MYLORD

POSC91

Economic burden of multiple myeloma according to treatment lines in France from 2014 to 2019, the MYLORD study

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Background and objectives

Multiple myeloma (MM) is an incurable hematologic disease. MM disease course is a succession of remissions and relapses, which define lines of treatment. In the context of a new therapeutic landscape, this study aims to describe the evolution from 2014 to 2019 of the economic burden of MM in France. For the first time, this real-life study based on secondary use of data from the nationwide French National Health Insurance (NHI) databases, called SNDS ("Système National des Données de Santé") provides information regarding the costs of MM patients in France depending on treatment lines.

Methods

Study design and data sources

This is a retrospective cohort study of MM patients identified through SNDS, the French National Health Insurance databases, from 2014 to 2019. These databases include hospital records, primary and secondary care, and deaths, for 66 million people.

Patient's identification

MM patients were identified using a published algorithm[1] refined to consider recent evolutions of MM therapeutic management.

Treatment lines reconstitution

Treatment lines were re-constructed through ATLAS, an adaptation of the Smith-Waterman alignment sequence using artificial intelligence[2]. Retrospective treatment history was studied back to 2006 to identify previous lines received.

Statistical analysis

The economic burden was estimated per treatment lines, considering all patients who started the line during each calendar year. Costs were estimated, from the French NHI perspective, based on complete cases (i.e. patients who finished their line of treatment or died before the end of the study period) with the nonparametric method proposed by Bang and Tsiatis to address censoring of data[3]. Both time with active treatment and treatment free intervals (TFI) are integrated in the estimation of the line costs. Line 4+ includes L4, and all potential subsequent lines (L5, L6, ...) until death or end of follow-up.

Conclusion

The economic burden of MM varies depending on MM treatment lines.

Overall, the highest types of consumption are medications, followed closely by hospitalisation care.

Average monthly costs are higher during the first months of a line initiation and tend to decrease over time.

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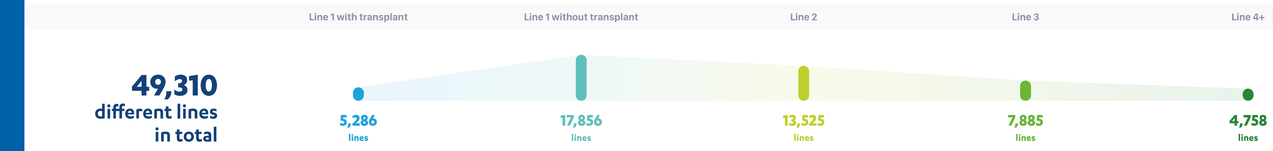
Results

40,747 patients treated for a MM (2014-2019)

