

# 748 cases of suicide assisted by a Swiss right-to-die organisation

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## Summary

**Background and methods:** In Switzerland, non-medical right-to-die organisations offer instruction and personal guidance in committing suicide to members suffering from incurable diseases. Suicide is usually committed with a lethal dose of barbiturates prescribed by a physician.

This study is a retrospective analysis of all case files of assisted suicide kept during the period 1990–2000 by “Exit Deutsche Schweiz”, the largest Swiss right-to-die organisation.

**Results:** Between 1990 and 2000 Exit assisted in 748 suicides among Swiss residents (0.1% of total deaths, 4.8% of total suicides). 54.4% of the deceased were women. Mean age at death was 73 years in males and 72 years in females (range 18–101 years). Assisted suicide was over-proportionately represented in the German-speaking ( $p < 0.0001$ ), more urbanised ( $p < 0.0001$ ), predominantly Protestant ( $p < 0.0001$ ) cantons. Over the study period the annual number of Exit deaths more than tripled ( $p < 0.0001$ ).

Of the 331 who died in Canton Zurich, 47.4%

had cancer, 11.8% cardiovascular/respiratory disease, 12.4% neurological disease and 7.3% HIV/AIDS. The remaining 21.1% suffered from other, usually non-fatal conditions; 76% of these were women.

There were no significant changes in sex, age and distribution of diagnoses during the study period. At first all the lethal substances were taken orally, but by the end of the study period 14% were administered via infusion or PEG catheter.

All assisted suicides in the City of Zurich were duly notified to the authorities.

**Conclusions:** The number of suicides assisted by “Exit Deutsche Schweiz” and the practices followed markedly expanded over this time. There was no apparent relaxation of the indications for assisted suicide. Notification of the authorities appeared to be total.

**Key words:** euthanasia; assisted suicide; barbiturates; Switzerland; Exit

## Introduction

Under the Swiss Penal Code, voluntary active euthanasia is punishable by imprisonment (Article 114) whilst assisting in suicide without any self-interest is not illegal (Article 115) [1]. Aid in dying offered by Swiss right-to-die organisations is based on this open legislation [2].

“Exit Deutsche Schweiz”, the German Swiss Exit Association founded in Zurich in 1982, was the first and for many years the only right-to-die organisation offering such assistance [3]. Originally it provided a suicide manual (how to take a cocktail of drugs and if necessary to place a plastic bag over the head). Since the 1990s the organisation has offered instruction and personal guidance through suicide to members suffering from diseases with “poor prognosis, unbearable suffering or unreasonable disability”, who wish to die [4]. In principle these criteria do not preclude people with mental disorders from assistance in suicide. However, in 1998 the Medical Officer of the Canton of

Basle prevented the suicide of a 29-year-old mentally ill woman [3], and Exit lost members when the case became public knowledge. As a result, the organisation founded an ethics committee which recommended that people wishing to commit suicide because of mental illness should not be assisted [5]. Information supplied by the organisation indicates that about one-third of requests to Exit lead to assistance in suicide [5].

Another consequence of this incident was the withdrawal of prescription rights from the physician involved, a board member of the Exit organisation. Even so, the legal responsibility of the physician prescribing the lethal dose of barbiturate has still not been clarified [6]. Such prescriptions are written by the family physician, an attending specialist or a physician working with the organisation.

Today, “Exit Deutsche Schweiz” has more than 50,000 members, almost 1% of the popula-

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tion [3]. Two much smaller right-to-die organisations, "Exit International", founded in 1997 and "Dignitas", founded in 1998, are both splinter groups of "Exit Deutsche Schweiz". However, the number of suicides assisted by these two organisations among Swiss residents during the study period remained very small [7]. "Exit ADMD", the French Swiss Exit Association, has mainly promoted a certain type of living will and has begun to offer assistance in suicide only after the study period [8].

As with all suicides, assisted suicides must be notified in Switzerland as unnatural deaths, to be investigated on the spot by the authorities in conjunction with a forensic medical officer [9]. Prosecution follows if doubts subsist regarding the deceased's decision-making capacity. Since there is no central notification of assisted suicide in Switzerland, only the right-to-die organisations themselves have an overview of these cases.

## Methods

### Purpose and approach

The aim of this study was independent collection and analysis of core data on the activities of "Exit Deutsche Schweiz" in assisted suicide. In October 2000, the Exit management committee granted us permission to review their records of assistance in suicide. All records from 1990–2000 were made available, subject to guarantees of complete anonymity of the data gathered in situ by one of the research team (E. U.) and strict confidentiality. None of these data had previously been subjected to external scientific review.

