

Cost of Leukopenia and Neutropenia in Metastatic Breast Cancer Within Last 12, 36, and 60 Months Using a Curated Disease Model

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ABSTRACT

OBJECTIVE: Evaluating changes to historical treatment costs is critical for healthcare professionals to make informed business decisions. However, real-world clinical and cost outcome data are challenging to use regularly without significant data science knowledge or resources. We sought to demonstrate the potential value of a user-friendly analytics tool to identify drivers of costs and outcomes.

METHODS: The IBM® Access and Value Connect solution was used to analyze a patient cohort of metastatic breast cancer (mBC) patients treated in the most recent 12, 36, and 60 months in the IBM MarketScan® Commercial and Medicare Supplemental Database. We used the interactive visual explorer tool to quickly (<15 minutes) determine the mean total per-patient-per-month (PPPM) cost associated with mBC overall and for select side effects by age group (45-54, 55-64, 65-74, and 75+) and generated histograms for mean total PPPM overall and for leukopenia and neutropenia by age group for each study period.

RESULTS: The mean total PPPM across all mBC patients ranged from \$6,562 for the 75+ age group at 60 months to \$14,201 for the 45-54 age group at 12 months. For those who experienced leukopenia, the mean total PPPM ranged from \$10,319 for the 75+ age group at 60 months to \$19,598 for the 45-54 age group at 60 months. Similarly, for those who experienced neutropenia the mean total PPPM ranged from \$10,593 for the 65-74 age group at 60 months to \$21,784 for the 45-54 age group at 12 months.

DISCUSSION: Our methods show that it is possible to make PPPM costs easily available without data science, clinical, or programming knowledge with interactive, visual analytics. Our results showed that in general PPPM costs are higher for younger patients overall and among those who experience leukopenia or neutropenia. This is likely due to the practice to aggressively treat younger patients.

OBJECTIVES

1. Determine PPPM costs for mBC side effects overall and for select side effects
2. Determine PPPM costs for mBC side effects by age group
3. Determine PPPM costs for mBC for most recent 12 months and 60 months
4. Generate visualizations for cost comparisons

COHORT

Identification

Inclusion criteria for disease module cohort:

- Breast cancer related treatment
- Minimum 90 days of treatment
- At least 2 claims indicating diagnosis of breast cancer
- At least 1 claim for secondary malignancy
- Continuous enrollment before treatment of 12 months
- Continuous enrollment after treatment of 3 months for 12-month view and 6 months for 36- and 60-month views

Exclusions included: Pregnancy, Other cancer diagnosis

Population

AGE GROUP	12 MONTHS (N %)	60 MONTHS (N %)
18-34	35 (1%)	116 (1%)
35-44	302 (9%)	833 (9%)
45-54	748 (23%)	2224 (23%)
55-64	1249 (38%)	3578 (37%)
65-74	528 (16%)	1610 (17%)
75+	392 (12%)	1282 (13%)
TOTAL	3,254	9,643

Configurations

Treatment and Clinical Characteristics can be modified. Filter to select the subpopulation of interest. Change the Y-axis values to assess Total Mean PPPM, Itemized Mean PPPM, Unique Patient Count, as well as others. Choose the specific treatment of interest to see outcomes and costs are associated.

Personal Characteristics

- Age group
- Gender
- Region
- Urbanicity
- Plan type

Clinical Characteristics

- CCI
- Comorbidity
- Prior treatment
- Disease severity
- Incident diagnosis

Line of Therapies

- Line of Therapy

Filters

X-Axis: Treatments

Utilization Outcomes

- All-cause healthcare utilization
- Disease-specific healthcare utilization
- All-cause inpatient admission
- All-cause ER visits
- Disease-specific inpatient admission
- Disease-specific ER visits

