERAPY DRUGS

| Generic Drug Names | | | |
|------------------------|--------------------|--------------------|----------------|
| Allopurinol | Allopurinol sodium | Aloprim | Amifostine |
| Calcium folinate | Dexrazoxane | Elitek | Ethylol |
| Fusilev | Kepivance | Leucovorin calcium | Levoleucovorin |
| Levoleucovorin calcium | Mesna | Mesnax | Totect |
| Voraxaze | Zinecard | Zyloprim | |

H8: PHYSICIAN-ADMINISTERED HEMATOPOIETIC AGENTS, HCPCS

| HCPCS | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J0880 | J0881 | J0885 | J0890 | J1440 | J1441 | J1442 | J1446 | J2355 |
| J2505 | J2796 | J2820 | J0888 | J1447 | Q5101 | Q9973 | Q2047 | |

H9: PRESCRIPTION-ADMINISTERED HEMATOPOIETIC AGENT DRUGS

| Generic Drug Names | | | |
|-----------------------|----------------------|--------------------------------|----------|
| Aranesp | Aranesp albumin free | Aranesp albumin free sureclick | Epogen |
| Granix | Leukine | Mircera | Neulasta |
| Neulasta delivery kit | Neumega | Neupogen | Nplate |
| Omontys | Procrit | Promacta | Zarxio |

H10: ANTIEMETICS, HCPCS

| HCPCS | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J0780 | J1094 | J1100 | J1200 | J1240 | J1260 | J1453 | J1626 | J2060 |
| J2250 | J2358 | J2405 | J2469 | J2550 | J2765 | J3230 | J3250 | J3310 |
| J3410 | J8498 | J8501 | J8540 | J8597 | J8650 | J8655 | Q0161 | Q0162 |
| Q0163 | Q0164 | Q0166 | Q0167 | Q0169 | Q0173 | Q0174 | Q0175 | Q0177 |
| Q0180 | Q0181 | Q9981 | S0091 | S0119 | S0174 | S0183 | S0166 | J2180 |
| J8670 | J1630 | J1631 | J0515 | | | | | |

