

Epidemiology of MDS Patients in Swiss Population Based Cancer Registries from 1989 until 2012



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Background: Myelodysplastic syndromes (MDS) comprise a heterogeneous group of clonal disorders that are predominantly diagnosed in elderly patients. Due to demographic ageing, MDS is expected to become an increasing financial burden on health-care systems.

Objectives: The objective of this study was to provide time-trends of annual frequencies, morphological sub-classification, incidence- and mortality-rates of patients diagnosed with MDS in Switzerland.

Methods: A retrospective, population-based, observational study was carried out on MDS patients reported to the Swiss Cantonal Cancer Registries (CCRs) between 1989 and 2012 and data was aggregated by the National Institute for Epidemiology and Cancer Registration (NICER). The Swiss Federal Statistical Office provided mid-year population estimates and cause of death statistics from all persons with permanent residence status in Switzerland.

Results: 85 MIO person-years (py) were observed, covering 45-54% of the Swiss population during the time of 24 years. 2'057 MDS cases were diagnosed at a median age of 76.5 years (range 75-78 years) resulting in an approximated annual frequency of 300 new cases. Reported classification in MDS subtypes was low and improved only modestly from 20% to 39% after 2008 (Fig. 1A-D). The annual age-standardized incidence-rate was 2.53 and the mortality-rate 2.16 per 100'000 py, respectively, and remained stable between 2001 and 2012. The lower rates observed before 2001 were most likely caused by classification and reporting biases (Fig. 2 A, B).

Figure 1: Distribution of classification in MDS subtypes

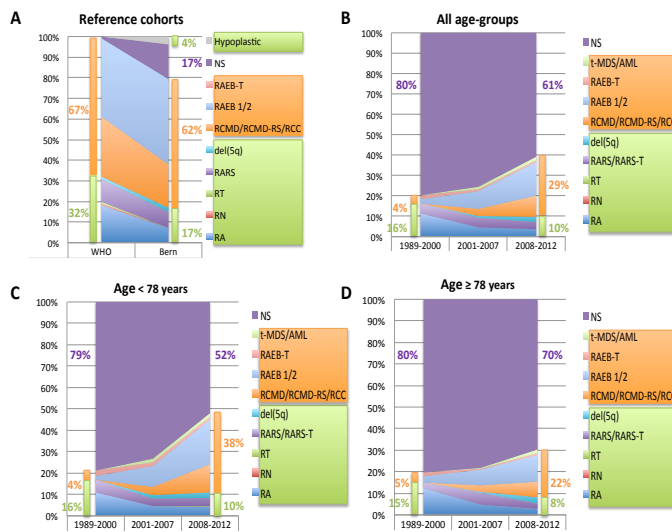
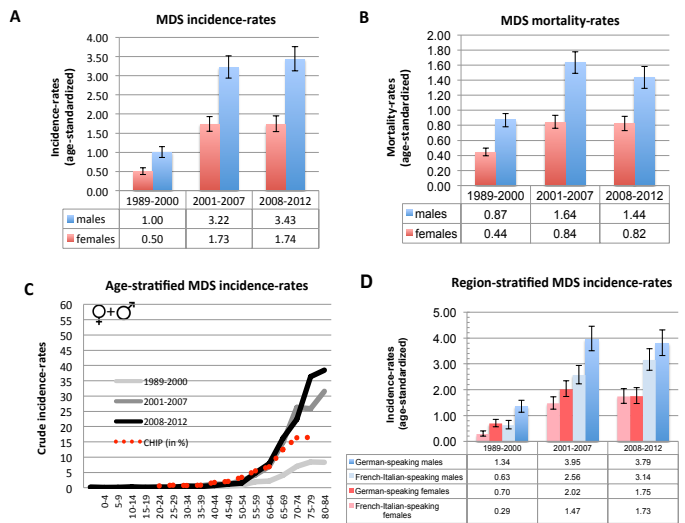


Figure 2: Incidence and mortality rates 1989-2012



Incidence- and mortality-rates were as double as high in males compared to females. A steep increase in MDS incidence (> 10-fold) and mortality (> 30-fold) beginning from the age of 60 years onward was found in the very old population aged > 85 years (Fig. 2C). Finally, our analysis showed that regional differences trend to disappear after implementation of the NICER database in 2007 (Fig. 2D).

Conclusions: This is the first population-based, epidemiological analysis of MDS patients based on observation of about half of the Swiss population observing stable incidence- and mortality-rates since introduction of WHO 2001. Our analysis indicates that national harmonization of CCRs enhance data quality but the available data is still insufficient for health service research. This limitation may be improved by an extended dataset with the new national cancer registration law or the planned *Swiss MDS Registry*.

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NICER: V. Arndt, A. Feller, Members of the NICER Working Group include (alphabetical order of cantons): M. Mousavi (BS/BL), B. Camey (FR), C. Bouchardy (GE), H. Frick (GL/GR), M. Maspoli (JU/NE), J. Diebold (LU/UR/NW/OW), S. Ess (SGA), A. Bordoni (TI), M. Bochud & J.-L. Bulliard (VD), I. Konzelmann (VS), S. Dehler (ZG/ZH).

