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Studie

«Potenzielle ökonomische Auswirkungen von mobilen Palliativdiensten in der Schweiz»

Vorbemerkungen

Die nationale Plattform Palliative Care (PPC) hat ihren ersten Umsetzungsfokus 2017/2018 auf die optimale Nachversorgung ausserhalb des Akutspitals gelegt. Die Leitungsgruppe der PPC hat dazu ein Massnahmenpaket verabschiedet. Ziel dieser Massnahmen ist es, dass alle Menschen, die Palliative Care benötigen, auch ausserhalb des akutstationären Bereichs Zugang zu qualitativ guten Palliative-Care-Angeboten haben. Damit wird dazu beigetragen, unerwünschte bzw. unnötige Rehospitalisationen zu vermeiden. Belastung und Stresssituationen für die betroffenen Personen sollen verhindert werden. Zudem wünschen sich rund 72% der Bevölkerung, zu Hause zu sterben.[1]

In diesem Zusammenhang spielen mobile Palliativdienste eine wichtige Rolle. Sie können eine qualitativ gute Betreuung und Behandlung von Patientinnen und Patienten zu Hause oder im Pflegeheim sicherstellen. Deshalb hat sich die PPC im Umsetzungsfokus 2017/2018 unter anderem zum Ziel gesetzt, mobile Palliativdienste zu fördern. In der Schweiz sind die Kantone (oder z.T. die Gemeinden) für die Ausgestaltung der Gesundheitsversorgung zuständig. Aus nationaler Sicht geht es also darum, Fakten und Wissensgrundlagen bereitzustellen, die die Vorteile von mobilen Palliativdiensten für die Kantone bzw. Regionen aufzeigen. Als erste Massnahme wurde die vorliegende Studie finanziert.

Die Studie gibt – basierend auf der Analyse verschiedener Daten – Hinweise darauf, dass durch spezialisierte mobile Palliativdienste in allen Kantonen und Regionen Gesundheitskosten eingespart werden können. Die Einsparungen resultieren vor allem daraus, dass Hospitalisationen vermieden werden. Die Einsparungen überwiegen die Kosten von mobilen Diensten. Die potenziellen Kosten für einen mobilen Palliativdienst und die potenziell möglichen Einsparungen wurden pro Kanton berechnet.

Die Ergebnisse sind rein deskriptiv und beinhalten lediglich eine Kostenanalyse. Sie sind daher mit Vorsicht zu interpretieren: Es braucht nicht nur einen mobilen Palliativdienst, um zu gewährleisten, dass eine Person – sofern sie dies möchte – ihr Lebensende zu Hause verbringen kann. In erster Linie braucht es ein tragfähiges Betreuungsnetzwerk aus Angehörigen, Spitex, Hausärztin oder Hausarzt und Freiwilligen. Der mobile Palliativdienst kann dieses Netzwerk unterstützen und insbesondere Krisensituationen abfedern. Wichtig ist auch, dass es nicht das oberste Ziel eines mobilen Palliativdienstes ist, in jedem Fall eine Hospitalisierung zu vermeiden. Im Fokus steht immer die Lebensqualität der betroffenen Person und ihrer Angehörigen. Schliesslich ist auch zu beachten, dass eine Reduktion der Kosten im stationären Bereich dazu führen kann, dass die Kosten in anderen Sektoren ansteigen – hier insbesondere im ambulanten Sektor. Es dürfte auch eine Verlagerung hin zur informellen Pflege durch Angehörige geben, d.h. eine Erhöhung der indirekten Kosten.
Unabhängig von diesen Limitationen bietet die Studie eine jedoch wichtige Grundlage zur Förderung von mobilen Palliativdiensten in der Schweiz. Die Leitungsgruppe der Plattform Palliative Care dankt den Autorinnen und Autoren für diese wertvolle Arbeit.

[1] Stettler Peter, Severin Bischof, Livia Bannwart (2018): Bevölkerungsbefragung Palliative Care 2017. Ergebnisse der Befragung 2017 und Vergleich zur Erhebung von 2009, Bern: Bundesamt für Gesundheit

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Potential economic impact of mobile specialist palliative care teams in Switzerland

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Introduction

What are mobile specialist palliative care teams

In many countries, mobile specialist palliative care teams are fundamentally important for delivering effective, decentralized palliative care at the end of life. Mobile specialist palliative care teams are multidisciplinary teams, but their structures can vary widely depending on the local model of care. Teams mostly include palliative care physicians as general practitioners or specialists, and home care nurses or nurse practitioners who improve the availability of specialist palliative care by providing ambulant palliative care or consultations. Their specialist palliative care services focus on quality of life as experienced by patients, their families, and carers, and often have a graded approach. Mobile specialist palliative care teams can provide direct specialized palliative care in collaboration with the local primary care team. They provide expertise in pain therapy, symptom control, palliative care and psychosocial support (1) and/or have an advisory function for the local care team.