### Data collection

The Exit files always consisted of an Exit record sheet providing information including sex, age, place of residence, medical diagnosis and date of membership of the person wishing to die, steps taken to clarify the situation and the timing of events during assistance. Also routinely enclosed was an assisted suicide declaration, "Freitod-Erklärung", in which the person concerned stated his/her wish to die in writing. Some files additionally included medical reports and/or opinions from the family doctor, attending specialist, hospital or a physician working with the organisation. Some of these reports were nothing more than a list of diagnoses, while others contained a specific assessment of the wish to die in relation to the medical and social situation (opinion). A copy of the prescription for the barbiturate used could also be found in some cases. A few files held correspondence between the member and the organisation, or detailed reports from the person wishing to die concerning his/her situation.

To keep the study within reasonable limits, cases were

reviewed at three levels. Sociodemographic data of the deceased (age, sex, year of death and canton of residence) were obtained for all Exit-assisted suicides in Switzerland (n = 748). Information relevant to the medico-legal investigation (diagnosis in relation to the wish to die, length of membership, medical reports and prescriptions, and how suicide was committed) was collected from the Exit files for residents of Canton Zurich (n = 331). Medical diagnoses were classified according to the International Classification of Diseases (ICD-10) into five diagnostic groups: cancer (ICD-10: C00–D09), cardiovascular/respiratory diseases (ICD-10: I00–J98), HIV/AIDS (ICD-10: B20–B24), neurological diseases (ICD-10: G00–G99) and other. The first four groups chiefly included fatal diagnoses, while "other diagnoses" consisted principally of cases in which no fatal condition was present.

For members who died in the City of Zurich (n = 147), a cross-check was made against files held at the Institute of Legal Medicine (ILM), containing the district physician's and police reports. Notification of the authorities and the diagnoses given in the Exit files were reviewed.

### Statistical analysis

We compared the number of cases, sociodemographic factors and medical diagnoses with death certificate data from the Swiss Federal Statistical Office [10]. Since data for 2000 were not yet available, we substituted data from 1999. To evaluate changes over the study period, data from the first four years (1990–1993) were compared with data from the last four (1997–2000). Simple two-way contingency tables (chi-square) were used for all statistical evaluations. Significance level was set at  $p < 0.05$ .

## Results

### Number, sex, age at death and canton of residence of Exit deaths in Switzerland

"Exit Deutsche Schweiz" assisted 748 suicides in the Swiss population between 1990 and 2000 (0.1% of total deaths and 4.8% of total suicides over this period). The deceased were between 18 and 101 years old, with a mean age of 72 years (m = 73, f = 72). 54.4% were women, a significant over-representation in comparison with all other deaths ( $p = 0.02$ ), and more markedly with all other suicides ( $p < 0.0001$ ) (table 1). The higher proportion of women compared with all other suicides was consistent throughout the age groups. However, in comparison with all other deaths, men

were over-represented in the over-85s ( $p = 0.03$ ). Residents of German-speaking ( $p < 0.0001$ ), more urbanised ( $p < 0.0001$ ), predominantly Protestant ( $p < 0.0001$ ) cantons were more common in the Exit deaths (table 2).

### Developments over the study period in Switzerland

The number of Exit deaths tripled from 110 (1990–1993) to 389 (1997–2000), amounting to 0.2% of all deaths at the end of the study period. This is a highly significant increase in relation both to total deaths ( $p < 0.0001$ ), which remained constant in Switzerland, and total suicides ( $p < 0.0001$ ),

**Table 1**

Exit-assisted suicides (Exit deaths) among Swiss residents 1990–2000: Sex and age distribution in comparison with all other deaths and with all other suicides. Figures are numbers (column percentage) of people.

