Treatment patterns in patients with relapsed/refractory multiple myeloma in Germany

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Study Rationale and Objectives

- Multiple myeloma (MM) is a rare hematological cancer with around 3500 incident male patients and 3000 incident female patients per year in Germany[1]
- Multiple novel drugs have been approved in the past years. Those can be used alone or in combination for the treatment of refractory/relapsed (RRMM)
- Given this increase in the number of available treatments, there is a lack of real-world data on the use of novel drugs in Europe

Primary Objective

- Describe characteristics and treatment patterns of RRMM patients being treated with novel agents by line and regimen in Germany

[1] Krebs in Deutschland (2013/2014), chapter 3.27 Multiples Myelom, Robert-Koch Institut

Methods

Data source

- IMS LRx database – Longitudinal nationwide German database containing 82% of reimbursed prescriptions (statutory health insurance) with focus on office-based and hospital outpatient care[1]
- Data used from January 2015 to February 2019

Inclusion

- Patients who received at least one prescription of carfilzomib, bortezomib, lenalidomide, pomalidomide, ixazomib, daratumumab and elotuzumab in RRMM (2L and 3L+)
- Adult patients with a year of pre-observation time

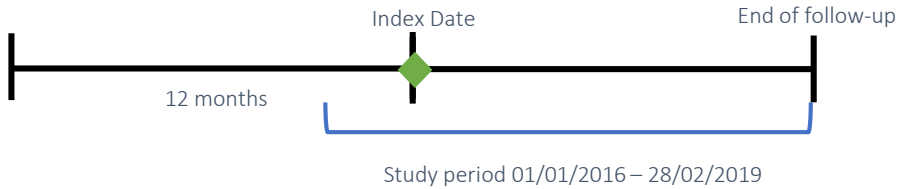
Outcomes

- Treatment patterns
- Demographic and treatment characteristics by regimen and line (2L and 3L+)

[1]*Use of a German longitudinal prescription database (LRx) in pharmacoepidemiology. Richter, H., Dombrowski, S., Hamer, H., Hadji, P. & Kostev, K. Use of a German longitudinal prescription database (LRx) in pharmacoepidemiology. Ger Med Sci 13, Doc14 (2015).*

Treatment Line and Regimens Algorithm[1]

1 Cohort of patients who received a novel MM treatment during the study period

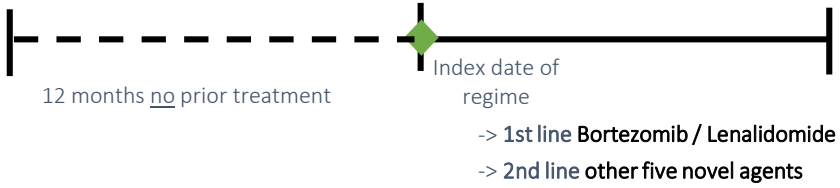


2 Line of therapy definition

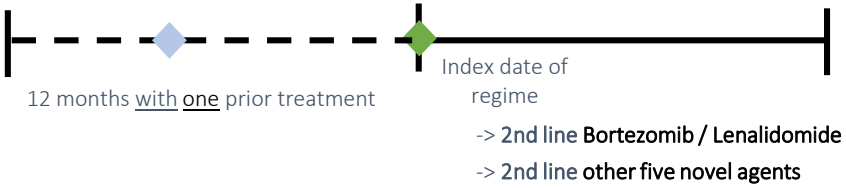
A) Based on sMPC label per indication
B) Prior MM therapies

Novel agent	MM label
Bortezomib	1st+
Lenalidomide	1st+
Carfilzomib	2nd+
Daratumumab	2nd+
Elotuzumab	2nd+
Ixazomib	2nd+
Pomalidomide	2nd+

