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3-28-2017

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Evaluating Value-Based Frameworks Used for Relapsed and Refractory Multiple Myeloma Regimens: ASCO value framework, ICER Report and NCCN Evidence Blocks

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Background

- Approximately 11.5 % of the US total drug costs are derived from oncology treatments, amounting nearly $38 billion in 2015. Experts suggest annual costs for oncology care will continue to rise between 7.5 to 10.5 % each year through 2020, accounting for over $140 billion in the U.S. alone. [1]
- With the continuous rise in costs for oncology drugs, the Institute for Clinical and Economic Review (ICER), the American Society of Clinical Oncology (ASCO) and the National Comprehensive Cancer Network (NCCN) have developed value-based frameworks (VBFs) to assist stakeholders in formulary and treatment decision-making. [2]
- While emerging VBFs have the potential to significantly impact therapeutic options for patients, it is important to understand the differences associated with those VBFs within a therapeutic area.
- Despite the proliferation of recent literature assessing , validity, reliability, and practicality of VBFs, few studies have critically evaluated all available models for oncology regimens and their potential impact on real world decision making. [3,4] There is no study to date that has compared the value of cancer regimens for a specific disease state across all oncology VBFs available in the US.

Objective

- To compare ASCO, ICER and NCCN VBFs across three therapeutic options for relapsed or refractory multiple myeloma (RRMM)

Methods

Overview of the study
- A literature reviewed was performed and three VBFs were utilized to assess the value of oncology drugs in the US: the American Society of Clinical Oncology (ASCO) VBF, the National Comprehensive Cancer Network (NCCN) Evidence Blocks and the Institute for Clinical and Economic Review (ICER)
- The four authors used each VBF to determine the RRMM treatment of greatest value by performing a test case analysis for each VBF

The test case: multiple myeloma drugs
Four inclusion criteria for the selection of oncology drugs
  (1) Recently approved by the FDA
  (2) Available results of a phase III clinical trial
  (3) Same standard of care as the comparator in clinical trials
  (4) Availability of reports for NCCN and ICER , and the availability of data to plug in the ASCO framework
- Based on those inclusion criteria, Carfilzomib (CFZ), Elotuzumab (ELO), Ixazomib (IX) in combination with Lenalidomide + dexamthasone (LEN +DEX) were chosen

Oncology value frameworks and usability in the test case

ASCO	The authors used the updated 2016 ASCO VBF to generate the value of CFZ, ELO and IX • Net health benefit (NHB): clinical benefit , toxicity and bonus points were calculated using phase III clinical trial of each regimen • Cost: wholesale acquisition cost (WAC) obtained from Medi-Span Price Rx and Redbook pricing references. Cost of each regimen was calculated using a standard weight-based dosing of 70kg, height of 170 cm
NCCN National Comprehensive Cancer Network	Published 2016 Multiple Myeloma NCCN evidence blocks report • 5 blocks: efficacy, safety, quality, consistency, and affordability • Score ranging from 1 to 5: 1 as the least favorable and 5 as the most favorable
ICER INSTITUTE FOR CLINICAL AND ECONOMIC REVIEW	Published ICER 2016 report of treatment options for RRMM • Comparative clinical effectiveness results • Cost-effectiveness analysis results (cost/ QALYS) for second and third line regimens • Budget Impact analysis results (cost) for second and third line regimens