Variable of the deceased	Exit deaths (n = 748) <sup>a</sup>	All other deaths <sup>b</sup> (n = 688,900) <sup>a</sup>	p value <sup>c</sup>	All other suicides <sup>b</sup> (n = 14,759) <sup>a</sup>	p value <sup>c</sup>
Sex, all ages					
Men	341 (45.6)	343,600 (49.9)	0.02	10,807 (73.2)	<0.0001
Women	407 (54.4)	345,300 (50.1)		3,952 (26.8)	
Sex, age <44 yr					
Men	37 (58.7)	28,600 (67.8)	0.12	4,790 (76.8)	0.001
Women	26 (41.3)	13,600 (32.2)		1,445 (23.2)	
Sex, age 45–64 yr					
Men	76 (40.9)	59,500 (65.4)	<0.0001	3,451 (72.1)	<0.0001
Women	110 (59.1)	31,500 (34.6)		1,338 (27.9)	
Sex, age 65–84 yr					
Men	177 (46.8)	183,000 (54.8)	0.002	2,172 (68.8)	<0.0001
Women	201 (53.2)	151,100 (45.2)		987 (31.2)	
Sex, age >85 yr					
Men	51 (42.1)	72,500 (32.7)	0.03 <sup>d</sup>	394 (68.4)	<0.0001
Women	70 (57.9)	149,100 (67.3)		182 (31.6)	

<sup>a</sup> All ages

<sup>b</sup> Data from Swiss Federal Statistical Office

<sup>c</sup> Chi-square test

<sup>d</sup> Over-representation of men

**Table 2**

Exit-assisted suicides (Exit deaths) among residents of different Swiss cantons 1990–2000 related to language, region and religion in comparison with all other deaths. Figures are numbers (column percentage) of people.

Characteristic of canton	Exit deaths (n = 748)	all other deaths <sup>a</sup> (n = 688,900)	p value <sup>b</sup>
Language			
German	703 (94.0)	495,000 (71.9)	<0.0001 <sup>c</sup>
French	27 (3.6)	164,200 (23.8)	
Italian	18 (2.4)	29,700 (4.3)	
Urban / rural			
Urbanised	491 (65.6)	351,400 (51.0)	<0.0001
Rural <sup>d</sup>	257 (34.4)	337,500 (49.0)	
Religion			
Protestant	558 (74.6)	387,600 (56.3)	<0.0001
Catholic	190 (25.4)	301,300 (43.7)	

<sup>a</sup> Data from Swiss Federal Statistical Office

<sup>b</sup> Chi-square test

<sup>c</sup> German-speaking compared with French- / Italian-speaking

<sup>d</sup> Defined as more than 33.3% of all residents living in a rural area

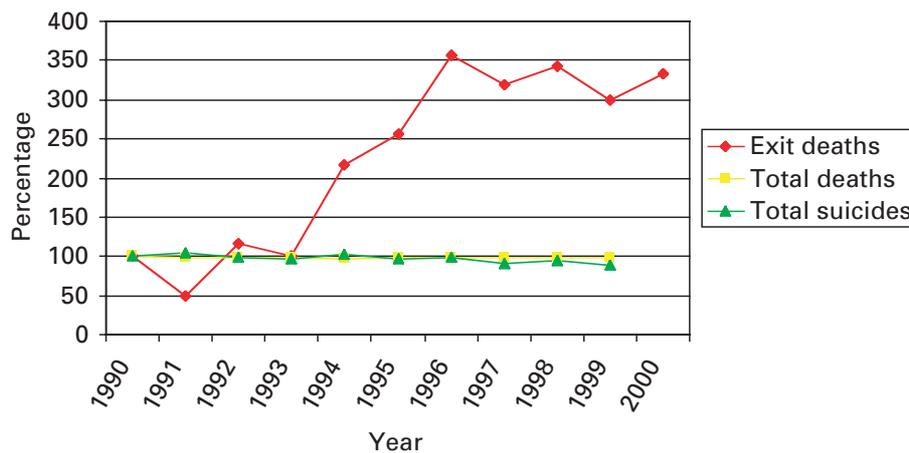
which decreased slightly over the same period (figure 1). Sex and age distribution did not change significantly between these periods (table 3).

**Medical diagnoses of Exit deaths in the Canton Zurich**

Between 1990 and 2000, “Exit Deutsche Schweiz” assisted at 331 suicides of residents of Canton Zurich, i.e. 0.3% of total deaths and 8.8% of total suicides in this region. Of these, 78.9% were principally suffering from fatal diseases: 47.4% from cancer, 11.8% from cardiovascular/respiratory diseases, 7.3% from HIV/AIDS and 12.4% from neurological diseases (table 4). Compared with natural deaths, Exit deaths represented 0.5% of total deaths due to malignancy, 0.1% of those due to cardiovascular/respiratory disease,

**Figure 1**

Exit deaths, total deaths and total suicides in Switzerland from 1990 to 2000, index year is 1990 (100 corresponds to 63'739 deaths, 1467 suicides and 30 Exit deaths per year respectively).