H11: PRESCRIPTION-ADMINISTERED ANTIEMETIC DRUGS

| Generic Drug Names | | | |
|---------------------------|---------------------------|--|---|
| Active injection kit d | Af-diphedryl | Ahist | Akynzeo |
| Aler-cap | Aler-dryl | Alertab | Aler-tab |
| Alka-seltzer plus allergy | Allergy | Allergy childrens | Allergy med |
| Allergy medication | Allergy medication childr | Allergy rapid melts child | Allergy relief |
| Allergy relief childrens | Allergy relief nighttime | Allermax | Aloxi |
| Alprazolam | Alprazolam er | Alprazolam intensol | Alprazolam odt |
| Alprazolam xr | Altaryl | Ambizine | A-methapred |
| Anti-hist | Anti-hist allergy | Antivert | Anzemet |
| Aprepitant | Ativan | Banophen | Baycadron |
| Benadryl | Benadryl allergy | Benadryl allergy children | Benadryl allergy fastmelt |
| Benadryl allergy quick di | Benadryl dye-free allergy | Ben-tann | Benztropine mesylate |
| BI diphedryl allergy | Bonine | Bonine kids | Cesamet |
| Childrens allergy | Childrens complete allerg | Chlorpromazine hcl | Cinvanti |
| Cogentin | Compazine | Complete allergy | Complete allergy medicati |
| Complete allergy medicine | Complete allergy relief | Compoz | Compro |
| Cvs allergy | Cvs allergy childrens | Cvs allergy formula | Cvs allergy relief |
| Cvs allergy relief adult | Cvs allergy relief childr | Cvs allergy relief nightt | Cvs childrens allergy |
| Cvs dye-free allergy | Cvs motion sickness | Cvs motion sickness ii | Cvs motion sickness relie Cvs sleep aid maximum str |
| Cvs nighttime sleep aid | Cvs nighttime sleep aid m | Cvs sleep aid | Cvs sleep-aid nighttime |
| Cvs sleep aid nighttime | Cvs sleep aid nighttime/m | Cvs sleep aid nighttime/r | Cvs sleep-aid nighttime |
| Cyclivert | Depo-medrol | Dex combo | Dex la 16 Dexamethasone sodium phos |
| Dex la 8 | Dexamethasone | Dexamethasone intensol | Dex la 16 Dexamethasone sodium phos |
| Dexpak 10 day | Dexpak 13 day | Dexpak 6 day | Dicopanol fusepaq |
| Dicopanol rapidpaq | Dimenhydrinate | Diphedryl | Diphen |
| Diphen af | Diphendryl | Diphenhist Diphenhydramine hcl maxim | Diphenhydramine |
| Diphenhydramine cough | Diphenhydramine hcl | Diphenhist Diphenhydramine hcl maxim | Diphenmax |
| Dormin | Doubledex | Dramamine | Dramamine for kids |
| Dramamine less drowsy | Driminate | Dronabinol | Droperidol |
| Dytan | Dytuss | Eck diph-al | Eck diphedryl |
| Eck diphedryl allergy | Eck motion sickness | Eck night time sleep-aid | Emend |
| Eq allergy | Eq allergy relief | Eq allergy relief childre | Eq motion sickness Eq sleep aid maximum stre |
| Eq motion sickness relief | Eq nighttime sleep aid | Eq nighttime sleep aid ma | Eq motion sickness Eq sleep aid maximum stre |
| Eq sleep-aid nighttime | Eq allergy | Eq allergy relief | Eq allergy relief childr |
| Eq childrens allergy | Eq motion sickness relie | Eq nighttime sleep aid | Eq sleep aid maximum str |
| Eq sleep aid nighttime | Fp complete allergy | Genahist | Geri-dryl |
| Geri-dryl allergy relief | Gnp allergy | Gnp childrens allergy | Gnp motion sickness relie |
| Gnp nighttime sleep aid | Gnp sleep time | Goodsense allergy relief | Goodsense sleep aid |
| Goodsense sleeptime | Granisetron hcl | Granisol | Haldol |
| Haldol decanoate 100 | Haldol decanoate 50 | Haloperidol | Haloperidol decanoate |
| Haloperidol lactate | Hm allergy | Hm allergy childrens | Hm allergy relief |
| Hm allergy relief childre | Hm allgery multi symptom | Hm motion relief | Hm motion sickness |
| Hm motion sickness relief | Hm nighttime sleep aid | Hm z-sleep | Hydramine |
| Hydroxyzine hcl | Hydroxyzine pamoate | Inapsine | Kls allergy medicine |