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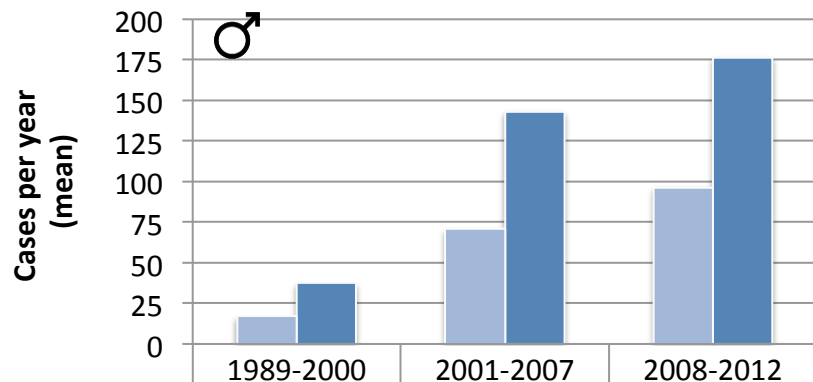
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85 MIO person-years
Covering 45-54% of the Swiss population
24 years
2'057 MDS cases
Median age of 77 years (range 75-78 years)
Life expectancy CH: 84.5y/87.4y

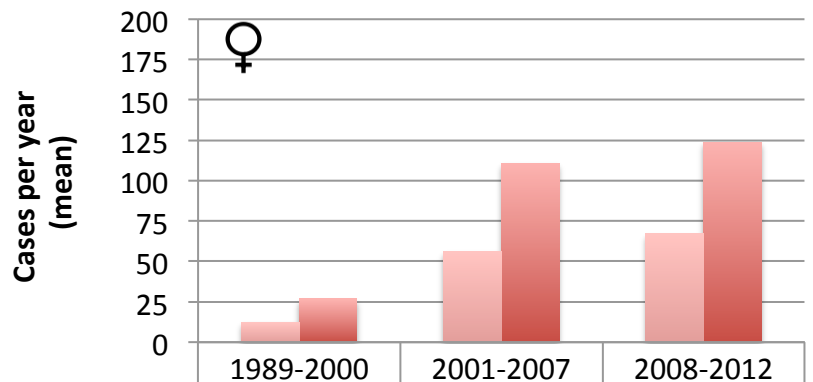
Annual Case Frequencies

MDS annual case frequencies (males)



males estimated	38	143	176
males registered	17	71	96

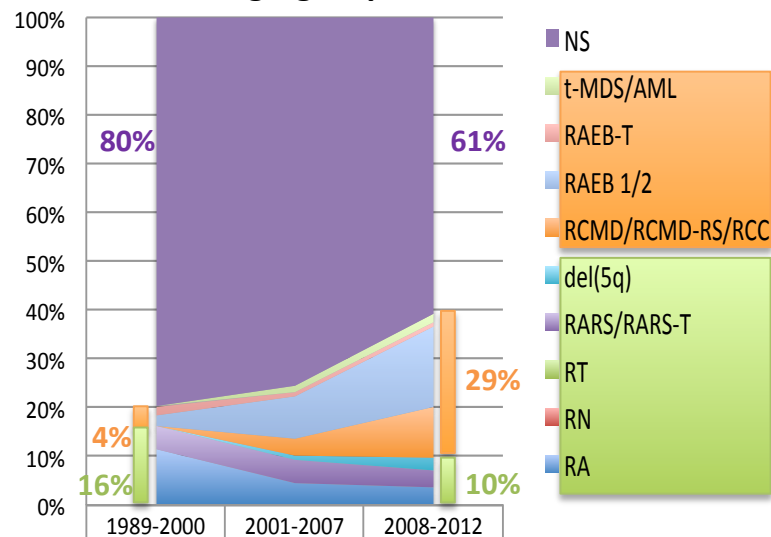
MDS annual case frequencies (females)