**Table 3**

Sociodemographic parameters of Exit deaths (Swiss residents) 1990-1993 and 1997-2000. Figures are numbers (column percentage) of people.

Variable of the deceased	Exit deaths 1990 - 1993 (n = 110) <sup>a</sup>	Exit deaths 1997 - 2000 (n = 389) <sup>a</sup>	p value <sup>b</sup>
Sex			
Men	58 (53)	185 (48)	0.3
Women	52 (47)	204 (52)	
Age group men			
<64 yr	17 (29)	57 (31)	0.8
>65 yr	41 (71)	128 (69)	
Age group women			
<64 yr	20 (38)	59 (29)	0.2
>65 yr	32 (62)	145 (71)	

<sup>a</sup> Both sexes

<sup>b</sup> Chi-square test

1.7% of those due to HIV/AIDS and 1.2% of those due to neurological diseases. Of particular note in this last group was that 4.5% of persons with multiple sclerosis and 3.4% of those with amyotrophic lateral sclerosis voluntarily ended their lives prematurely.

The remaining 70 cases (21.1%) embraced principally non-fatal diagnoses such as musculoskeletal disorders (20 cases, viz. 5 rheumatoid arthritis, 8 osteoporosis and 7 arthrosis), 13 cases of chronic pain syndrome and diagnoses such as "blindness" and "general weakness". The wish to die was related to mental disorder in 9 cases (8 depression and 1 psychosis).

Of the total 331 cases in Canton Zurich, 159 were males and 172 (52%) females. 142 men (mean age 71 years) and 119 women (46%) (mean age 67 years) had fatal diseases. In contrast, "other diagnoses" comprised 17 men and 53 women (76%) of higher mean ages (80 and 83 years respectively).

### Developments over the study period in Canton Zurich

In the 331 case records studied the proportions of persons with cancer and of persons without fatal medical conditions ("other diagnoses") did not change significantly (table 5). Assisted suicides of

persons with less than 4 weeks' Exit membership increased from 4% to 10% ( $p = 0.2$ ), while the median duration of membership prior to death increased from 2 to 3 years. By the end of the study period there was a highly significant increase in the number of medical reports ( $p < 0.0001$ ) and in identification of the physician prescribing the barbiturates ( $p < 0.0001$ ), who was the attending or family physician in 31% of cases and a physician working with the right-to-die organisation in 52%. At the beginning of the 1990s secobarbital, pentobarbital or a combination of various hypnotics were used, all taken orally. Between 1997 and 2000, pentobarbital was used almost exclusively, administered by intravenous infusion or PEG catheter in 14% of cases (significant increase,  $p = 0.004$ ).

### Barbiturates as means of suicide (Canton Zurich)

In 300 of the Exit deaths in Canton Zurich, a barbiturate was the only drug used (following ingestion of an anti-emetic) and was taken orally in 276 cases. In 261 cases 10-12 g pentobarbital was taken orally: the median interval before death was 23 minutes (range 7-1075 minutes, table 6). In 15 cases 10-15 g secobarbital was ingested and the median time to death was 25 minutes (range 11-626 minutes). In 22 cases, 10-15 g pentobarbital was administered intravenously and caused death after a median time of 16 minutes (range 4-45 minutes). In two further cases, pentobarbital was administered via PEG catheter.

### Notification rate, verification of diagnosis, post-mortem investigations of the cases in the city of Zurich

147 Exit deaths in the city of Zurich (place of death) were reviewed, all of which were notified as unnatural deaths and investigated by the Institute of Legal Medicine (ILM).

For 61 cases without a medical report in the Exit file, the diagnosis stated on the Exit record sheet was checked in the ILM records. 35 of these contained a record that the forensic medical offi-

**Table 4**

Medical diagnoses in Exit deaths and total deaths among residents of Canton Zurich between 1990 and 2000. Figures are numbers (column percentage) of people.

Diagnostic group	Exit deaths (n = 331)	total deaths <sup>a</sup>	% Exit deaths / total deaths
Malignancy	157 (47.4)	29,131	0.5
Cardiovascular/respiratory	39 (11.8)	57,457	0.1
HIV / AIDS	24 (7.3)	1,412	1.7
Nervous system	41 (12.4)	3,519	1.2
Multiple sclerosis	10 (3.0)	223	4.5
Amyotrophic lateral sclerosis	8 (2.4)	232	3.4
Other <sup>b</sup>	70 (21.1)	-	-
Musculoskeletal system	20 (6.0)	-	-
Pain syndrome	13 (3.9)	-	-
Depression / schizophrenia	9 (2.7)	-	-

<sup>a</sup> "Natural" deaths according to data from the Swiss Federal Statistical Office and Exit deaths of the same diagnostic group (numbers given only for diagnostic groups which are compatible with the condition of a fatal illness)

<sup>b</sup> Including 3 cases in which no diagnosis was given

**Table 5**

Medico-legally relevant parameters of Exit deaths among residents of Canton Zurich in four-year periods 1990–1993 and 1997–2000. Figures are numbers (column percentage) of people.