Case 1

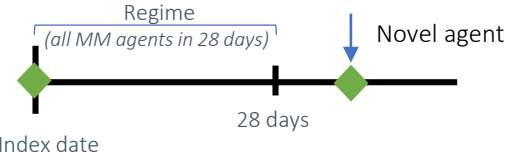


Case 2



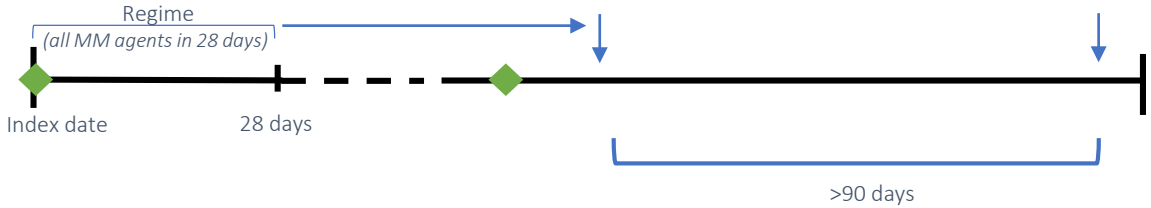
3 Line continues until

A) Regimen change: modification or switch to another novel drug after 28 days



or

B) Discontinuation of all drugs in the treatment line for > 90 days



[1]*Identifying cancer drug regimens in French health insurance database: An application in multiple myeloma patients. Palmaro A, Gauthier M, Despas F, Lapeyre-Mestre M. Pharmacoepidemiol Drug Saf. 2017 26(12):1492-1499*

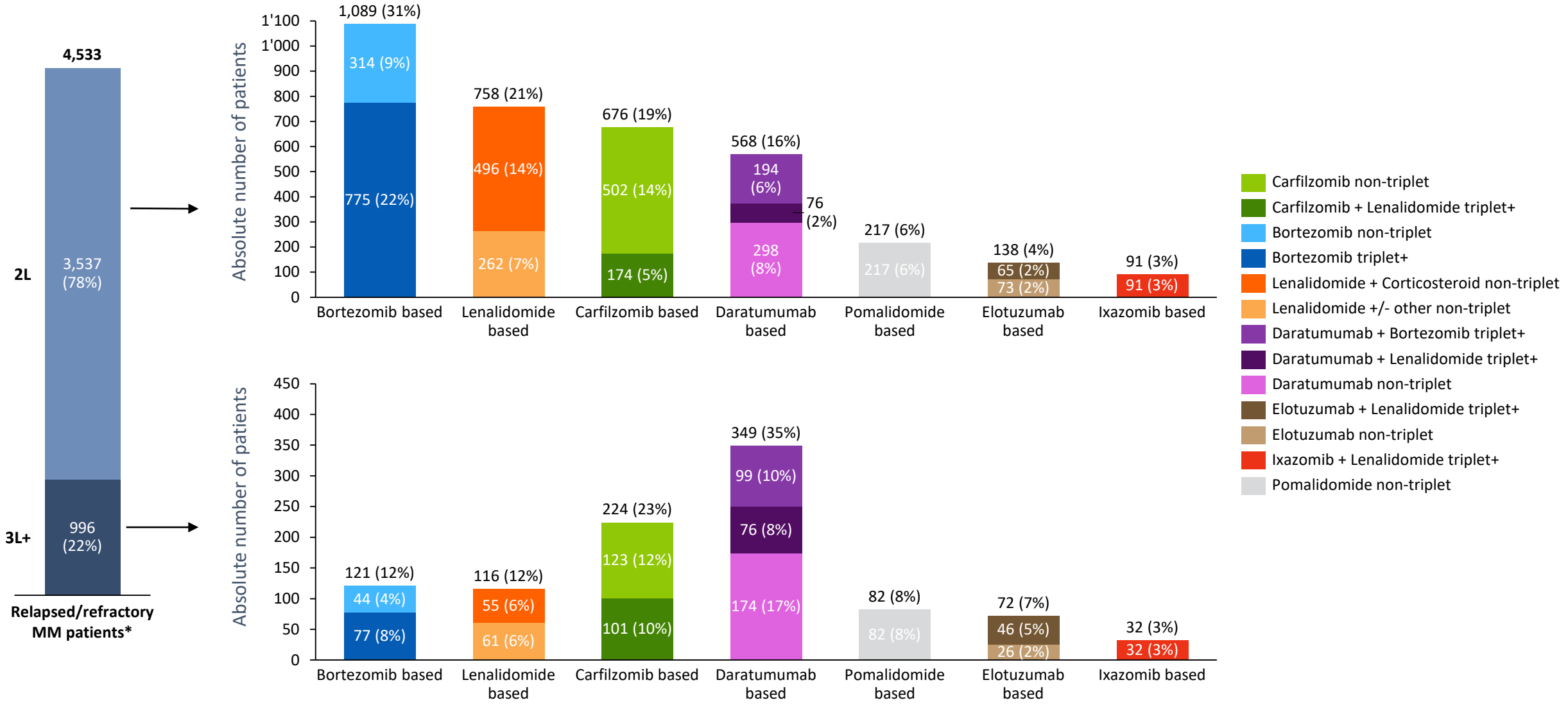
Patient characteristics were similar for patients at 2L and 3L+ of treatment