| | | | |
|---------------------------|---------------------------|---|--|
| Kp diphenhydramine hcl | Kytril | Locort 11-day | Locort 7-day Lorazepam/sodium chloride |
| Lorazepam | Lorazepam intensol | Lorazepam/dextrose | |
| Marezine | Marinol | Mas care-pak | Meclizine 25 |
| Meclizine hcl | Meclizine hydrochloride | Medi-meclizine | Medi-phedryl |
| Medrol | Medrol dosepak | Meijer antihistamine alle | Methylprednisolone Methylprednisolone sodium |
| Methylprednisolone acetat | Methylprednisolone dose p | Methylprednisolone pf | |
| Metoclopramide hcl | Metoclopramide odt | Metozolv odt | Midazolam hcl Midazolam/syrspend sf ph4 |
| Midazolam hcl/nacl | Midazolam hydrochloride | Midazolam hydrochloride/s | |
| Motion sickness | Motion sickness relief | Motion sickness relief ii | Motion-time |
| Mp aller med | Mp complete allergy | Mp sleep | Mp sleep formula |
| Mp travel aid | Multi-symptom allergy | Naramin | Nervine |
| Night time sleep aid | Nighttime sleep | Nighttime sleep aid | Nighttime sleep-aid |
| Niravam | Nytol | Nytol maximum strength | Nyt-time sleep caps |
| Olanzapine | Olanzapine odt | Ondansetron hcl | Ondansetron hcl/dextrose |
| Ondansetron hydrochloride | Ondansetron odt | Ormir | P-care d40 |
| P-care d80 | Pediicare childrens aller | Pediicare childrens night | Perphenazine |
| Pharbedryl | Phenadoz | Phenergan | Prochlorperazine |
| Prochlorperazine edisylat | Prochlorperazine maleate | Promethazine hcl | Promethazine hcl plain |
| Promethazine hydrochlorid | Promethegan | Px allergy Qc sleep aid maximum stre | Qc allergy relief intense |
| Qc complete allergy medic | Qc rest simply | | Q-dryl |
| Qlearquil nighttime alle | Quenalin | Ra allergy | Ra allergy medication |
| Ra allergy medication chi | Ra allergy relief | Ra allergy relief childre | Ra complete allergy |
| Ra complete allergy medic | Ra diphedryl allergy | Ra motion sickness relief | Ra nighttime sleep aid Readysharp dexamethasone |
| Ra sleep aid | Ra sleep aid maximum stre | Ra sleep-aid nighttime | |
| Readysharp methylpredniso | Reglan | Rest simply | Restfully sleep |
| Sancuso | Sb allergy | Sb allergy medicine | Sb motion sickness |
| Sb sleep | Scopolamine | Scot-tussin allergy relie | Sg diphedryl antihistamin |
| Sg diphedryl child | Siladryl allergy | Silphen cough | Simply allergy |
| Simply sleep | Sleep aid | Sleep aid liquid gels max Sleep-aid maximum strengt | Sleep ii |
| Sleep tablets | Sleep tabs | | Sleeping tablets |
| Sleep-tabs | Sm allergy relief | Sm allergy relief childre Sm sleep aid maximum stre | Sm motion sickness |
| Sm motion sickness relief | Sm nighttime sleep aid | | Sm sleep aid night time Sominex maximum strength |
| Sm z-sleep | Solu-medrol | Sominex | |
| Sustol | Syndros | Tebamide | Tebamide pediatric |
| Tetra-formula nighttime s | Tgt allergy medication ch | Tgt allergy melts childre | Tgt allergy relief |
| Tgt allergy relief childr | Tgt nighttime sleep aid | Tgt sleep aid maximum str | Th allergy relief |
| Th childrens allergy | Th motion relief | Th rest simply | Th sleep aid |
| Th sleep aid maximum stre | Theraflu multi symptom | Tigan | Total allergy |
| Total allergy medicine | Transderm-scop | Travel motion sickness | Travel sickness |
| Travel-ease | Travel-eze | Trav-tabs | Triaminic childrens aller |
| Triaminic cough & runny n | Trimethobenzamide hcl | Triptone | Twilite |
| Unisom sleepgels | Unisom sleepmelts | Univert | Vanamine pd |
| Varubi | Vertin-32 | Vistaril | Wal-dram |
| Wal-dram ii | Wal-dryl allergy | Wal-dryl allergy children | Wal-dryl allergy relief c Wal-som maximum strength |
| Wal-sleep z | Wal-sleep z liquid shots | Wal-som | |

| | | | |
|----------------|------------------|-----------------|-----------------|
| Xanax | Xanax xr | Zema-pak 10 day | Zema-pak 13 day |
| Zema-pak 6 day | Zodex 12-day | Zodex 6-day | Zofran |
| Zofran odt | Zonacort 11 day | Zonacort 7 day | Zuplenz |
| Zyprexa | Zyprexa relprevv | Zyprexa zydis | Zzzquil |

H12: RADIATION ONCOLOGY, HCPCS

| HCPCS | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 31643 | 61796 | 61797 | 61798 | 61799 | 63620 | 63621 | 77371 | 77372 |
| 77373 | 77385 | 77386 | 77387 | 77401 | 77402 | 77403 | 77404 | 77406 |
| 77407 | 77408 | 77409 | 77411 | 77412 | 77413 | 77414 | 77416 | 77418 |
| 77422 | 77423 | 77520 | 77522 | 77523 | 77525 | 77750 | 77761 | 77762 |
| 77763 | 77767 | 77768 | 77770 | 77771 | 77772 | 77785 | 77786 | 77787 |
| 77789 | 77799 | 79101 | 79200 | 79403 | 79440 | 79445 | 0073T | 0182T |
| 0394T | 0395T | G0251 | G0339 | G0340 | G6003 | G6004 | G6005 | G6006 |
| G6007 | G6008 | G6009 | G6010 | G6011 | G6012 | G6013 | G6014 | G6015 |
| G6016 | | | | | | | | |

