COUNTRY REPORT

SWITZERLAND

Swiss data for the OECD study of cross-national differences in treatment, costs and outcomes of stroke

prepared by

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Lausanne, 6 April 2001

Introduction

This report is limited to specific information related to stroke, prepared according to the template resulting from the Paris, 7-8 December 2000 meeting at the OECD.

A general presentation of the Swiss health care system was previously provided to the OECD within the context of the ageing-related diseases / myocardial infarction project.

The purpose of this report is to document the sources and limitations of numbers presented in the enclosed tables:

1. Mortality - ischaemic stroke
2. Mortality - all strokes
3. Hospital discharges - ischaemic stroke
4. Hospital discharges - transient ischaemic attack
5. Diagnostic imaging machines: CT-scan, MRI/MRA
6. Physicians
7. Drugs expenditures

Mortality - stroke

Mortality data are produced by the Swiss Federal office for statistics. The cause of death is coded according to the WHO ICD-8 classification in the years 1980-1994, then according to the ICD-10. Therefore, the interpretation of time trends is not possible between 1994 and 1995.

The most recent available year of cause-specific mortality data is 1997.

Stroke is defined on the basis of the following codes, registered either as primary or as immediate cause of death:

- all strokes, including haemorragic:

  ICD-8: 431, 433, 434, 436

  ICD-10: I61.1 to I61.9, I63.3 to I63.5, I63.8, I63.9, I64

- ischaemic strokes:

  ICD-8: 433, 434, 436

  ICD-10: I63.3 to I63.5, I63.8, I63.9, I64

The numbers presented relate to the resident population of the whole country.

Stroke deaths are related to the numbers of mid-year resident population. Rates are presented for 100'000 resident population.

Tables:

1. ***Mortality - ischaemic stroke***
2. ***Mortality - all strokes***

ISCHAEMIC STROKE MORTALITY (/100'000), SWITZERLAND
Cause of death 1a (primary) or 1b (immediate) ICD-8 433, 434, 436 (years 1980-1994)
Cause of death 1a (primary) or 1b (immediate) ICD-10 I63.3 to I63.5, I63.8, I63.9, I64 (years 1995-1997)

MEN	40-64	65-74	75+
1980	18	304	1297
1981	25	308	1326
1982	23	301	1364
1983	21	295	1268
1984	21	270	1224
1985	19	264	1263
1986	18	255	1244
1987	18	247	1233
1988	18	222	1210
1989	15	204	1244
1990	17	222	1249
1991	16	199	1199
1992	14	218	1183
1993	14	204	1180
1994	12	194	1229
1995	11	142	951
1996	9	116	853
1997	9	121	773

ISCHEMIC STROKE MORTALITY (/100'000), SWITZERLAND
Cause of death 1a (primary) or 1b (immediate) ICD-8 433, 434, 436 (years 1980-1994)
Cause of death 1a (primary) or 1b (immediate) ICD-10 I63.3 to I63.5, I63.8, I63.9, I64 (years 1995-1997)

WOMEN	40-64	65-74	75+
1980	14	189	1208
1981	13	189	1229
1982	12	193	1157
1983	11	170	1217
1984	12	149	1152
1985	8	145	1153
1986	10	147	1167
1987	9	122	1100
1988	7	116	1098
1989	7	116	1121
1990	6	110	1117
1991	7	98	1111
1992	8	103	1095
1993	6	92	1076
1994	7	92	1092
1995	4	82	861
1996	6	66	797
1997	5	65	803

(ALL) STROKE MORTALITY (/100'000), SWITZERLAND
Cause of death 1a (primary) or 1b (immediate) ICD-8 431, 433, 434, 436 (years 1980-1994)
Cause of death 1a (primary) or 1b (immediate) ICD-10 I61.1 to I61.9, I63.3 to I63.5, I63.8, I63.9, I64 (years 1995-1997)

MEN	40-64	65-74	75+
1980	30	374	1422
1981	37	372	1423
1982	38	361	1483
1983	36	355	1377
1984	34	322	1335
1985	32	324	1345
1986	30	304	1325
1987	28	289	1341
1988	28	273	1295
1989	25	244	1335
1990	29	270	1345
1991	25	243	1295
1992	23	259	1273
1993	22	253	1283
1994	20	237	1322
1995	19	184	1038
1996	18	157	948
1997	17	163	867

(ALL) STROKE MORTALITY (/100'000), SWITZERLAND
Cause of death 1a (primary) or 1b (immediate) ICD-8 431, 433, 434, 436 (years 1980-1994)
Cause of death 1a (primary) or 1b (immediate) ICD-10 I61.1 to I61.9, I63.3 to I63.5, I63.8, I63.9, I64 (years 1995-1997)

