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Data analysis plan

Prevalence of Multiple Myeloma

1. Rationale and background

In the European Union (EU), a disease is defined as rare if it affects fewer than 5 in 10,000 people across the EU.

Multiple Myeloma has, so far, been considered a rare disease, however with the increasing number of medicines being authorised for this disease, and better management of the disease, the prevalence of Multiple Myeloma is likely to rise, as more and more patients benefit from an increased survival, living longer with the disease and leading to it becoming more and more chronic.

2. Research question and objectives

The objective of this study is to determine the prevalence of Multiple Myeloma in electronic health records of three European countries.

3. Research methods

3.1. Study design

This is a descriptive study to determine the prevalence of Multiple Myeloma in electronic health records of three European countries (France, Germany, United Kingdom).

3.2. Setting and study population

All observable patients, i.e. with at least one encounter (consultation, prescription), between 2015 and 2020, in the three databases from France, Germany and United Kingdom, will be included in the analysis.

3.3. Variables

3.3.1. Multiple myeloma

Multiple myeloma is a type of blood cancer that affects plasma cells. Malignant white blood cells develop in bone marrow, suppressing healthy plasma cells that produce antibodies against infection. According to Dynamed (www.dynamed.com), Multiple Myeloma can also be called plasma cell myeloma or plasma cell leukemia.

There are two medical ontologies used in the three databases, ICD-10 and Read. Multiple Myeloma will be defined respectively as:

For ICD-10 codes:

ICD-10 Code	Term
Included terms	
C90.0	Multiple myeloma
C90.1	Plasma cell leukaemia
Excluded terms	

ICD-10 Code	Term
C90.2	Extramedullary plasmacytoma
C90.3	Solitary plasmacytoma

For Read codes:

Read Code	Term
Included terms	
B630	Multiple myeloma
BBn0-2	[M]Myeloma NOS
B6303	Lambda light chain myeloma
BBn0	[M]Plasma cell myeloma
B63	Multiple myeloma and immunoproliferative neoplasms
BBn0-1	[M]Multiple myeloma
^ESCTPL340846	Plasma cell myeloma
B630-2	Myelomatosis
HNG0184	[RFC] Multiple myeloma
B630-1	Kahler's disease
^ESCTMU340844	Multiple myeloma
N3309	Osteoporosis in multiple myelomatosis
B63-99	Multiple myeloma etc.
B631	Plasma cell leukaemia
BBr3z	Plasma cell leukaemia
BBr30	[M]Plasma cell leukaemia
Excluded terms	
B6302	Plasmacytoma
B6301	Solitary myeloma
B63z	Immunoproliferative neoplasm or myeloma NOS
B6300	Malignant plasma cell neoplasm, extramedullary plasmacytoma
B6300-1	Extramedullary plasmacytoma
B6304	Plasmacytoma - disorder
B63y	Other immunoproliferative neoplasms

3.4. Data sources

The databases used will be the IQVIA™ Disease Analyser Germany, IQVIA™ Disease Analyser France and IQVIA™ Medical Research Data (IMRD) EMIS UK.

For IQVIA™ Disease Analyser France and IMRD EMIS UK, only data from General Practice is available and will be used.

For IQVIA™ Disease Analyser Germany, General Practice and Paediatric specialties will be used. In Germany the choice of physician is free, and it is common that caretakers of children choose to consult with paediatricians instead of general practices and thus, use of these two specialties provides a more accurate depiction of prevalence.

3.5. Statistical analysis

3.5.1. Main statistical methods

Prevalence will be determined using the any-time method. The denominator will be the count of patients of all ages who are eligible, i.e. had at least one observation (consultation or prescription), during the period of interest. The numerator will be the count of patients that had at least one code for Multiple Myeloma, as listed above, during the period starting from the start of data collection for the patient to the end of the period of interest (i.e. complete prevalence). Results will not be stratified by age or gender.

The report will also include, in appendix, published prevalence data of Multiple Myeloma from Nordic cancer registries. They are not included in the main report as these stem from a different data collection and statistical analysis methodology.

3.5.2. Sensitivity analyses

None.

3.6. Quality control

The study will be conducted according to the ENCePP code of conduct (European Medicines Agency 2018).

Standard operating procedures or internal process guidance will be adhered to for the conduct of the study. These procedures include rules for secure and confidential data storage, quality-control procedures for all aspects of the study from protocol development to the reporting of the results.

All documents will undergo at least one round a review by an experienced reviewer, while the results from the statistical analysis will be either reviewed or checked via double coding.

The quality control of the data is the responsibility of the data holder.

3.7. Limitations of the research methods

A limitation of this study is the possibility that Multiple Myeloma is not adequately recorded in general practices and paediatric practices as this is a malignancy and will mostly be treated by specialist oncology care. However, the number of multiple myeloma related diagnoses reported per patient seems to vary between 2 and 4, with some patients having tens of codes reported for Multiple Myeloma, which suggests that it is fairly well represented in these databases.

Another limitation is specific to the IQVIA™ Disease Analyser Germany data. As there is a free choice of physician in the German system, it is possible that the same patient is reported in more than one practice. This may lead to a slightly over estimated prevalence.

4. Protection of human subjects

Patient confidentiality will be protected according to the EU General Data Protection Regulation (GDPR) on the protection of individuals.

5. Management and reporting of adverse events/adverse reactions

Pursuant to the requirements for reporting of adverse events for secondary data (GVP module VI, VI.C.1.2.1.2), adverse event reporting will not be conducted as part of this study given the study objectives will be met through the use of secondary data.

6. Plans for disseminating and communicating study results

The analysis plan and study results will be published in EUPAS registries upon completion.