H13: RADIATION ONCOLOGY ICD-9 PROCEDURE CODES

| ICD-9 | | | | | | | | |
|-------|------|------|------|------|------|------|------|------|
| 1426 | 9220 | 9221 | 9222 | 9223 | 9224 | 9225 | 9226 | 9228 |
| 9229 | 9230 | 9231 | 9232 | 9233 | 9239 | | | |

H14: RADIATION ONCOLOGY ICD-10 PROCEDURE CODES

| ICD-10 | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 0YHN41Z | 3E0B304 | 3E0B704 | 3E0BX04 | 3E0C304 | 3E0C704 | 3E0CX04 | 3E0D304 | 3E0D704 |
| 3E0DX04 | 3E0E304 | 3E0E704 | 3E0E804 | 3E0F304 | 3E0F704 | 3E0F804 | 3E0G304 | 3E0G704 |
| 3E0G804 | 3E0H304 | 3E0H704 | 3E0H804 | 3E0J304 | 3E0J704 | 3E0J804 | 3E0K304 | 3E0K704 |
| 3E0K804 | 3E0L304 | 3E0L704 | 3E0M304 | 3E0M704 | 3E0N304 | 3E0N704 | 3E0N804 | 3E0P304 |
| 3E0P704 | 3E0P804 | 3E0Q304 | 3E0Q704 | 3E0R304 | 3E0S304 | 3E0U304 | 3E0Y304 | 3E0Y704 |
| CW70NZZ | CW70YZZ | CW73NZZ | CW73YZZ | CW7GGZZ | CW7GYZZ | CW7N8ZZ | CW7NGZZ | CW7NNZZ |
| CW7NPZZ | CW7NYZZ | CW7YYZZ | D0000ZZ | D0001ZZ | D0002ZZ | D0003ZZ | D0004ZZ | D0005ZZ |
| D0006ZZ | D0010ZZ | D0011ZZ | D0012ZZ | D0013ZZ | D0014ZZ | D0015ZZ | D0016ZZ | D0060ZZ |
| D0061ZZ | D0062ZZ | D0063ZZ | D0064ZZ | D0065ZZ | D0066ZZ | D0070ZZ | D0071ZZ | D0072ZZ |
| D0073ZZ | D0074ZZ | D0075ZZ | D0076ZZ | D01097Z | D01098Z | D01099Z | D0109BZ | D0109CZ |
| D0109YZ | D01197Z | D01198Z | D01199Z | D0119BZ | D0119CZ | D0119YZ | D01697Z | D01698Z |
| D01699Z | D0169BZ | D0169CZ | D0169YZ | D01797Z | D01798Z | D01799Z | D0179BZ | D0179CZ |
| D0179YZ | D020DZZ | D020HZZ | D020JZZ | D021DZZ | D021HZZ | D021JZZ | D026DZZ | D026HZZ |
| D026JZZ | D027DZZ | D027HZZ | D027JZZ | D0Y07ZZ | D0Y17ZZ | D0Y67ZZ | D0Y77ZZ | D7000ZZ |
| D7001ZZ | D7002ZZ | D7003ZZ | D7004ZZ | D7005ZZ | D7006ZZ | D7010ZZ | D7011ZZ | D7012ZZ |
| D7013ZZ | D7014ZZ | D7015ZZ | D7016ZZ | D7020ZZ | D7021ZZ | D7022ZZ | D7023ZZ | D7024ZZ |
| D7025ZZ | D7026ZZ | D7030ZZ | D7031ZZ | D7032ZZ | D7033ZZ | D7034ZZ | D7035ZZ | D7036ZZ |
| D7040ZZ | D7041ZZ | D7042ZZ | D7043ZZ | D7044ZZ | D7045ZZ | D7046ZZ | D7050ZZ | D7051ZZ |
| D7052ZZ | D7053ZZ | D7054ZZ | D7055ZZ | D7056ZZ | D7060ZZ | D7061ZZ | D7062ZZ | D7063ZZ |
| D7064ZZ | D7065ZZ | D7066ZZ | D7070ZZ | D7071ZZ | D7072ZZ | D7073ZZ | D7074ZZ | D7075ZZ |
| D7076ZZ | D7080ZZ | D7081ZZ | D7082ZZ | D7083ZZ | D7084ZZ | D7085ZZ | D7086ZZ | D71097Z |