WOMEN	40-64	65-74	75+
1980	24	238	1312
1981	22	225	1337
1982	20	231	1244
1983	20	215	1312
1984	22	183	1242
1985	15	176	1229
1986	16	178	1245
1987	16	146	1171
1988	14	146	1172
1989	13	141	1177
1990	13	135	1182
1991	14	124	1183
1992	12	128	1159
1993	12	119	1151
1994	12	123	1163
1995	9	113	942
1996	11	93	874
1997	10	92	886

Hospital discharges - ischaemic stroke and transient ischaemic attack (TIA)

Hospital discharges data are produced by the Swiss Federal office for statistics. They are abstracted from a new statistic, introduced in all private and public hospitals in 1998. The registration is not complete in many cantons, and data are available for the year 1998 only. We selected for analysis four large cantons with an extensive coverage (Genève, Vaud, Valais and Zurich), and limited the database to the stays that ended in 1998.

Diagnostics at discharge are coded according to the WHO ICD-10 classification. Ischaemic stroke is defined as ICD-10 codes I63.3 to I63.5, I63.8, I63.9, I64. Transient ischaemic attack is defined as codes G45, I65, I66.

Medical procedures are coded according to a Swiss adaptation of the ICD-9-CM classification. However, some procedures are obviously under-registered. This is the case of procedures not performed in an operating room, such as Cat-scans or MRI/MRA. We therefore limited the analysis of medical procedures to the endarterectomy (code 38.12).

In order to avoid double counts of patients transferred between hospitals, we excluded the stays of patients admitted from another hospital in analyses of hospitalizations and length of stay. The length of stay of patients transferred from another hospital are presented separately.

In the estimation of the proportion of patients with endarterectomy, the stays of patients admitted from another hospital were also excluded. In fact, only two patients had an endarterectomy registered during a hospital stay that was "secondary".

The stays of patients transferred from another hospital were also excluded in the analysis of in-hospital stroke mortality; therefore, our data present the "first stay" in-hospital mortality.

And finally, they were also excluded in the analysis of discharges to a rehabilitation facility; this information should be interpreted with caution anyway because, in the Swiss statistic, a patient is registered as discharged to a rehabilitation facility only when the rehabilitation facility is not located in the same hospital as the acute care ward.

The numbers presented relate to the resident population of the four selected cantons. Rates are presented for 100'000 resident population.

Remark: concerning endarterectomy and stroke. One third of all endarterectomies registered in the four cantons included in the analysis are performed in patients with a primary diagnosis that is neither stroke, nor tia such as defined by ICD-codes selected in this OECD project. The most frequent diagnoses in these cases are related to sclerosis of arteries (coronary arteries, generalized or unspecified) and to cerebral infarction due to an occlusion of precerebral arteries. One hypothesis is that endarterectomy is performed after the acute stage of ischaemic stroke, during a later hospitalization.

Tables:

3. ***Hospital discharges - ischaemic stroke***
4. ***Hospital discharges - transient ischaemic attack***

ISCHAEMIC STROKE HOSPITAL DISCHARGES (/100'000 RESIDENTS), 4 SWISS CANTONS, 1998

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	57.3	311.3	818.4		27.4	160.1	592.7

PERCENTAGE OF ALL ISCHAEMIC STROKE ADMISSIONS WITH ENDARTERECTOMY REGISTERED DURING THE FIRST HOSPITAL STAY

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	0.0	0.4	0.2		0.9	0.6	0.2

PERCENTAGE OF ISCHAEMIC STROKE PATIENTS WHO DIED IN HOSITAL WITHIN 7 DAYS FROM ADMISSION, ALL FIRST STAY ADMISSIONS

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	2.2	2.9	7.2		2.7	2.8	8.6

PERCENTAGE OF ISCHAEMIC STROKE PATIENTS WHO DIED IN HOSITAL WITHIN 7 DAYS FROM ADMISSION, ALL FIRST STAY ADM <=30 DAYS

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	2.6	3.4	9.0		2.9	3.4	10.9

PERCENTAGE OF ISCHAEMIC STROKE PATIENTS WHO DIED IN HOSITAL WITHIN 30 DAYS FROM ADMISSION, ALL FIRST STAY ADMISSIONS

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	3.1	5.9	15.4		4.5	6.2	15.7

PERCENTAGE OF ISCHAEMIC STROKE PATIENTS WHO DIED IN HOSITAL WITHIN 30 DAYS FROM ADMISSION, ALL FIRST STAY ADM <=30 DAYS

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	3.6	6.8	19.3		4.9	7.4	19.9

PERCENTAGE OF ISCHAEMIC STROKE PATIENTS DISCHARGED TO A REHABILITATION UNIT, ALL FIRST STAY ADMISSIONS

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	11.0	11.8	14.6		5.4	9.6	14.7