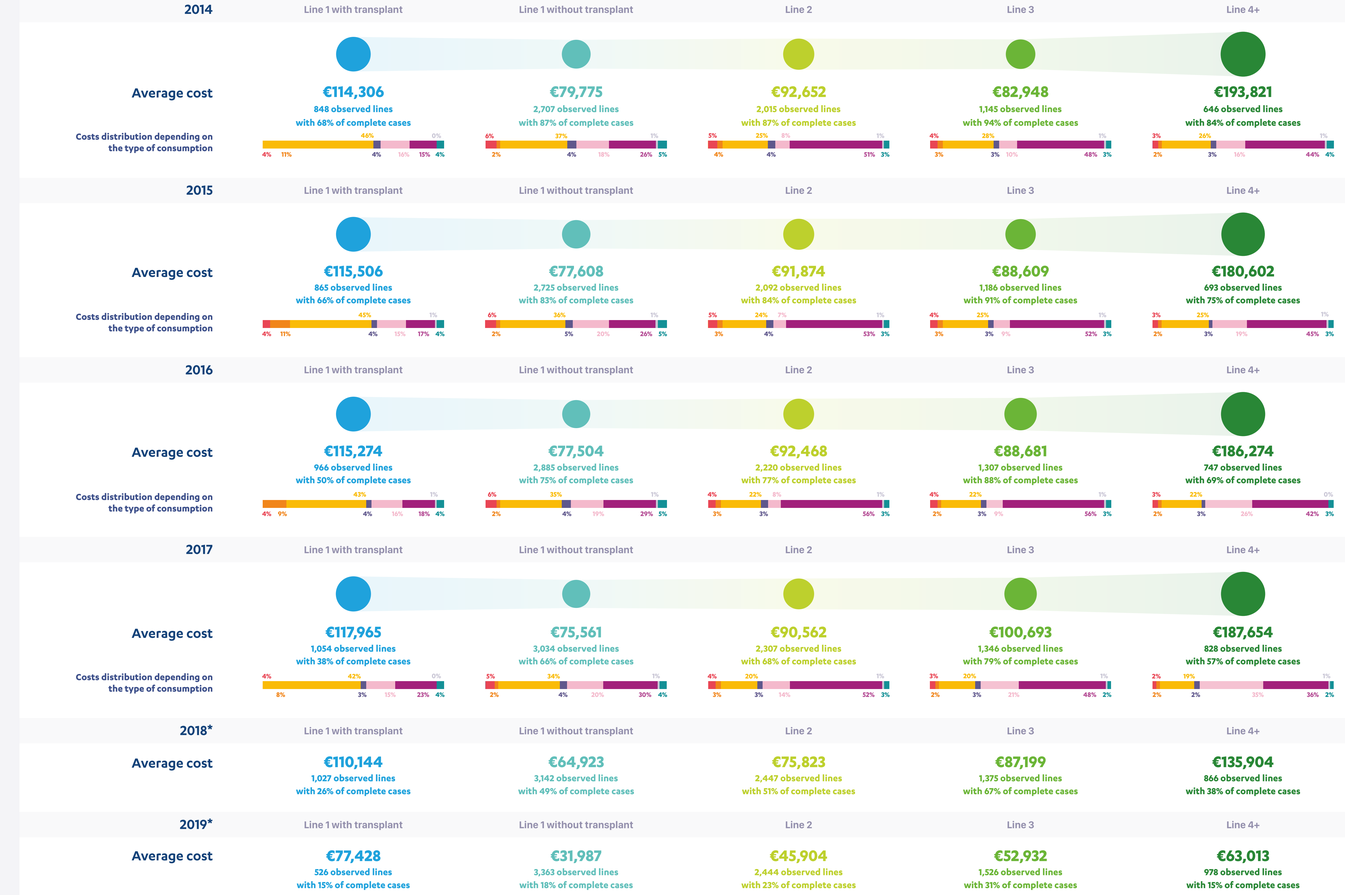
36,239 Patients with lines identified with ATLAS

Distribution of lines



Average total costs

for patients who started a treatment line, each year, from 2014 to 2019



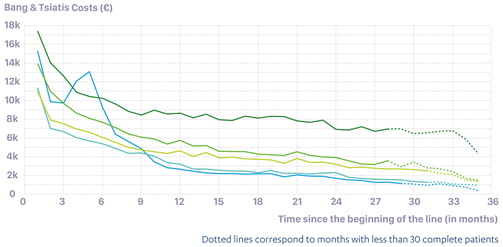
* The number of censored patients were respectively representing 14% (N=1,066) in 2014, 18,1% (N=1,368) in 2015, 25,8% (N=2,097) in 2016, 35,8% (N=3,068) in 2017, 51,3% % (N=4,546) of the patients in 2018 and 78,8% (N= 6,966) in 2019. As the proportion of censored patients should not exceed 50% of the number of patients included to properly interpret results obtained with the Bang & Tsiatis method, results for 2018, 2019 should be interpreted carefully.

Average monthly costs

per patient and treatment lines for patients who initiated their line in 2017

Evolution of the average total monthly costs

over time of follow-up since treatment line initiation presented by line for patients who initiated their line in 2017



Dotted lines correspond to months with less than 30 complete patients

Legend

Lines

- Line 1 with transplant
- Line 1 without transplant
- Line 2
- Line 3
- Line 4+

Type of costs

- Consultations
- Daily fees + pensions + allocations compensation revenue
- Hospital care (without medication)
- Lab tests + Medical devices + Medical procedures (out of hospital)
- Medication (in hospital)
- Medication (out hospital)
- Other out of hospital care (e.g. paramedical care, referring physician surchare fees for patients in Long-Term Disease (ALD) status)
- Transport

Glossary

ATLAS: Analysis of Treatment Lines using Alignment of Sequences
MM: Multiple Myeloma
MYLORD: Multiple mYeloma: an epidemioLOgical study using SNIIRAM Database
NHI: National Health Insurance
SNDS: Système National des Données de Santé
TFI: Treatment Free Intervals

References

1. Palmaro A et al. Identifying multiple myeloma patients using data from the French health insurance databases. Medicine. 2017. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5371442/
2. M. Prodel, L. Lamarsalle and V. Augusto, "ATLAS: A Robust Algorithm for Temporal Sequence Alignment of Treatment Lines using Claim Databases," 2019 IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB), Siena, Italy, 2019, pp. 1-8. https://ieeexplore.ieee.org/document/8791467
3. Bang H, Tsiatis AA. Estimating Medical Costs with Censored Data. Biometrika. 2000;87(2):329–43

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