| D71098Z | D71099Z | D7109BZ | D7109CZ | D7109YZ | D71197Z | D71198Z | D71199Z | D7119BZ |
| D7119CZ | D7119YZ | D71297Z | D71298Z | D71299Z | D7129BZ | D7129CZ | D7129YZ | D71397Z |
| D71398Z | D71399Z | D7139BZ | D7139CZ | D7139YZ | D71497Z | D71498Z | D71499Z | D7149BZ |
| D7149CZ | D7149YZ | D71597Z | D71598Z | D71599Z | D7159BZ | D7159CZ | D7159YZ | D71697Z |
| D71698Z | D71699Z | D7169BZ | D7169CZ | D7169YZ | D71797Z | D71798Z | D71799Z | D7179BZ |
| D7179CZ | D7179YZ | D71897Z | D71898Z | D71899Z | D7189BZ | D7189CZ | D7189YZ | D720DZZ |
| D720HZZ | D720JZZ | D721DZZ | D721HZZ | D721JZZ | D722DZZ | D722HZZ | D722JZZ | D723DZZ |
| D723HZZ | D723JZZ | D724DZZ | D724HZZ | D724JZZ | D725DZZ | D725HZZ | D725JZZ | D726DZZ |
| D726HZZ | D726JZZ | D727DZZ | D727HZZ | D727JZZ | D728DZZ | D728HZZ | D728JZZ | D8000ZZ |
| D8001ZZ | D8002ZZ | D8003ZZ | D8004ZZ | D8005ZZ | D8006ZZ | D81097Z | D81098Z | D81099Z |
| D8109BZ | D8109CZ | D8109YZ | D820DZZ | D820HZZ | D820JZZ | D8Y07ZZ | D9000ZZ | D9001ZZ |
| D9002ZZ | D9003ZZ | D9004ZZ | D9005ZZ | D9006ZZ | D9010ZZ | D9011ZZ | D9012ZZ | D9013ZZ |
| D9014ZZ | D9015ZZ | D9016ZZ | D9030ZZ | D9031ZZ | D9032ZZ | D9033ZZ | D9034ZZ | D9035ZZ |
| D9036ZZ | D9040ZZ | D9041ZZ | D9042ZZ | D9043ZZ | D9044ZZ | D9045ZZ | D9046ZZ | D9050ZZ |
| D9051ZZ | D9052ZZ | D9053ZZ | D9054ZZ | D9055ZZ | D9056ZZ | D9060ZZ | D9061ZZ | D9062ZZ |
| D9063ZZ | D9064ZZ | D9065ZZ | D9066ZZ | D9070ZZ | D9071ZZ | D9072ZZ | D9073ZZ | D9074ZZ |
| D9075ZZ | D9076ZZ | D9080ZZ | D9081ZZ | D9082ZZ | D9083ZZ | D9084ZZ | D9085ZZ | D9086ZZ |
| D9090ZZ | D9091ZZ | D9092ZZ | D9093ZZ | D9094ZZ | D9095ZZ | D9096ZZ | D90B0ZZ | D90B1ZZ |
| D90B2ZZ | D90B3ZZ | D90B4ZZ | D90B5ZZ | D90B6ZZ | D90D0ZZ | D90D1ZZ | D90D2ZZ | D90D3ZZ |
| D90D4ZZ | D90D5ZZ | D90D6ZZ | D90F0ZZ | D90F1ZZ | D90F2ZZ | D90F3ZZ | D90F4ZZ | D90F5ZZ |
| D90F6ZZ | D91097Z | D91098Z | D91099Z | D9109BZ | D9109CZ | D9109YZ | D91197Z | D91198Z |
| D91199Z | D9119BZ | D9119CZ | D9119YZ | D91397Z | D91398Z | D91399Z | D9139BZ | D9139CZ |
| D9139YZ | D91497Z | D91498Z | D91499Z | D9149BZ | D9149CZ | D9149YZ | D91597Z | D91598Z |
| D91599Z | D9159BZ | D9159CZ | D9159YZ | D91697Z | D91698Z | D91699Z | D9169BZ | D9169CZ |