In recent years, many mobile specialist palliative care teams have been formed in Switzerland to improve specialist palliative care services at home. However, nationwide availability has not yet been achieved. Most people in Switzerland (72%) prefer to die at home (2). In the current health care system, the majority of Swiss patients will not have this desired home death. Seventy-nine percent of the people dying in Switzerland die in a hospital or nursing home (3). This discrepancy between the preferred and actual place of death could be improved if more mobile specialist palliative care teams were available to provide high quality palliative care at home. The Swiss palliative care strategy defined a palliative care model that assumed that 20 percent of all terminal patients need specialist palliative care services (4). These patients can be admitted to a specialist palliative care clinic. The availability of mobile specialist palliative care teams provides the possibility of treatment outside the hospital or a shorter length of stay in the clinic. The impact of the availability of a palliative care network including mobile specialist palliative care teams is shown in the demonstration project of the World Health Organization (WHO) in Catalonia. This demonstration project has been evaluated for over 25 years. Results demonstrate not only the positive effect on quality of care as perceived by patients and family, but also on overall costs, especially in terms of significantly lower rates of emergency room visits and hospitalizations (5; 6).

Clinical example of mobile specialist palliative care

Mr. T. is 44 year old, a carpenter from Canton Bern. He lives alone and has colon cancer that has already metastasized throughout the abdominal cavity. Mr. T. can no longer eat normally, his digestive tract no longer functions, and he is dependent on parenteral nutrition. He regularly receives palliative chemotherapy to keep symptoms such as pain and nausea under control. Independence and autonomy are the most important values for Mr. T. He wants to be able to live as normally as possible, which includes staying in his home. Because he lives alone and needs complicated medical care daily, he is at risk of being forced to move between institutions. To stay at home, Mr. T received help: from the oncologist, normal homecare, and a mobile specialist palliative care team. The oncologist regularly prescribes and administers chemotherapy and the mobile specialist palliative care nurses visit him once a week at home to monitor the symptoms related to the chemotherapy

and his disease, adjust the medication, handle the part of the chemotherapy which is given at home, and maintain the venous access and regularly change the needle. They also trained the normal homecare to administer parenteral nutrition and handling the venous access, since this is not something common for them. Mr. T. also was given a phone number to call that would provide him with round the clock support from the mobile specialist palliative care team. This support, from the specialist team he already knew, allowed him to face changes in his symptoms with more confidence and made him feel secure at home. The mobile specialist palliative care team anticipates changes and emergency situations. Therefore, even if he needs to be hospitalized, this will happen in a calm and organized way and the team facilitates communication with the hospital personnel. They make sure he can go home as soon as possible by guaranteeing that his specialist home care is assimilated to the new situation.

In this way, Mr.T. is able to live at home. He even wanted to fulfill his long-held dream to take his self-converted VW camper bus for a road trip through Italy and France. After diligent preparations from him and his mobile specialist palliative care nurse, he started his road trip. He always had the emergency number of the specialist palliative care team with him. The number was his "medicine" which gives him security to face new emerging medical problems aboard.

Need for Swiss-specific economic data on mobile specialist palliative care teams

The introduction of government-funded palliative care programs has significantly reduced the cost of end-of-life care in several countries by reducing hospital admissions, length of hospital stays, and frequency of emergency admissions (7-13). However, the size of these savings varies greatly depending on the health care system, palliative care setting, and type of calculation (7; 9; 10; 14; 15). Study results vary from no to over 60 percent savings (7; 10; 12; 13; 16-19). Economic studies of the impact of mobile specialist palliative care teams alone on hospital costs would facilitate the design and budgeting of palliative care services. Unfortunately, such studies are rare. In addition, the effects of cost reductions that have been reported for mobile specialist palliative care teams are not necessarily relevant to other health care systems. In Switzerland, a comprehensive cost-benefit study of palliative care networks is difficult to carry out due to difficult access to data in various care settings and the complexity of component costs (20). There are many barriers to providing an overview of the expected costs of Swiss mobile specialist palliative care. In the last month of life, health care costs increase tremendously. Emergency admission and hospital care in particular contribute to this sharp increase in costs (21). Therefore, number of hospital admissions is a proxy for and can provide valuable information about health care costs.