Clinical Outcomes

- Side effects

RESULTS

Figure 1. PPPM Cost for All Outcomes at 12 Months

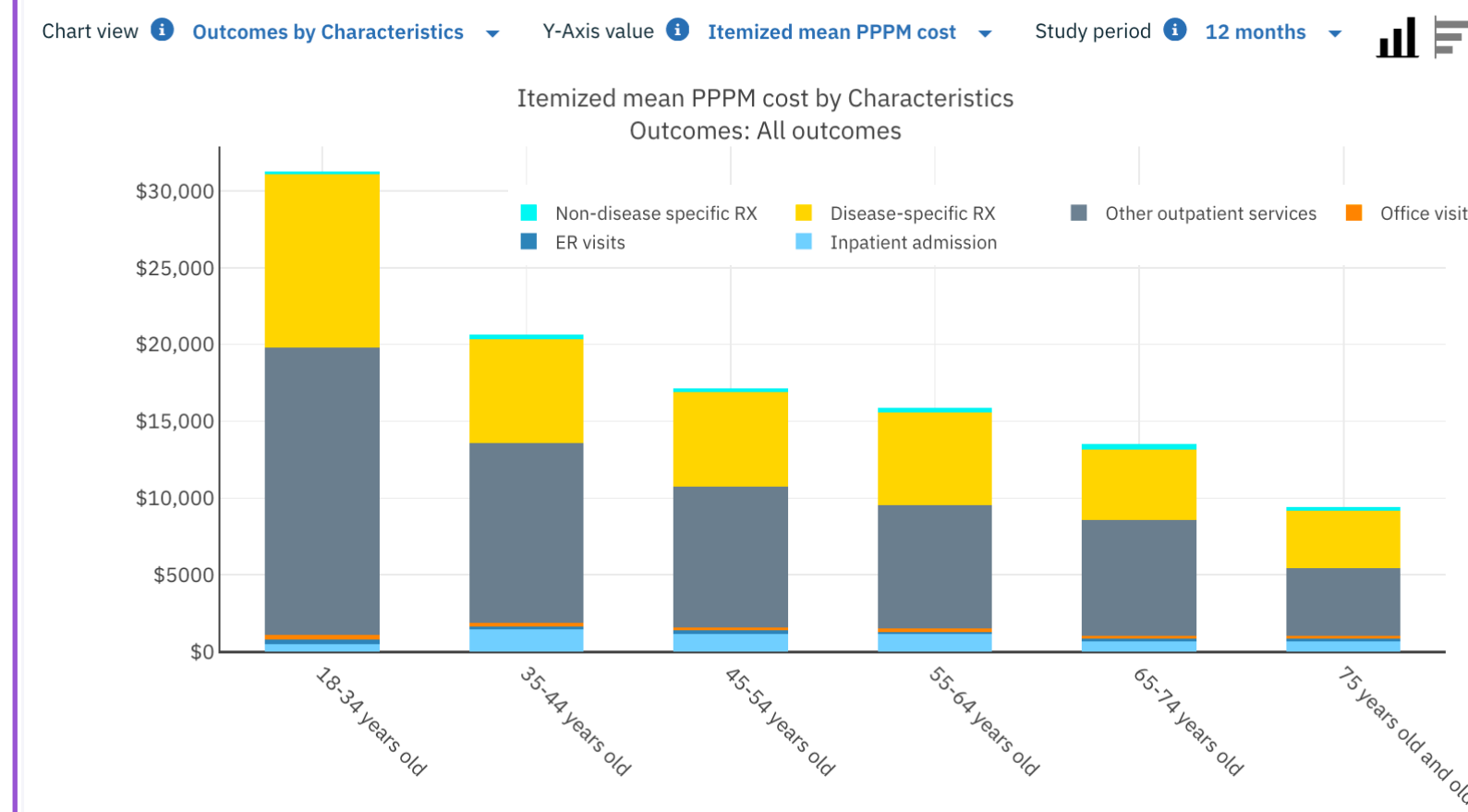


Figure 2. PPPM Cost for All Outcomes at 60 Months

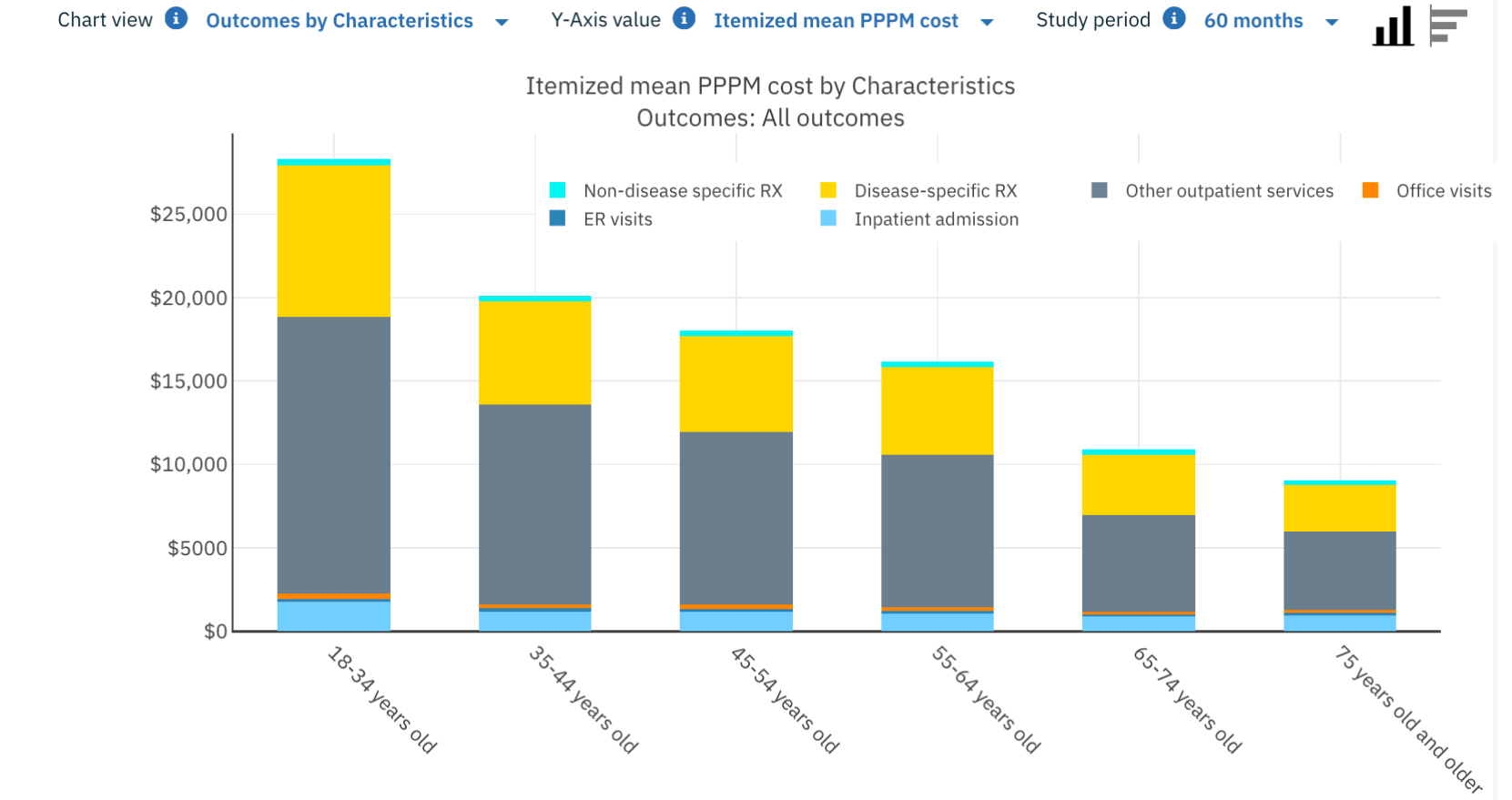