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| D9169YZ | D91797Z | D91798Z | D91799Z | D9179BZ | D9179CZ | D9179YZ | D91897Z | D91898Z |
| D91899Z | D9189BZ | D9189CZ | D9189YZ | D91997Z | D91998Z | D91999Z | D9199BZ | D9199CZ |
| D9199YZ | D91B97Z | D91B98Z | D91B99Z | D91B9BZ | D91B9CZ | D91B9YZ | D91D97Z | D91D98Z |
| D91D99Z | D91D9BZ | D91D9CZ | D91D9YZ | D91F97Z | D91F98Z | D91F99Z | D91F9BZ | D91F9CZ |
| D91F9YZ | D920DZZ | D920HZZ | D920JZZ | D921DZZ | D921HZZ | D921JZZ | D924DZZ | D924HZZ |
| D924JZZ | D925DZZ | D925HZZ | D925JZZ | D926DZZ | D926HZZ | D926JZZ | D927DZZ | D927HZZ |
| D927JZZ | D928DZZ | D928HZZ | D928JZZ | D929DZZ | D929HZZ | D929JZZ | D92BDZZ | D92BHZZ |
| D92BJZZ | D92CDZZ | D92CHZZ | D92CJZZ | D92DDZZ | D92DHZZ | D92DJZZ | D9Y07ZZ | D9Y17ZZ |
| D9Y37ZZ | D9Y47ZZ | D9Y57ZZ | D9Y67ZZ | D9Y77ZZ | D9Y87ZZ | D9Y97ZZ | D9YB7ZZ | D9YD7ZZ |
| D9YF7ZZ | DB000ZZ | DB001ZZ | DB002ZZ | DB003ZZ | DB004ZZ | DB005ZZ | DB006ZZ | DB010ZZ |
| DB011ZZ | DB012ZZ | DB013ZZ | DB014ZZ | DB015ZZ | DB016ZZ | DB020ZZ | DB021ZZ | DB022ZZ |
| DB023ZZ | DB024ZZ | DB025ZZ | DB026ZZ | DB050ZZ | DB051ZZ | DB052ZZ | DB053ZZ | DB054ZZ |
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| DB082ZZ | DB083ZZ | DB084ZZ | DB085ZZ | DB086ZZ | DB1097Z | DB1098Z | DB1099Z | DB109BZ |
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| DB1298Z | DB1299Z | DB129BZ | DB129CZ | DB129YZ | DB1597Z | DB1598Z | DB1599Z | DB159BZ |
| DB159CZ | DB159YZ | DB1697Z | DB1698Z | DB1699Z | DB169BZ | DB169CZ | DB169YZ | DB1797Z |
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| DB189CZ | DB189YZ | DB20DZZ | DB20HZZ | DB20JZZ | DB21DZZ | DB21HZZ | DB21JZZ | DB22DZZ |
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| DB27HZZ | DB27JZZ | DB28DZZ | DB28HZZ | DB28JZZ | DBY07ZZ | DBY17ZZ | DBY27ZZ | DBY57ZZ |
| DBY67ZZ | DBY77ZZ | DBY87ZZ | DD000ZZ | DD001ZZ | DD002ZZ | DD003ZZ | DD004ZZ | DD005ZZ |
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| DD021ZZ | DD022ZZ | DD023ZZ | DD024ZZ | DD025ZZ | DD026ZZ | DD030ZZ | DD031ZZ | DD032ZZ |
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| DD119YZ | DD1297Z | DD1298Z | DD1299Z | DD129BZ | DD129CZ | DD129YZ | DD1397Z | DD1398Z |
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| DD149YZ | DD1597Z | DD1598Z | DD1599Z | DD159BZ | DD159CZ | DD159YZ | DD1797Z | DD1798Z |
| DD1799Z | DD179BZ | DD179CZ | DD179YZ | DD20DZZ | DD20HZZ | DD20JZZ | DD21DZZ | DD21HZZ |
| DD21JZZ | DD22DZZ | DD22HZZ | DD22JZZ | DD23DZZ | DD23HZZ | DD23JZZ | DD24DZZ | DD24HZZ |
| DD24JZZ | DD25DZZ | DD25HZZ | DD25JZZ | DD27DZZ | DD27HZZ | DD27JZZ | DDY07ZZ | DDY17ZZ |
| DDY27ZZ | DDY37ZZ | DDY47ZZ | DDY57ZZ | DDY77ZZ | DF000ZZ | DF001ZZ | DF002ZZ | DF003ZZ |
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| DF109BZ | DF109CZ | DF109YZ | DF1197Z | DF1198Z | DF1199Z | DF119BZ | DF119CZ | DF119YZ |
| DF1297Z | DF1298Z | DF1299Z | DF129BZ | DF129CZ | DF129YZ | DF1397Z | DF1398Z | DF1399Z |
| DF139BZ | DF139CZ | DF139YZ | DF20DZZ | DF20HZZ | DF20JZZ | DF21DZZ | DF21HZZ | DF21JZZ |
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| DG026ZZ | DG040ZZ | DG041ZZ | DG042ZZ | DG043ZZ | DG045ZZ | DG046ZZ | DG050ZZ | DG051ZZ |
| DG052ZZ | DG053ZZ | DG055ZZ | DG056ZZ | DG1097Z | DG1098Z | DG1099Z | DG109BZ | DG109CZ |
| DG109YZ | DG1197Z | DG1198Z | DG1199Z | DG119BZ | DG119CZ | DG119YZ | DG1297Z | DG1298Z |