ISCHAEMIC STROKE, LENGTH OF STAY DISTRIBUTION, ALL FIRST STAY ADMISSIONS

MEAN	MEDIAN	25th PCT	75th PCT
19.9	13.0	8.0	24.0

ISCHAEMIC STROKE, LENGTH OF STAY DISTRIBUTION, PATIENTS TRANSFERRED FROM ANOTHER HOSPITAL

MEAN	MEDIAN	25th PCT	75th PCT
43.2	33.0	15.0	61.0

TRANSIENT ISCHAEMIC ATTACK HOSPITAL DISCHARGES (/100'000 RESIDENTS), 4 SWISS CANTONS, 1998

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	36.4	204.9	409.2		24.2	116.0	268.6

PERCENTAGE OF ALL TIA ADMISSIONS WITH ENDARTERECTOMY REGISTERED DURING THE FIRST HOSPITAL STAY

MEN:	40-64	65-74	75+	WOMEN:	40-64	65-74	75+
	17.4	20.1	8.2		17.2	17.1	5.4

Diagnostic imaging machines: CT-scan, MRI/MRA

Data on imaging machines in hospitals are abstracted from the Hospitals statistic 1998 of the Federal office for statistics. The coverage of the Swiss hospitals is extensive.

The number of machines is related to the resident population; results are expressed as number of machines per 100'000 Swiss resident population.

Table:

5. Diagnostic imaging machines: CT-scan, MRI/MRA

DIAGNOSTIC IMAGING MACHINES IN SWISS HOSPITALS 1998

NUMBER OF CT Scanners	91
NUMBER OF MRI	49

NUMBER OF CT Scanners / 100'000 RESIDENT POPULATION	1.28
NUMBER OF MRI / 100'000 RESIDENT POPULATION	0.69

Physicians

Data on specialist physicians are abstracted from the FMH (Federatio Medicorum Helveticorum) database of active physicians in the years 1996 to 1999.

The number of physicians is related to the resident population; results are expressed as number of machines per 100'000 Swiss resident population.

Table:

6. Physicians

ACTIVE FMH-REGISTERED SPECIALISED PHYSICIANS IN SWITZERLAND, 1996-1999

ABSOLUTE NUMBER:

	1996	1997	1998	1999
NEUROLOGISTS	235	245	244	250
NEUROSURGEONS	57	56	58	62
NEURORADOLOGISTS	15	15	19	20

NUMBER PER 100'000 RESIDENT POPULATION:

	1996	1997	1998	1999
NEUROLOGISTS	3.33	3.46	3.44	3.51
NEUROSURGEONS	0.81	0.79	0.82	0.87
NEURORADOLOGISTS	0.21	0.21	0.27	0.28

Drugs expenditures

Data on drugs expenditures in Switzerland are estimated by Pharma Information, an association of pharmaceutics companies, based on drugs sales by pharmacists, hospitals and physicians. They are expressed in CHF (public price).

There is no available data on drugs sales expressed in DDD; however, information is provided on the number of packages sold.

Both expenditures and packages sold in 1995-1999 are expressed per 100'000 resident population.

Table:

7. Drugs expenditures

ESTIMATED EXPENDITURE FOR SELECTED DRUGS CATEGORIES, PER 100'000 RESIDENT POPULATION, SWITZERLAND, 1995-1999 (in CHF)

	B01A*	CO2	CO3	C04	C07	C08	pure, CO9A	combi, CO9B	C10A
1995	96737	113976	953127	424562	1163983	1431828	1306454	614048	836301
1996	97700	110444	968509	393634	1220548	1445684	1396126	715054	1012404
1997	94051	100264	860012	364340	1215878	1431940	1431940	806349	1280838
1998	93708	87367	800395	339604	1090679	1420419	1424646	880716	1593743
1999	92651	77209	811399	336913	1047238	1464168	1422054	964414	2043939

*not for injection

ESTIMATED NUMBER OF PACKAGES SOLD FOR SELECTED DRUGS CATEGORIES, PER 100'000 RESIDENT POPULATION, SWITZERLAND, 1995-1999

	B01A*	CO2	CO3	C04	C07	C08	pure, CO9A	combi, CO9B	C10A
1995	6307	3790	28950	7636	15914	16128	13734	4459	5713
1996	6513	3384	28291	7136	16963	15179	14386	5097	6584
1997	6465	3008	28724	6821	17454	14588	14334	5550	7725
1998	6292	2579	29099	6595	18291	14049	14063	5933	9061
1999	6313	2330	28427	6668	20060	13673	13757	6317	10978

*not for injection