females estimated	27	111	124
females registered	13	56	67

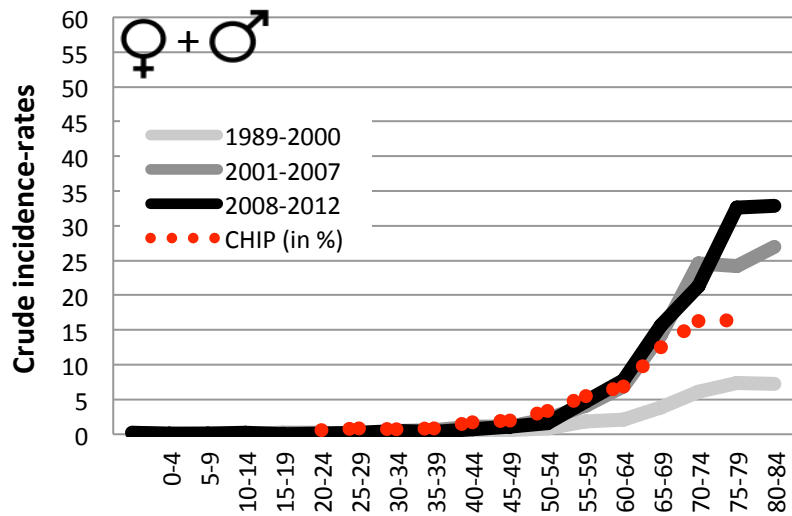
+50

All age-groups

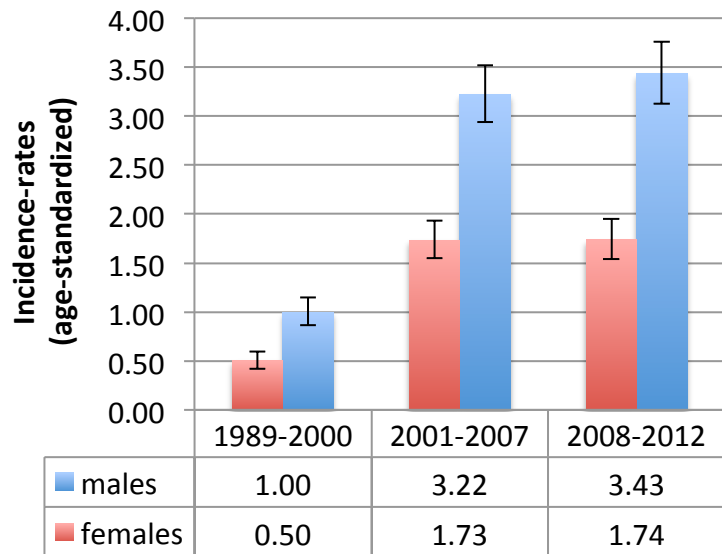


Incidence and Relative Survival

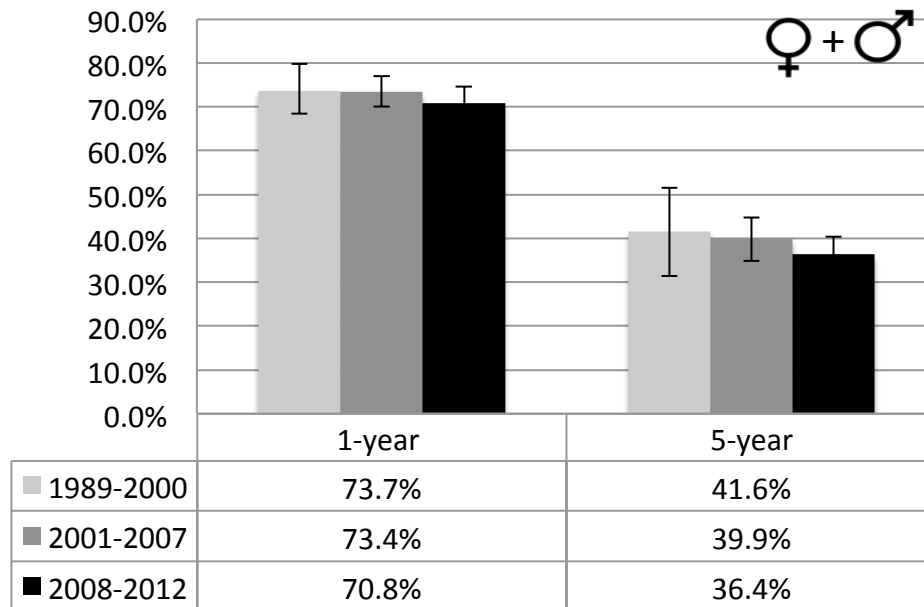
Age-stratified MDS incidence-rates



MDS incidence-rates



Relative Survival



Conclusions

- First population-based, epidemiological analysis of MDS patients in Switzerland
- Lower rates observed before 2001: classification and reporting biases.
- Estimated annual case frequency increased modestly from 254 to 300 (20%) from 2001-2012.
- Classification in MDS subtypes was low and improved from 20% to 39% after 2008, with predominantly higher risk MDS patients.
- Incidence- and mortality-rates were as double as high in males compared to females.
- Crude incidence-rates ranged from 3.48-3.83 and crude mortality-rates from 1.92-1.96 per 100'000 py, respectively, with steep age-dependent increases from 60 years onwards.
- In patients > 85 years we observed a time-dependent increase between time periods from 42.6 to 52.6 and 20.6 to 24.1 per 100'000 py for males and females, respectively.
- The annual age-standardized incidence-rate was 2.53 and the mortality-rate 2.16 per 100'000 py, respectively, and remained stable between 2001 and 2012.
- The currently available data from cancer registries is insufficient for health service research. It may be improved by an extended dataset within the new cancer registration law or the planned *Swiss MDS Registry*.