

Malmö Preventive Project
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Malmö Preventive Project

Diabetes Endpoints

End of follow-up: 31 December 2016

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General information

An individual with diabetes can be characterized as either prevalent or incident with respect to diabetes onset in relation to the time of baseline study. Hence, individuals with prevalent diabetes can not be incident. Only the first recorded diabetes event of an individual has been used in this report.

Prevalent: date of diagnosis \leq date of entry

Incident: date of diagnosis $>$ date of entry

In total, 15 different sources of data were used to identify individuals with diabetes (table 5). All individuals in the Diabetes 2000 (except certain with missing data), the ANDIS (Alla Nya Diabetiker I Skåne) and the NDR (Swedish National Diabetes Register) registries were considered as diabetics, as well as individuals with at least two HbA1c-values $\geq 6,0\%$ (not on the same day) in the HbA1c register at Clinical Chemistry, Malmö. In the National Patient Register (inpatient care and outpatient care) and the Swedish Cause of Death Register from the National Board of Health and Welfare individuals with the ICD10 codes E10-E14 and O244-O249 (and corresponding ICD7-9 codes), were treated as diabetics. The ATC code A10 was used to identify diabetics in the Prescribed Drug Register. From the MPP and MDC cohorts, seven different study generated data sources from baseline, rescreening and subcohort studies have been used to identify diabetics. The MPP endpoint update takes into account MDC data, and vice versa. Briefly, individuals with fasting blood glucose $\geq 6,5$, or glucose ≥ 11 mmol/L at 120 minutes OGTT, or fasting plasma glucose ≥ 7 mmol/L, or have reported intake of A10 drugs, or have responded “Yes” on the question “Do you have diabetes?” (or similar) have been considered as diabetics. Elevated glucose levels in the MDC CV rescreening study must have been verified through fasting plasma glucose and/or OGTT tests in a subsequent examination in order to confirm new diabetes.

Type of diabetes are reported in the Diabetes 2000 and NDR registries, but the type has also been possible to assign through the ICD codes in the National Patient Register and the Swedish Cause of Death Register. Diabetics who have taken oral anti-diabetes drugs only have been classified as Type 2 diabetics. An individual can have information about diabetes from more than one source but only the information associated with the first recorded event has been used regardless of completeness or reliability. Contradictory information about diabetes status or type in subsequent events has been neglected. Some of the 15 diabetes sources contain multiple information (e.g. both questionnaire and lab data) on diabetes. In order to choose one of these within source the following selection order has been applied: 1) questionnaire, 2) drugs, 3) fasting plasma glucose, and 4) glucose at 120 minutes OGTT. Year at diabetes onset was only available in the Diabetes 2000 and the NDR registries. Information on diabetes onset year was taken into account, together with data from 15 sources in determining the timing of prevalent or incident diabetes.

Amendments and implementation of new procedures

Year* Description

- 2017 - Added data from the ANDIS register (source number 15)
- Replaced earlier reclassification of diabetes type in the Diabetes2000 register by the variable derived by Diabetes2000
 - Included the first sampling date (sd_vis_1), in addition to the existing visit date (V_DATE), for determination of dmdat in MPP rescreening (2002-2006)
 - Increased the number of accounted secondary diagnoses in the Outpatient care register from 8 to 12 (i.e. the same number as already used for Inpatient care and Cause-of-Death registers)

* The year when the endpoint update was made, usually the year after last follow-up year.

1. Cohort

Total: 33 346

Men: 22 444

Women: 10 902

2. Time of follow-up

Follow-up time from date of entry to death, lost to follow-up or to 31 December 2016.

Population	Person-years
Total	1 001 290
Men	688 873
Women	312 417

3. Individuals with prevalent or incident diabetes by sex

Number of individuals with diabetes until 31 Dec 2016.

MPP (n=33 346)

Diabetes, total	7 589
Prevalent diabetes at baseline	1 191
Men	770
Women	421
Incident diabetes	6 398
Men	4 701
Women	1 697

4. Individuals with incident diabetes by year of diabetes onset or first recorded event

Number of individuals with incident diabetes until 31 December 2016 by year of diabetes onset or first recorded event.

Year	MPP (n=33 346)
1974	1
1975	
1976	4
1977	5
1978	13
1979	13
1980	24
1981	18
1982	77
1983	64
1984	33
1985	52
1986	61
1987	51
1988	75
1989	70
1990	139
1991	80
1992	74
1993	156
1994	154
1995	196
1996	179
1997	223
1998	227
1999	163
2000	236
2001	264
2002	272
2003	306
2004	412
2005	547
2006	373
2007	356
2008	276
2009	254
2010	256
2011	177
2012	119
2013	112
2014	86
2015	103
2016	97
Total	6 398

5. Individuals with prevalent or incident diabetes by source and type of diabetes

Number of individuals with prevalent or incident diabetes (recorded in the first event) until 31 December 2016 by source of data and type of diabetes.

Source	Type of diabetes							Total
	Type 1	Type 2	LADA	Pregnancy	Secondary	Other	Unknown	
1. Diabetes 2000	1	177	7		5		27	217
2. NDR	19	924					105	1 048
3. HbA1c							2 074	2 074
4. Inpatient	96	390				5	584	1 075
5. Outpatient	86	222			2	3	42	355
6. Cause of death		7				1	26	34
7. Drug		473					105	578
8. MPP baseline							923	923
9. MPP 6-yr rescr							157	157
10. MPP rescr		47					693	740
11. MDC base		38					75	113
12. MDC CV base							81	81
13. MDC 5-yr rescr		11					23	34
14. MDC CV rescr							62	62
15. ANDIS		92	5		1			98
Total	202	2 381	12	0	8	9	4 977	7 589

- 1) The Diabetes 2000 Registry
- 2) The Swedish National Diabetes Register (NDR)
- 3) The HbA1c register at Clinical Chemistry, SUS, Malmö
- 4) The Hospital Discharge Register (also The National Inpatient Register, IPR) (Slutenvårdsregistret)
- 5) The National Patient Register – Outpatient Care (Spec Öppenvårdsregistret)
- 6) The Cause-of-death Register (Dödsorsaksregistret)
- 7) The Swedish Prescribed Drug Register (Läkemedelsregistret)
- 8) MPP baseline screening (1974-92) (type of source: questionnaire, fB-glucose, OGTT)
- 9) MPP 6-year rescreening (1981-89) (questionnaire, fB-glucose, OGTT)
- 10) MPP rescreening (2002-06) (questionnaire, list of drugs, fP-glucose)
- 11) MDC baseline screening (1991-96) (questionnaire, list of drugs)
- 12) MDC baseline screening cardiovascular cohort (1992-94) (fB-glucose)
- 13) MDC 5-year rescreening (1997-2001) (questionnaire, list of drugs)
- 14) MDC cardiovascular rescreening (2007-12) (questionnaire, list of drugs, fP-glucose, OGTT)
- 15) The ANDIS (Alla Nya Diabetiker I Skåne) Registry