Variable of the deceased	Exit deaths 1990–1993 (n = 51)	Exit deaths 1997–2000 (n = 166)	p value <sup>a</sup>
Diagnoses			
Malignancy	30 (59)	74 (45)	0.07 <sup>b</sup>
HIV / AIDS	5 (10)	7 (4)	
Cardiovascular/respiratory disease	3 (6)	33 (20)	
Nervous system	4 (8)	20 (12)	
Other	9 (18)	32 (19)	0.8 <sup>c</sup>
Duration of membership in "Exit"			
<1 week	2 (4)	6 (4)	0.2 <sup>d</sup>
1 –<4 weeks	0	10 (6)	
4 –<1 year	15 (29)	36 (22)	
1 –<5 years	17 (33)	44 (27)	
>=5 years	17 (33)	70 (42)	
Medical report or opinion issued by			
Attending or family physician	6 (12)	87 (52)	
Exit physician	0	21 (13)	
Hospital physician	2 (4)	45 (27)	
No report or opinion in the file	43 (84)	13 (8)	<0.0001 <sup>e</sup>
Prescribing physician recorded by			
Attending or family physician	4 (8)	52 (31)	
Exit physician	0	86 (52)	
Not recorded in the file	47 (92)	28 (17)	<0.0001 <sup>e</sup>
Lethal drug, mode of administration			
Pentobarbital orally	11 (22)	141 (85)	
Secobarbital orally	12 (24)	0	
Other/combination orally	28 (55)	1 (1)	
Pentobarb. via gastric tube/infusion	0	24 (14)	0.004 <sup>f</sup>

<sup>a</sup> Chi-square test

<sup>b</sup> Malignancy compared with all other diagnostic groups

<sup>c</sup> "Other diagnoses" compared with all previously-mentioned diagnostic groups

<sup>d</sup> <4 compared with >4 weeks

<sup>e</sup> "No report" compared with the rest

<sup>f</sup> "Pentobarbital via gastric tube/infusion" compared with oral administration

**Table 6**

Time interval between oral ingestion of lethal dose of pentobarbital (10, 12, or 15 g) and death. Figures are numbers (column percentage) of deaths.

Time interval	cases (n = 261)	
0–15 min	70	(27)
16–30 min	115	(44)
31–60 min	44	(17)
>1–2 h	11	(4)
>2–12 h	20	(8)
>12 h	1	(0.4)

cer had contacted the family or attending physician directly, and in a further 22 cases there was a record of a statement by relatives to the investigative authorities. By this means the diagnostic group given by Exit was eventually confirmed in all these 57 cases. In one case, however, the diagnosis of lung

cancer given by Exit was actually carcinoma of the oesophagus with pulmonary metastases. In three cases Exit gave a non-specific diagnosis of "cancer" when the type of malignancy was actually known.

Post-mortem and toxicological investigations were carried out in five of the 147 cases investigated by the ILM. In four cases the post mortem findings confirmed the Exit diagnosis. In the fifth case, the accompanying Exit staff member had refused to provide information on preparation of the suicide, the drugs taken or the deceased's medical situation. The post-mortem showed prostate cancer and an old thalamic haemorrhage. As in the other four cases, toxicological investigation found lethal pentobarbital blood concentrations.

## Discussion

This is, to our knowledge, the first independent comprehensive overview of the suicide-related activities of the right-to-die organisation "Exit Deutsche Schweiz", and of the distinguishing features of the deceased.

### Incidence

Exit deaths comprised 0.1% of total deaths in Switzerland over the entire study period and 0.2% between 1997 and 2000. In Oregon, as reported in 1998–2001 under the Death with Dignity Act, assisted suicide accounted for less than 0.1% of all deaths [11]. In 1995, in the Netherlands, the incidence of reported cases of physician-assisted suicide and voluntary active euthanasia (physician-assisted death) made up 1.1% of total deaths [12]. However, an extensive anonymous investigation of physicians (death certificate study) showed that the true incidence was more than twice as high [13]. Although illegal, assistance in dying is also performed in other countries [14–16].