Results

NCCN Evidence Blocks

Figure 1. NCCN Evidence Blocks report of each regimen
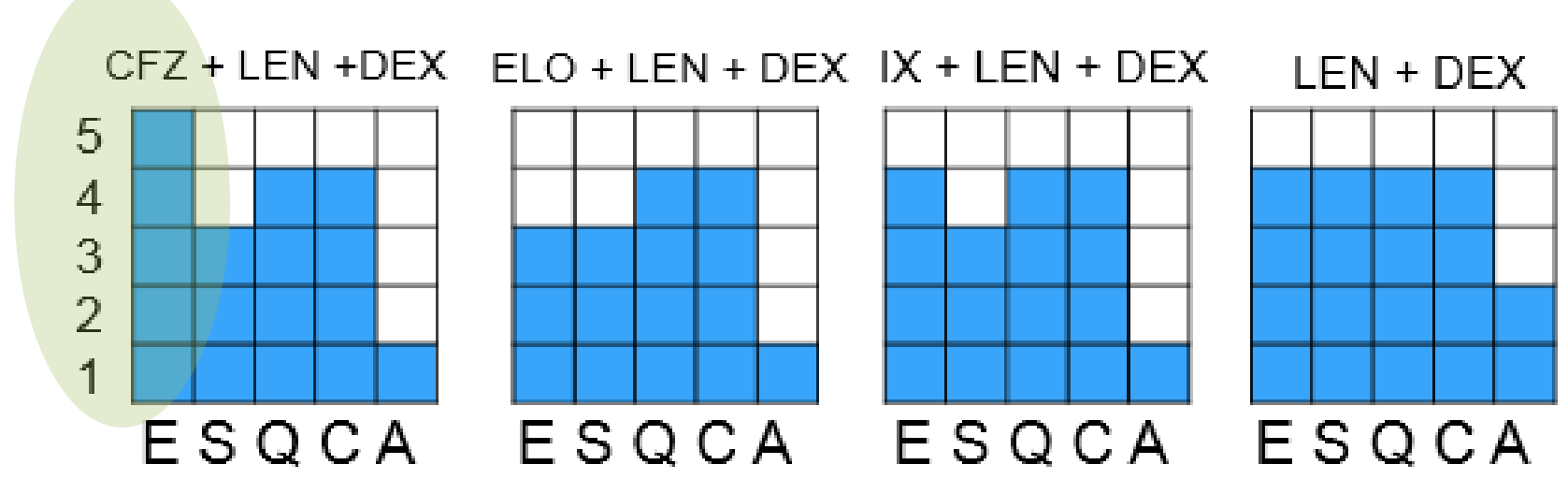
E= Efficacy of regimen/agent; S= Safety of regimen/agent; Q= Quality of evidence;
C= Consistency of evidence; A= Affordability of regimen/agent