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| DG1299Z | DG129BZ | DG129CZ | DG129YZ | DG1497Z | DG1498Z | DG1499Z | DG149BZ | DG149CZ |
| DG149YZ | DG1597Z | DG1598Z | DG1599Z | DG159BZ | DG159CZ | DG159YZ | DG20DZZ | DG20HZZ |
| DG20JZZ | DG21DZZ | DG21HZZ | DG21JZZ | DG22DZZ | DG22HZZ | DG22JZZ | DG24DZZ | DG24HZZ |
| DG24JZZ | DG25DZZ | DG25HZZ | DG25JZZ | DGY07ZZ | DGY17ZZ | DGY27ZZ | DGY47ZZ | DGY57ZZ |
| DH020ZZ | DH021ZZ | DH022ZZ | DH023ZZ | DH024ZZ | DH025ZZ | DH026ZZ | DH030ZZ | DH031ZZ |
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| DH044ZZ | DH045ZZ | DH046ZZ | DH060ZZ | DH061ZZ | DH062ZZ | DH063ZZ | DH064ZZ | DH065ZZ |
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| DH081ZZ | DH082ZZ | DH083ZZ | DH084ZZ | DH085ZZ | DH086ZZ | DH090ZZ | DH091ZZ | DH092ZZ |
| DH093ZZ | DH094ZZ | DH095ZZ | DH096ZZ | DH0B0ZZ | DH0B1ZZ | DH0B2ZZ | DH0B3ZZ | DH0B4ZZ |
| DH0B5ZZ | DH0B6ZZ | DHY27ZZ | DHY37ZZ | DHY47ZZ | DHY67ZZ | DHY77ZZ | DHY87ZZ | DHY97ZZ |
| DHYB7ZZ | DM000ZZ | DM001ZZ | DM002ZZ | DM003ZZ | DM004ZZ | DM005ZZ | DM006ZZ | DM010ZZ |
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| DT1099Z | DT109BZ | DT109CZ | DT109YZ | DT1197Z | DT1198Z | DT1199Z | DT119BZ | DT119CZ |
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| DU109CZ | DU109YZ | DU1197Z | DU1198Z | DU1199Z | DU119BZ | DU119CZ | DU119YZ | DU1297Z |
| DU1298Z | DU1299Z | DU129BZ | DU129CZ | DU129YZ | DU20DZZ | DU20HZZ | DU20JZZ | DU21DZZ |
| DU21HZZ | DU21JZZ | DU22DZZ | DU22HZZ | DU22JZZ | DUY07ZZ | DUY17ZZ | DUY27ZZ | DV000ZZ |
| DV001ZZ | DV002ZZ | DV003ZZ | DV004ZZ | DV005ZZ | DV006ZZ | DV010ZZ | DV011ZZ | DV012ZZ |
| DV013ZZ | DV014ZZ | DV015ZZ | DV016ZZ | DV1097Z | DV1098Z | DV1099Z | DV109BZ | DV109CZ |
| DV109YZ | DV1197Z | DV1198Z | DV1199Z | DV119BZ | DV119CZ | DV119YZ | DV20DZZ | DV20HZZ |
| DV20JZZ | DV21DZZ | DV21HZZ | DV21JZZ | DVY07ZZ | DVY17ZZ | DW010ZZ | DW011ZZ | DW012ZZ |
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| DW064ZZ | DW065ZZ | DW066ZZ | DW1197Z | DW1198Z | DW1199Z | DW119BZ | DW119CZ | DW119YZ |
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| DW139BZ | DW139CZ | DW139YZ | DW1697Z | DW1698Z | DW1699Z | DW169BZ | DW169CZ | DW169YZ |
| DW21DZZ | DW21HZZ | DW21JZZ | DW22DZZ | DW22HZZ | DW22JZZ | DW23DZZ | DW23HZZ | DW23JZZ |
| DW26DZZ | DW26HZZ | DW26JZZ | DWY17ZZ | DWY27ZZ | DWY37ZZ | DWY47ZZ | DWY57ZZ | DWY5GDZ |
| DWY5GFZ | DWY5GGZ | DWY5GHZ | DWY5GYZ | DWY67ZZ | | | | |