The number of unreported cases of assisted suicide or euthanasia in Oregon and Switzerland is not known. However, the finding of 147 Exit cases from the City of Zurich in the records of our own Institute is a reliable indication that all Exit-assisted suicides were duly notified. The overall incidence of medical end-of-life decisions in Switzerland has recently been investigated in a multinational European death certificate study, the results of which should be available soon [17].

### Sex and age

Altogether we found that women were over-represented among Exit deaths as a proportion of total deaths, although men were over-represented in the over-85s. In contrast, Frei and co-workers recently reported a strong over-representation of women over the age of 65 among 35 Exit deaths investigated in the Basle region [18]. This difference is due to a different comparison group (ordinary suicides) rather than to a different study population. In 1702 cases of assisted dying reported to the public prosecutor in North Holland between 1984 and 1993, assistance was given more often to men than to women, with no differences between the sexes in the percentage of deaths in old age [19].

### Diagnostic groups

Cancer patients formed the largest diagnostic group among Exit deaths, but the percentage (47%) was low compared with 77% of the assisted suicides in Oregon and up to 80% of physician-assisted deaths in the Netherlands [11, 13, 20]. In patients with multiple sclerosis, amyotrophic lateral sclerosis or HIV/AIDS, the proportion of Exit deaths was markedly higher than in cancer patients. In North Holland, physician-assisted death rates were the highest in AIDS patients (six times higher than for cancer), followed by multiple scle-

rosis and amyotrophic lateral sclerosis (both twice as high) [20].

21% of the persons assisted by "Exit Deutsche Schweiz" had no apparent fatal medical condition ("other diagnoses"), a markedly higher proportion than reported from the Netherlands and Oregon. In North Holland, using similar diagnostic groups, 7% of physician-assisted deaths between 1984 and 1993 were due to "other diagnoses", while in Oregon the Death with Dignity Act allows assistance in suicide only for terminally ill people [11, 20].

### Exit deaths in old age and among mentally ill patients

The 70 persons with "other diagnoses" in the Exit deaths were distinguished by a high mean age. It must be assumed that multimorbidity rather than a single fatal illness sometimes predominated amongst these elderly people.

The high proportion of women (76%) in this group cannot be explained simply by their longer life expectancy, since amongst the total 331 cases men were actually older than women. It is more a case of over-representation of women without fatal disease contrasting with over-representation of men with such conditions. Our figures correspond to Waern's recent findings that serious physical illness in old age may be a stronger risk factor for suicide in men than in women [21].

9 Exit deaths (3%) were directly connected with mental disorders. This number does not include cases with concomitant mental disorder. A special checklist, used by Exit since 1998, revealed a depressive disorder associated with a somatic disease in 18% of 132 cases investigated [7]. However, "ordinary" suicides and Exit suicides seem to relate to different populations. Among the Exit deaths examined in the files of the Basle University Institute of Legal Medicine between 1992 and 1997, 14% had been treated at least once as in- or outpatients at a public psychiatric institution, whereas among the "ordinary" suicides in this region during the same period the corresponding figure was 37% [18].

### "Exit Deutsche Schweiz" on the slippery slope?

There was a striking increase – tripling – in the number of Exit deaths over the 11-year study period. However, sociodemographic factors (age, gender distribution) and medical factors (diagnoses) relating to the deceased remained relatively unchanged. Since the quality of the records improved, we conclude that this increase stems more from a growing number of requests than from relaxation of the indications for assisted suicide or from progressive laxity in decision-making. Concern remains whether the persistence of the death wish was tested adequately in those cases where the prescribing physician was not the attending or

family doctor, particularly when Exit membership was of short duration (sometimes less than a week). Such practice stands in contrast to Emanuel and co-workers' finding that, among terminally ill patients who were seriously considering euthanasia or physician-assisted suicide, half changed their minds over the next few months [22].

A significant procedural change occurred after 1997, when i.v. infusions and gastric tubes were introduced for drug administration. These cases have been classified as assisted suicide by the authorities, since the final decisive step causing death (i.e. starting the infusion) had actually been taken by the person wishing to die [23]. This means that even severely ill people, e.g. with difficulties in swallowing, are now no longer excluded from assisted suicide in Switzerland [24]. In the Netherlands, however, these techniques would probably be classed as voluntary active euthanasia [25].

