

Estimation of 10-year Healthcare Costs for Patients with Myeloproliferative Neoplasms in Denmark

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Introduction

Myeloproliferative neoplasms (MPNs: essential thrombocythemia [ET], polycythemia vera [PV], myelofibrosis [MF], and unclassifiable MPN [MPN-U]) are acquired hematopoietic stem cell cancers with substantial symptoms and risk of debilitating complications that are often present years before diagnosis. Due to the chronic nature of MPNs and the significant burden of morbidity, most patients have a continuous need for healthcare during the lifelong course of the disease. Healthcare resource utilization (HRU) in Danish MPN patients was recently published [1] but has not been translated into monetary terms.

Objective

To estimate 10-year healthcare costs for MPN patients and matched non-MPN comparators from the general population in Denmark.

Methods

In a register-based, nationwide cohort study [1] we assessed HRU from two years before to up to eight years after diagnosis in Danish MPN patients (ET/PV/MF/MPN-U) and non-MPN comparators (non-ET/non-PV/non-MF/non-MPN-U) matched on sex, age, residency, and educational level. The study provided mean annual HRU (hospitalizations, outpatient visits, emergency department [ED] visits, and general practitioner [GP] contacts) of each MPN and non-MPN cohort, respectively. The HRU was multiplied by publicly available unit costs in 2023 DKK values (€ 1 = DKK 7.45) (Table 1), the survival rate each year (half-year corrected), and number of patients diagnosed in the inclusion period 2010-2016. Costs were discounted at 3.5%, with two years before the diagnosis as the starting point (t=0). Individuals who were censored due to emigration or end of study (31 December 2017) were assumed, after censoring, to have the same HRU and risk of death as corresponding non-censored individuals.

Table 1 Unit costs

Type	Unit	Unit cost (DKK)
General practitioner [2,3]	Contact	208
Emergency department [4]	Visit	1 582
Outpatient care [2,3]	Visit	2 357
Inpatient care [2,3]	Stay	37 795

Results

The study included 3 342 MPN patients (1 140 ET, 1 109 PV, 533 MF, 560 MPN-U) and 32 737 non-MPN comparators (11 181 non-ET, 10 873 non-PV, 5 217 non-MF, 5 466 non-MPN-U) with a mean follow-up of 3.1 to 3.9 years.

Total 10-year healthcare costs

The 10-year healthcare costs for all MPN patients in the study were DKK 780 million higher than for the corresponding number of non-MPN comparators (2 400 vs 1 620 million). The cost difference was DKK 267 million (804 vs 537 million) in ET, DKK 276 million (802 vs 525 million) in PV, DKK 102 million (395 vs 293 million) in MF, and DKK 134 million (400 vs 266 million) in MPN-U. Inpatient care accounted for the largest share of total costs. (Figure 1)

Annual healthcare costs per individual

Average annual healthcare costs for MPN patients peaked in the first year after diagnosis, then declined in the subsequent years. The magnitude of costs and decline herein was more pronounced for patients with MF and MPN-U. (Figure 2)

Figure 1 Total 10-year healthcare costs (million DKK)

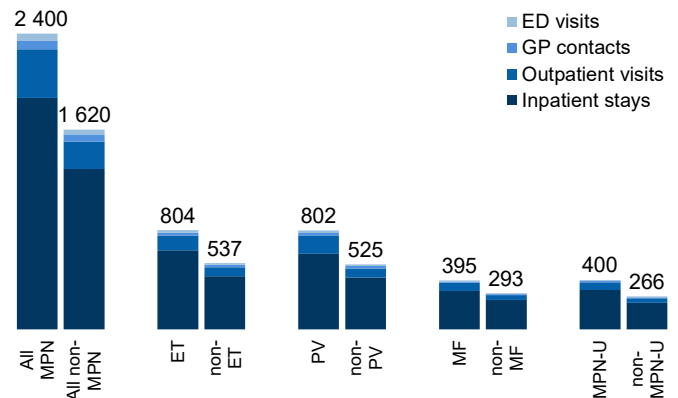
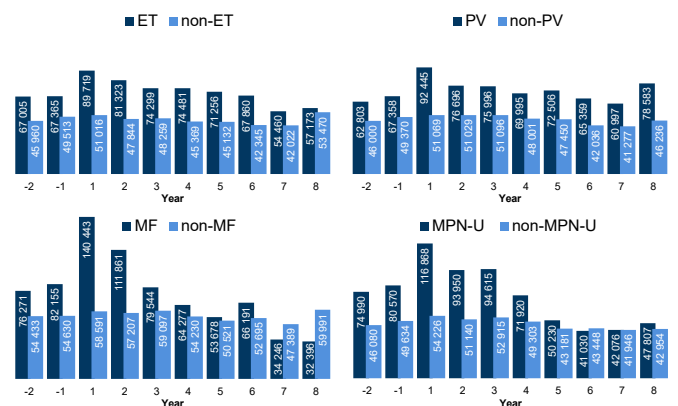


Figure 2 Average annual healthcare costs per individual (DKK)



Discussion and limitations

The study on which the cost estimates were based was descriptive and the HRU was not exhaustive. However, we believe that the most common and important costs are captured.

Because costs were calculated from two years before diagnosis, there is an immortal time until the date of diagnosis. There are differences in mortality between the diagnoses, which thereby affects the respective average annual costs in the years after diagnosis to varying extents.

Only a small proportion of study subjects had all years of follow-up and the estimates for later years are therefore more uncertain.

Conclusions

Healthcare costs for MPN patients were almost 50% higher than for matched non-MPN comparators, and higher costs were already observed in the two years before diagnosis.

Based on the number of MPN patients diagnosed annually in Denmark (~500), the excessive 10-year costs amount to more than DKK 110 million.

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