Patient Characteristics	All RRMM (4,533)	2L (n=3537)	3L+ (n=996)
Age at treatment initiation			
Mean (sd)	69.5 (10.4)	69.7 (10.4)	68.7 (10.1)
Gender (n, %)			
Men	2,215 (54%)	1753 (54%)	462 (51%)
Women	1,919 (46%)	1467 (46%)	452 (49%)
CCI[1]			
Mean (sd)	0.9 (0.9)	1.0 (1.0)	0.9 (0.9)
0	1,622 (36%)	1,257 (36%)	365 (37%)
1	1,894 (42%)	1,484 (42%)	410 (41%)
2	769 (17%)	597 (17%)	172 (17%)
≥3	248 (5%)	199 (5%)	49 (5%)
Frailty[2] (n, %)			
Frail	825 (18%)	683 (19%)	142 (14%)
Non-frail	3,708 (82%)	2,854 (81%)	854 (86%)

[1]Modified CCI based on the presciption of drugs. The following comorbidities are included Myocardial infarction/severe cardiovascular disease, peripheral vascular disease, cerebrovascular disease, demetia, chronic pulmonary disease, rheumatic disease, peptic ulcer disease, diabetes, moderate or severe renal disease, malignancy and Aids/HIV.

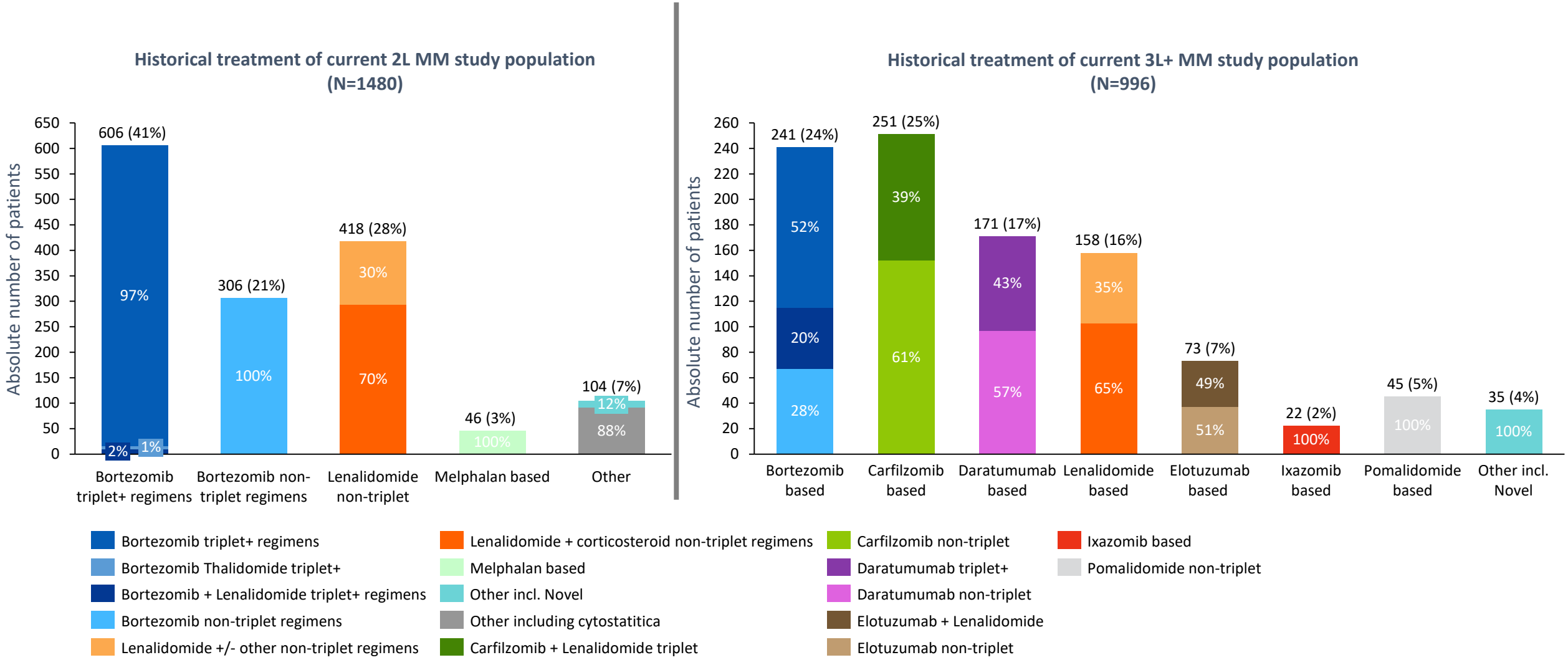
[2]Geriatric assessment predicts survival and toxicities in elderly myeloma patients: an International Myeloma Working Group report. Palumbo A, Bringhen S, Mateos MV, Larocca A, Facon T, Kumar SK et al. Blood. 2015 125(13):2068-74

Bortezomib with 31% and lenalidomide with 21% were the most frequent regimens in 2L, in 3L+ daratumumab with 35% and carfilzomib with 23%