### Practical issues

The rapid increase in parenteral administration of barbiturates since 1997 may be a consequence of the observation that after oral ingestion several hours can elapse before death. In the present study the median and range of time to death following oral administration are somewhat shorter than reported for the 91 assisted suicides in Oregon in the period 1998–2001 (30 minutes, range 4 minutes to 37 hours) [11]. Like Preston in Washington and Hedberg in Oregon, we found no records of serious complications or cases of reawakening from coma [11, 26]. These findings are noteworthy in the light of the ongoing international debate on the effectiveness of purely orally administered drugs in assisted suicide [25, 27, 28].

### Limitations of the results

Records held in Exit's archives were the main source of information, so it is not wholly impos-

sible that important information may have been withheld. Verification of available files was possible only in the city of Zurich, but comparison with the records held in our Institute revealed only very minor differences.

There was a lack of information on the Exit files about specific data on the motivation, duration and persistence of the wish to die, on the stage of disease and therapeutic options tried or offered, and on the psychosocial setting. This holds in particular for the files from the start of the study period. Further systematic research in this area is needed to establish a high index of suspicion for any preventable cause of the wish to die. Special attention in this context should be paid to the group of people committing assisted suicide without having fatal medical conditions.

Our results cannot be extrapolated to suicide assistance given more recently, mainly to non-Swiss residents, by other Swiss right-to-die organisations such as "Dignitas" or "Exit International" [29]. However, "Exit Deutsche Schweiz" has maintained a clear distance from these practices, which have yet to be scientifically investigated [30].

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## References

- 1 Hauser R, Rehberg J. StGB Schweizerisches Strafgesetzbuch. Zurich, Switzerland: Orell Füssli, 1986.
- 2 Hurst SA, Mauron A. Assisted suicide and euthanasia in Switzerland: allowing a role for non-physicians. *BMJ* 2003;326:271–3.
- 3 Teuwsen P. Notausgang. *Tages-Anzeiger Magazin* 2001, March 17.
- 4 Exit Deutsche Schweiz. Statutes; 1999 June 26. [www.exit.ch/wDeutsch/organisation/statuten.shtml](http://www.exit.ch/wDeutsch/organisation/statuten.shtml) (accessed 05 June 2003).
- 5 Wehrli H. Humanes Sterben. Die städtische Sterbehilfe-Neuregelung und Exit. *Neue Zürcher Zeitung* 2001, February 8.
- 6 Bosshard G, Bär W. Sterbeassistenz und die Rolle des Arztes. *Aktuelle Juristische Praxis* 2002;11:407–13.
- 7 Ulrich E. Exit - Beihilfe zum Suizid 1990–2000. Medical dissertation. University of Zurich, Switzerland, 2002.
- 8 Giroud C, Augsburg M, Horisberger B, Lucchini P, Rivier L, Mangin P. Exit Association-mediated suicide. Toxicologic and forensic aspects. *Am J Forensic Med Pathol* 1999;20:40–4.
- 9 Bosshard G, Fischer S, Bär W. Open regulation and practice in assisted dying. How Switzerland compares with the Netherlands and Oregon. *Swiss Med Wkly* 2002;132:527–34.
- 10 Bundesamt für Statistik: Statistisches Jahrbuch der Schweiz. Zurich, Switzerland: Verlag Neue Zürcher Zeitung, 1992–2002.
- 11 Hedberg K, Hopkins D, Southwick K. Legalized physician-assisted suicide in Oregon, 2001. *N Engl J Med* 2002;346:450–2. Further information available from [www.ohd.hr.state.or.us/chs/pas/pas.cfm](http://www.ohd.hr.state.or.us/chs/pas/pas.cfm) (accessed 05 June 2003).
- 12 Van der Wal G, van der Maas PJ, Bosma JM, Onwuteaka-Philipsen BD, Willems DL, Haverkate I, Kostense PJ. Evaluation of the notification procedure for physician-assisted death in the Netherlands. *N Engl J Med* 1996;335:1706–11.
- 13 Van der Maas PJ, van der Wal G, Haverkate I, de Graaff CLM, Kester JGC, Onwuteaka-Philipsen BD, et al. Euthanasia, physician-assisted suicide, and other medical practices involving the end of life in the Netherlands 1990–1995. *N Engl J Med* 1996;335:1699–705.
- 14 Ward JP, Tate PA. Attitudes among NHS doctors to requests for euthanasia. *BMJ* 1994;308:1332–4.