Figure 3. PPPM Cost for Neutropenia and Leukopenia at 12 Months

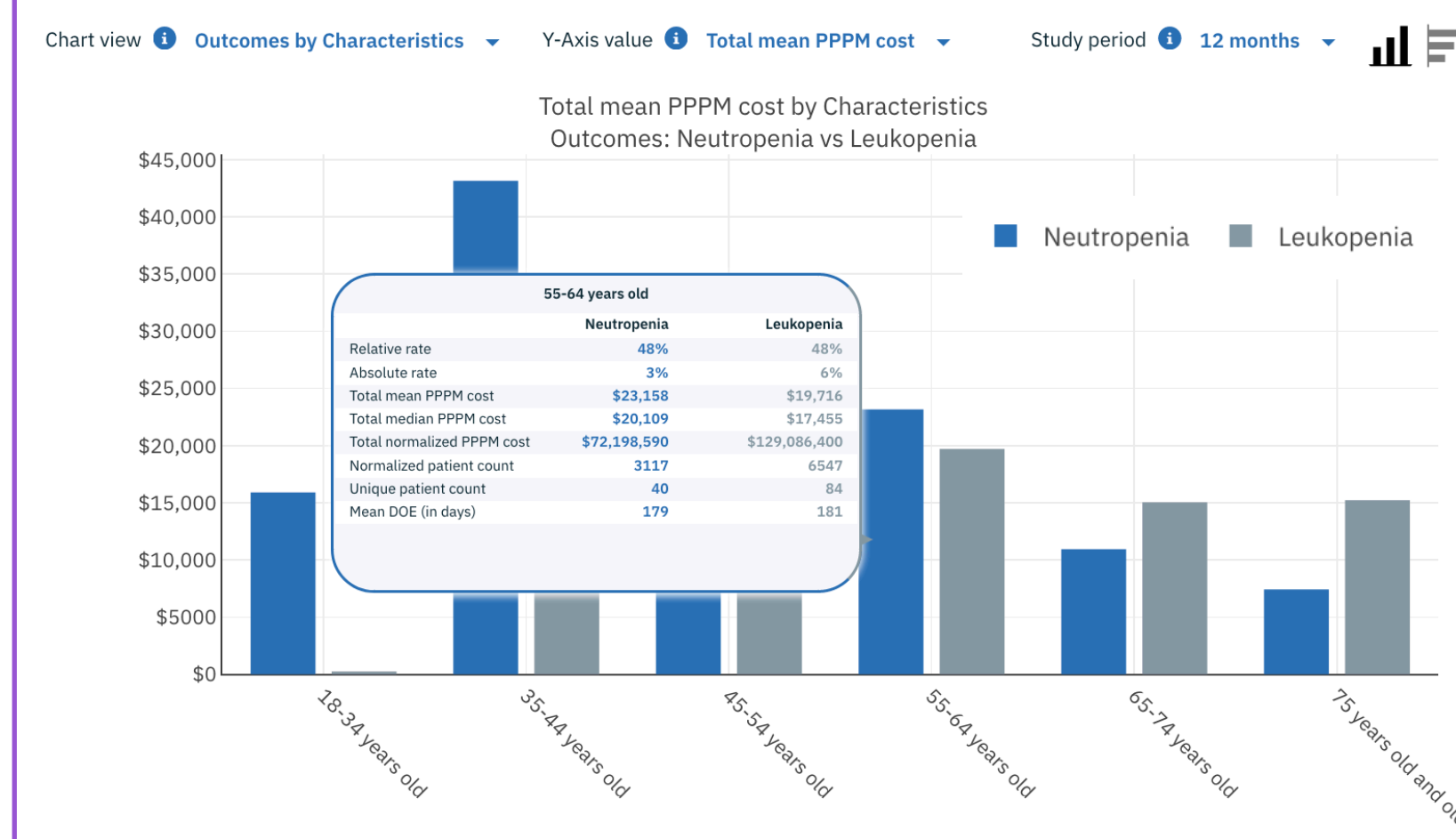
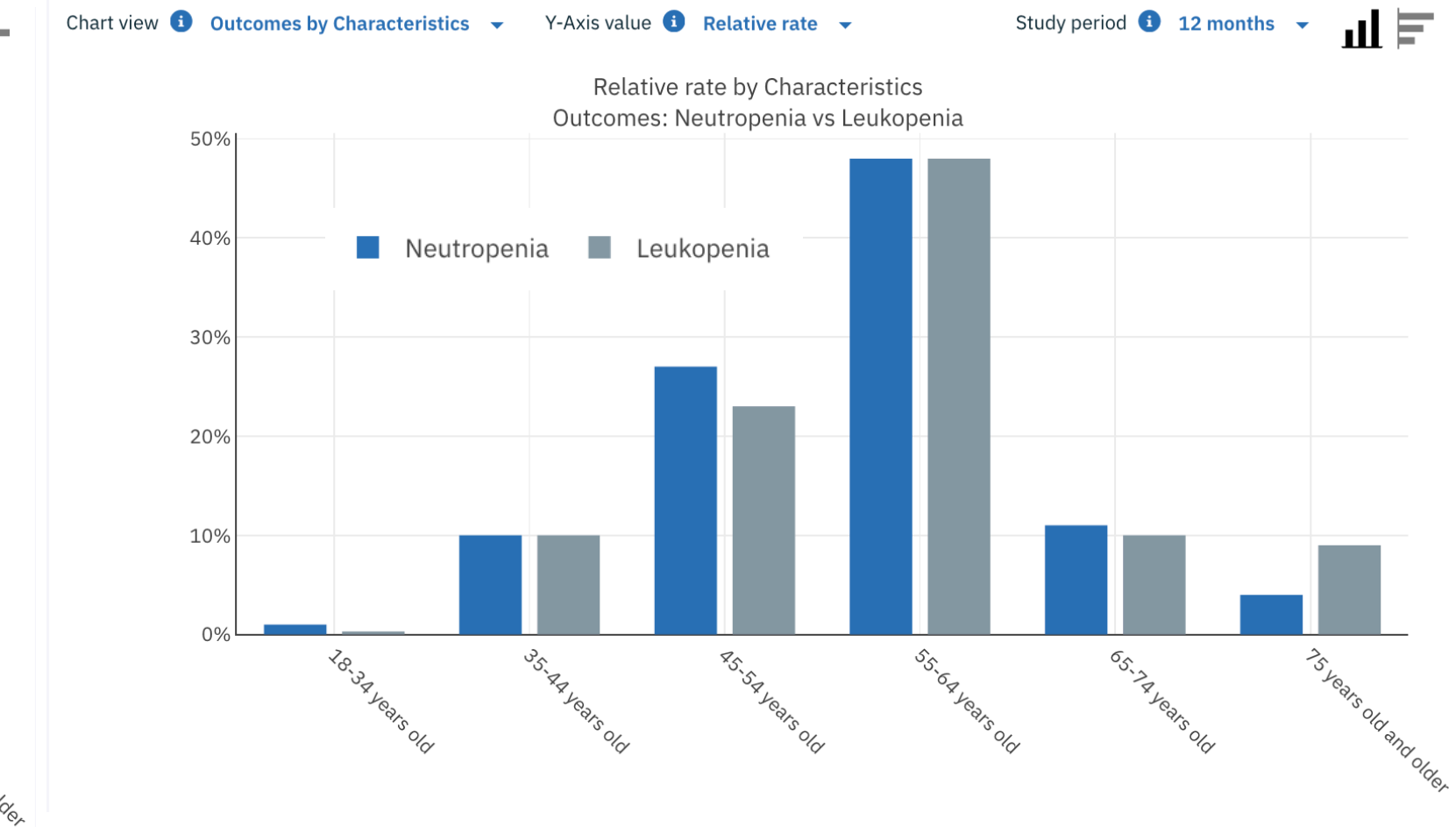


Figure 4. Relative rate for Neutropenia and Leukopenia at 12 Months



CONCLUSIONS

The tool proved to be business professional-friendly, with no programming needed; accessible across business units. Immediate insights were obtained from curated disease models as the tool is cloud-based with data and analytics packaged together. The tool's flexibility was demonstrated by an interactive, filtering and outcome/treatment selection, and views by disease or therapeutic area.

CONTACTS

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