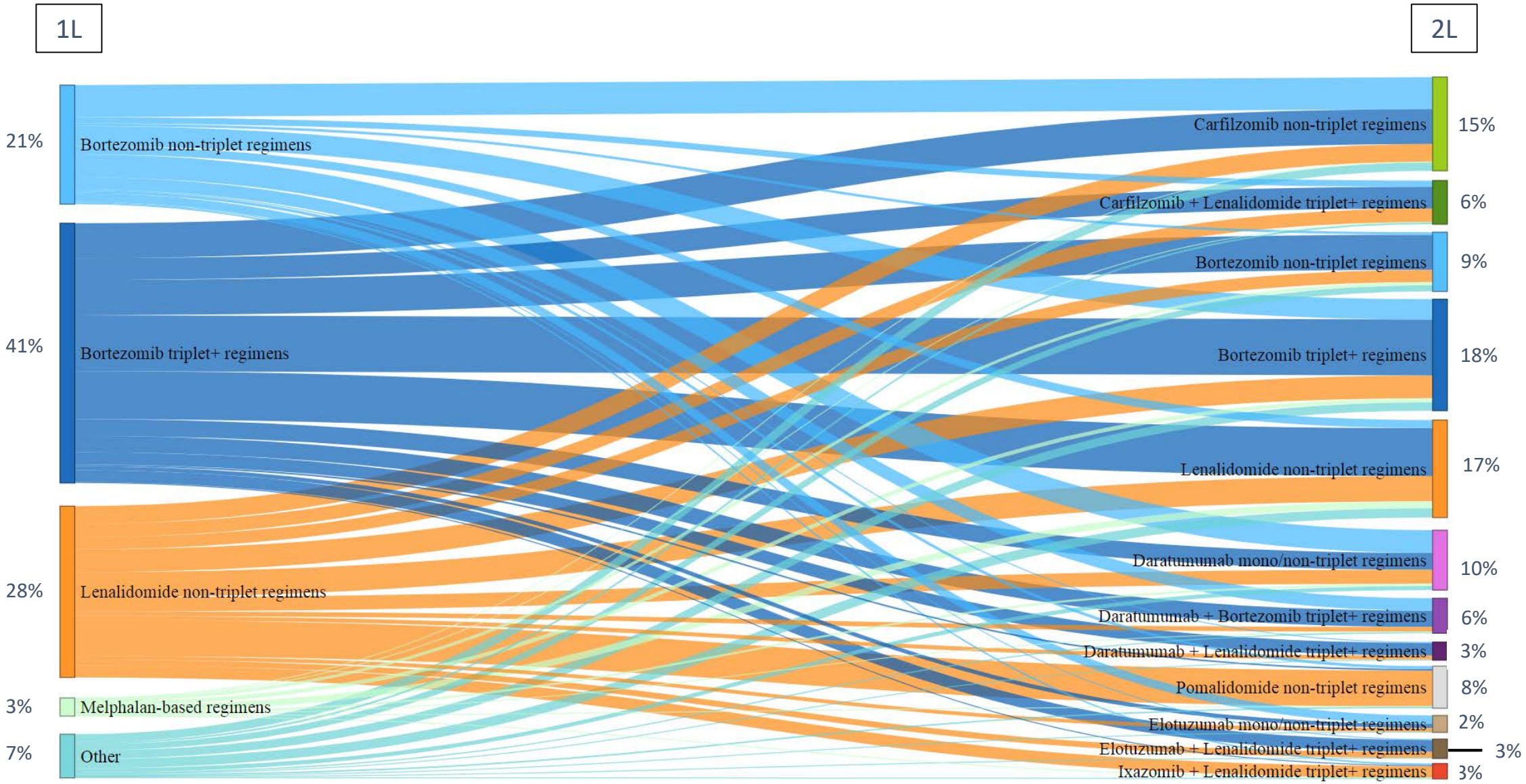


Results show the use of novel treatments in 2L and 3L+ between 2016 - 02/2019

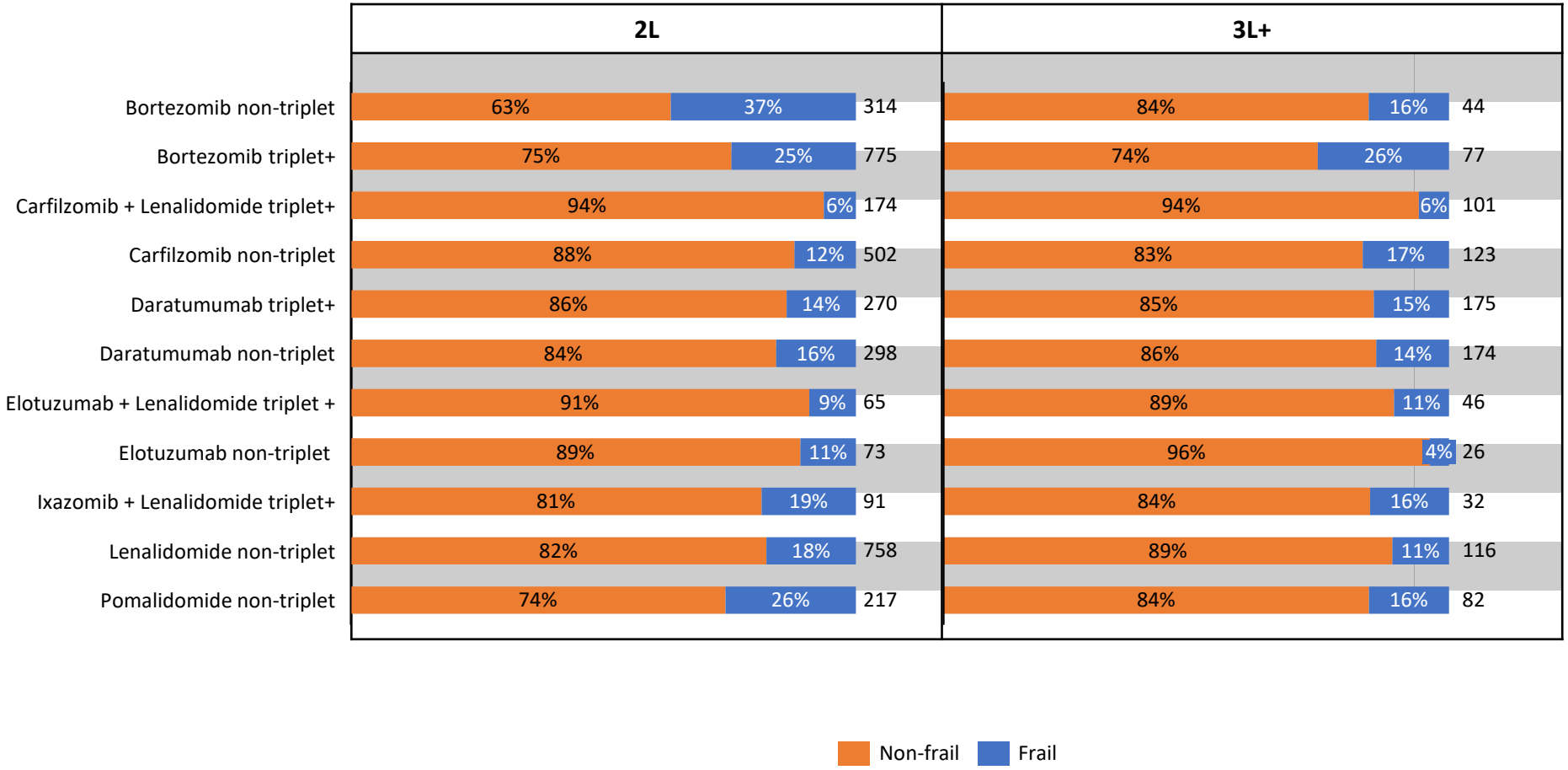
62% of 2L patients were pre-treated with bortezomib regimens versus 24% of 3L+ patients, 28% and 16% patients with lenalidomide, respectively



Most patients receiving bortezomib in 1L receive lenalidomide regimens in 2L, retreatment with bortezomib is still common



Non-triplet regimens were more often used in frail[1] patients in 2L and 3L+



[1]*Geriatric assessment predicts survival and toxicities in elderly myeloma patients: an International Myeloma Working Group report. Palumbo A, Bringhen S, Mateos MV, Larocca A, Facon T, Kumar SK et al. Blood. 2015 125(13):2068-74*

Limitations

- Due to LRx data including primarily retail prescriptions, drugs administered in hospital may not always be linked to office-based setting, hence inconsistencies may occur in line of therapy identification. Biggest impact on bortezomib 1st/2nd line due to indication across lines and iv administration
- Linkage inconsistencies may have underestimated carfilzomib, daratumumab and elotuzumab triplet+ regimens as they may appear in non-triplet groups
- The database does not contain diagnosis, therefore the assessment of co-morbidities and frailty index was based on drug utilization

Conclusions

This real-world database analysis shows….

- Between 2016-2018, lenalidomide and bortezomib treatments were the most common regimens followed by carfilzomib and daratumumab in 2L
- Majority of 2L patients received bortezomib based regimens as 1L treatment
- Non-triplet regimens were more often used in frail patients
- Treatment choice is individual patient driven, no defined patient profiles were observed
- More frequent use of potent novel and combination therapies could improve care of RRMM patients in Germany