- 15 Meier DE, Emmons CA, Wallenstein S, Quill T, Morrison RS, Cassel CK. A national survey of physician-assisted suicide and euthanasia in the United States. *N Engl J Med* 1998;338:1193-201.
- 16 Deliens L, Mortier F, Bilsen J, Cosyns M, Vander Stichele R, Vanoverloop J, Ingels K. End-of-life decisions in medical practice in Flanders, Belgium: a nationwide survey. *Lancet* 2000;356:1806-11.
- 17 Van der Heide A, Deliens L, Faisst K, Nilstun T, Norup M, Paci E, et al. End-of-life decision-making in 6 European countries. *Lancet* (in press).
- 18 Frei A, Schenker T, Finzen A, Kräuchi K, Dittmann V, Hoffmann-Richter U. Assisted suicide as conducted by a "Right-to-Die"-society in Switzerland: A descriptive analysis of 43 consecutive cases. *Swiss Med Wkly* 2001;131:375-80.
- 19 Onwuteaka-Philipsen BD, Muller MT, van der Wal G. Euthanasia and old age. *Age Ageing* 1997;26:487-92.
- 20 Van der Wal G, Onwuteaka-Philipsen BD. Cases of euthanasia and assisted suicide reported to the public prosecutor in North Holland over 10 years. *BMJ* 1996;312:612-3.
- 21 Waern M, Rubenowitz E, Runeson B, Skoog I, Wilhelmson K, Allebeck P. Burden of illness and suicide in elderly people: case-control study. *BMJ* 2002;324:1355-8.
- 22 Emanuel EJ, Fairclough DL, Emanuel LL. Attitudes and desires related to euthanasia and physician-assisted suicide among terminally ill patients and their caregivers. *JAMA* 2000;284:2460-8.
- 23 Riklin F. Die strafrechtliche Regelung der Sterbehilfe in der Schweiz. In: Holderegger A, ed. *Das medizinisch assistierte Sterben*. Freiburg i. U., Switzerland: Universitätsverlag, 2000:322-44.
- 24 Bosshard G, Jermini D, Eisenhart D, Bär W. Assisted suicide bordering on active euthanasia. *Int J Legal Med* 2003;117:106-8.
- 25 Groenewoud JH, van der Heide A, Onwuteaka-Philipsen BD, Willems DL, van der Maas PJ, van der Wal G. Clinical problems with the performance of euthanasia and physician-assisted suicide in the Netherlands. *N Engl J Med* 2000;342:551-6.
- 26 Preston TA, Mero R. Observations concerning terminally ill patients who choose suicide. *J Pharma Care* 1996;4:183-92.
- 27 Nuland S. Physician-assisted suicide and euthanasia in practice (editorial). *N Engl J Med* 2000;342:583-4.
- 28 Rasmussen PA. Physician-assisted suicide and euthanasia (comment). *N Engl J Med* 2000;343:150.
- 29 Dyer C. Swiss parliament may try to ban "suicide tourism" (news roundup). *BMJ* 2003;326:242.
- 30 Benini F. Die Schweiz als Zielland für "Sterbetouristen". Scharfe Kritik an der Sterbehilfeorganisation Dignitas. *NZZ am Sonntag* 2002, September 13.

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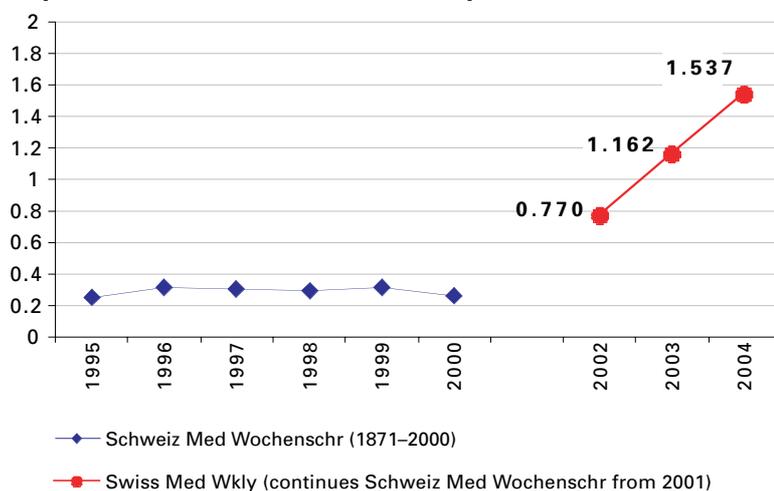
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