Results

ASCO VBF

Figure 2a. Net health benefit of each RRMM regimens
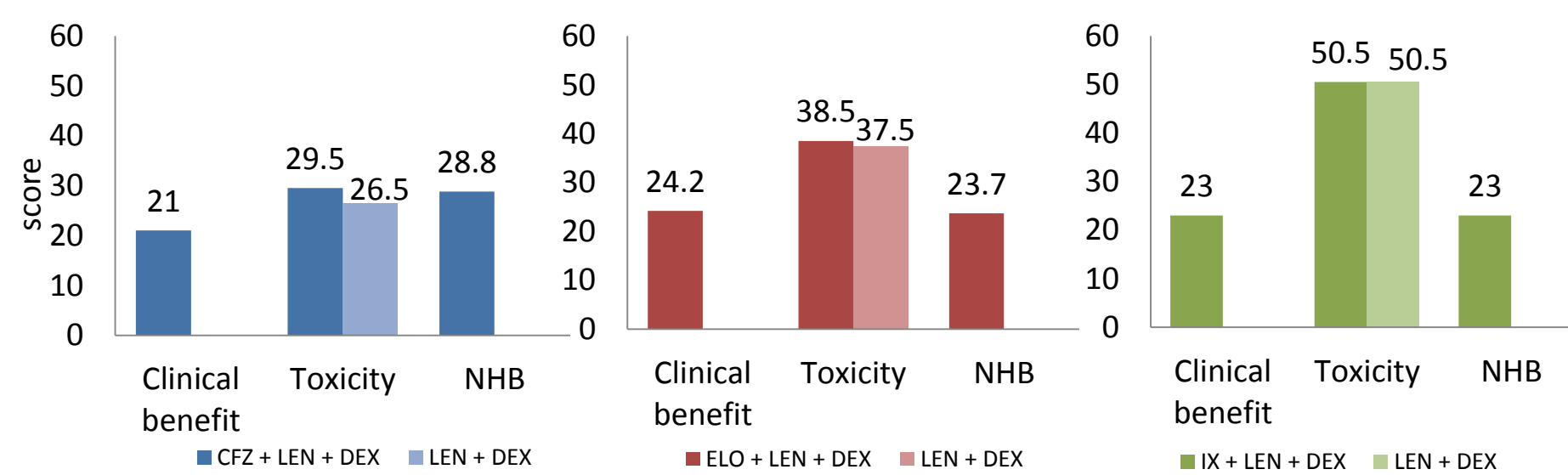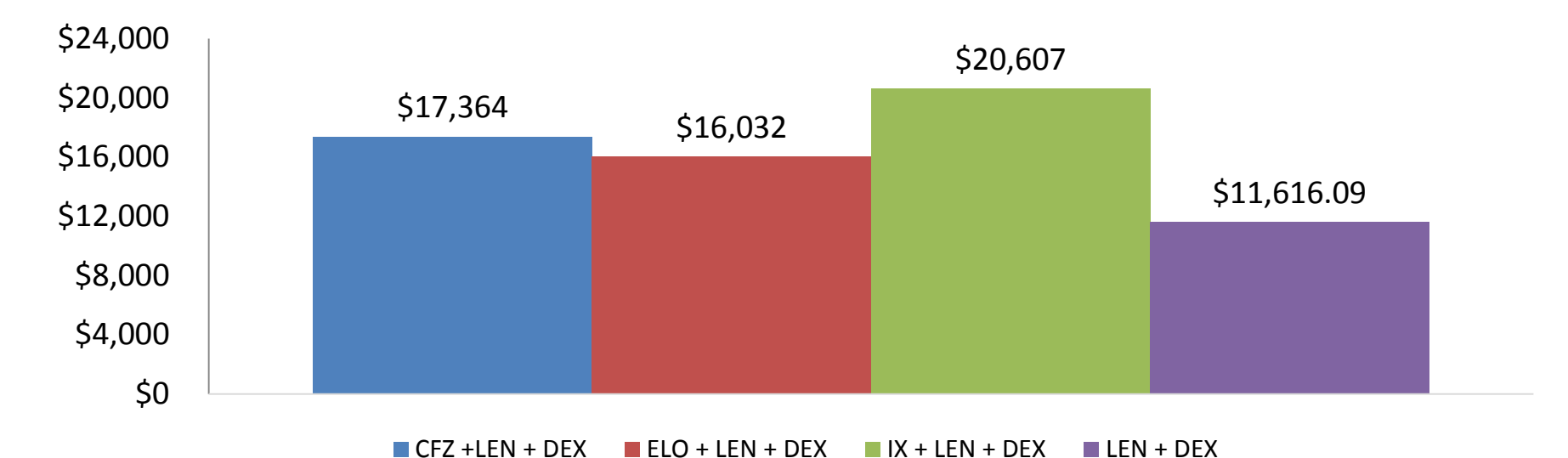

Figure 2b. Cost associated with each RRMM regimen


ICER Report

Comparative clinical effectiveness: all regimens received an equal rating of B+

Table 1. Cost effectiveness analysis results (costs per QALYs)

Drug	Second line	Discount from list price
CFZ + LEN + DEX	$199,982	32%-64%
ELO + LEN + DEX	$427,607	75%-89%
IX + LEN +DEX	$433,794	80%-94%

Drug	Third line	Discount from list price
CFZ + LEN + DEX	$238,560	48%-77%
ELO + LEN + DEX	$481,244	80%-93%
IX + LEN +DEX	$484,582	85%-97%