H15: TRANSPLANT, HCPCS

HCPCS

| | |
|-------|-------|
| 38240 | 38241 |
|-------|-------|

H16: TRANSPLANT, MS-DRGS

MS DRGs Description

| | |
|-----|--|
| 014 | Allogeneic Bone Marrow Transplant |
| 015 | Autologous Bone Marrow Transplant |
| 016 | Autologous Bone Marrow Transplant w CC/MCC |
| 017 | Autologous Bone Marrow Transplant w/o CC/MCC |

H17: TRANSPLANT ICD-9 PROCEDURE CODES

ICD-9

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| 4100 | 4101 | 4102 | 4103 | 4104 | 4105 | 4106 | 4107 | 4108 |
| 4109 | | | | | | | | |

H18: TRANSPLANT ICD-10 PROCEDURE CODES

ICD-10

| | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 30230AZ | 30230G0 | 30230G1 | 30230G2 | 30230G3 | 30230G4 | 30230X0 | 30230X1 | 30230X2 |
| 30230X3 | 30230X4 | 30230Y0 | 30230Y1 | 30230Y2 | 30230Y3 | 30230Y4 | 30233AZ | 30233G0 |
| 30233G1 | 30233G2 | 30233G3 | 30233G4 | 30233X0 | 30233X1 | 30233X2 | 30233X3 | 30233X4 |
| 30233Y0 | 30233Y1 | 30233Y2 | 30233Y3 | 30233Y4 | 30240AZ | 30240G0 | 30240G1 | 30240G2 |
| 30240G3 | 30240G4 | 30240X0 | 30240X1 | 30240X2 | 30240X3 | 30240X4 | 30240Y0 | 30240Y1 |
| 30240Y2 | 30240Y3 | 30240Y4 | 30243AZ | 30243G0 | 30243G1 | 30243G2 | 30243G3 | 30243G4 |
| 30243X0 | 30243X1 | 30243X2 | 30243X3 | 30243X4 | 30243Y0 | 30243Y1 | 30243Y2 | 30243Y3 |
| 30243Y4 | 30250G0 | 30250G1 | 30250X0 | 30250X1 | 30250Y0 | 30250Y1 | 30253G0 | 30253G1 |
| 30253X0 | 30253X1 | 30253Y0 | 30253Y1 | 30260G0 | 30260G1 | 30260X0 | 30260X1 | 30260Y0 |
| 30260Y1 | 30263G0 | 30263G1 | 30263X0 | 30263X1 | 30263Y0 | 30263Y1 | | |

H19: TRANSFUSION, HCPCS

HCPCS

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| 36430 |
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H20: TRANSFUSION, REVENUE CODES

Revenue Codes

| | | | | | | | | |
|------|------|------|------|------|------|------|------|------|
| 0380 | 0381 | 0382 | 0383 | 0384 | 0385 | 0386 | 0387 | 0389 |
| 0390 | 0391 | 0392 | 0399 | | | | | |

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