Figure 3. Budget Impact Analysis Results (Average costs/year, millions)
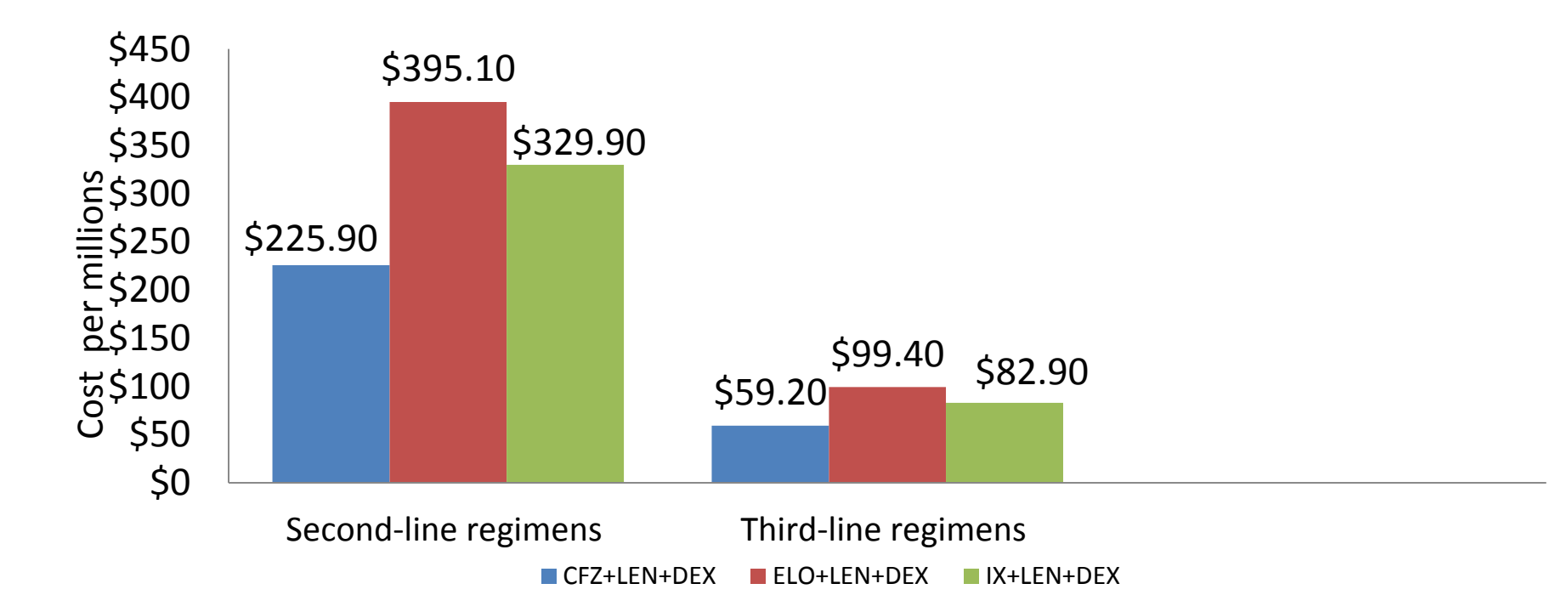
Overall results
- ICER, ASCO and NCCN VBFs suggest CFZ, in combination with LEN + DEX may be the most valued treatment out of the three regimens

Discussion

- Previous research demonstrated that while these VBF capture important value to diverse audience, they lack consistency and are presented with analytic challenges related to their use.[4] Furthermore, the use of ASCO VBF in clinical decision making requires further specificity.[3]

Limitations
- While there is a number of therapies available to treat RRMM, this study was able to capture and analyze only three FDA approved treatment
- There were some discrepancies between authors about the results of the ASCO VBFs

Conclusion

- Challenges and limitations associated with these VBFs should be further evaluated before implementation in practice
- Even though all VBFs suggested CFZ as the best option, the usability of VBF in formulary decision-making process remains unclear

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