To estimate the potential costs of mobile specialist palliative care teams in Switzerland, we calculated possible scenarios based on international observational studies, Swiss insurance data on hospital costs in the last three months of life, and Swiss demographic projections over the next decade. These scenarios should help inform Swiss cantonal governments and health authorities and insurers about costs and potential savings from the introduction of mobile specialist palliative care teams for the whole country.

Study objective

The aim of the study is to estimate both the potential added costs and hospital cost reductions for Swiss cantons of a nationwide availability of mobile specialist palliative care teams.

Methods

This study consists of three parts: 1) a systematic literature review to determine the effect of mobile specialist palliative care teams on the hospital admission rate, 2) an administrative database analysis to quantify the health care costs and number of hospitalizations in the last three months of life in all Swiss cantons in 2020, and 3) a survey to determine the mean costs of Swiss mobile specialist palliative care services.

Systematic literature review

We systematically searched the literature to answer the following research question:

> *How much do mobile specialist palliative care teams caring for adult patients with cancer and noncancer diagnoses effect the hospital admission rate at the end of life?*

We searched MEDLINE (PubMed) to identify recent studies reporting the effect of mobile specialist palliative care teams on hospital admission rates. We identified potentially relevant studies by searching titles and abstracts for Medical Subject Heading (MESH) terms, and their synonyms, that included ‘‘palliative care,’’ “costs,” “ambulant care,” and “hospital outcome measures,” which were combined in several ways. The data search was supplemented by a hand search of review articles. The search strategy is available in appendix 1. Two independent researchers reviewed the potentially eligible studies. The inclusion criteria for eligible studies were:

1. Study participants:
    a. Non-disease-specific patients are 19 years or older
    b. Ambulant care providers are general practitioners, home care nurses, ambulant palliative care specialists (at least one person in the team is specialized)
2. Intervention: Must include a mobile specialist palliative care team or similar terms or services (e.g. palliative care home care team) that provides care that focus on non-institutionalized care (exclude if only provides care in hospital outpatient clinic, non-long stay hospices or non-long stay nursing homes)
3. Outcomes: Must include information on hospital utilization reported for a clearly defined timeframe related to the date of death (e.g. last 3 months of life)
4. Study design: All, expect case studies
5. Methodological quality: Must have a study control group, or reference study or comparator site reporting on hospital utilization

6. Region: No exclusion
7. Language: English or German
8. Type of paper: Only original research studies or reviews, no letters, comments, or editorials
9. Publication date: Studies published between 27.11.2012 and 30.09.2018, during the five years before the initiation of the study

From potentially eligible studies, we extracted full-text articles and critically appraised them based on the above inclusion criteria. Two independent reviewers completed data extraction forms for the eligible studies. We reported changes in hospital admissions as the proportional change of the intervention compared to the control group and calculated overall median and interquartile range of hospital admission changes.

Estimating hospital cost impact of mobile specialist palliative care teams

A study of Swiss health care costs in the last 12 months of life collected claims data from providers of mandatory health insurance on persons who died between 2008 and 2010 in Switzerland (22). These data, combined with data from the Federal Statistical Office, were used to predict the number of naturally deceased in 2020, their expected hospital admission rate, and hospital costs during the last three months of life.

To calculate the health costs in the last three months of life, we used the billing data of five Swiss health insurance companies (CSS, Groupe Mutuel, Helsana, SWICA, Visana), which cover almost 60% of the people who died in Switzerland in 2008-2010. We probabilistically linked these anonymized data to cause-of-death statistics of the Federal Statistical Office to add missing information including cause of death. The calculations included all deceased insurants who were 20 years of age or older who did not die from an external cause of death such as a car accident. Insured persons who died as a result of accompanied suicide were included in the analysis with the first accompanying illness diagnosis as cause of death. To calculate the costs in the last three months of life, we summed all invoices paid by health insurers in the 90 days before death. Cantonal allocation of these costs was based on the last place of residence of the deceased person.

While outpatient health care costs are usually borne by insurers and patients, the cantons pay a portion of hospital costs. Upon revision of hospital financing at the beginning of January 2012, the minimum cantonal share was set at 55 percent. During the 2008-2010 study period, the cantonal share was on average slightly higher than that. However, since no exact figures are available for that period we used the figure set in 2012 to estimate the costs for the cantons, and thus possibly underestimated actual hospital costs.

To estimate future health care costs, we first calculated average costs in the last three months of life for each canton for both sexes and for age groups in ten years bands using our linked insurance database. For estimating hospital costs, we calculated the probability of being hospitalized in the last three months of life by canton, sex, and the age groups 20-65 and >65. In the second step, we multiplied these values by the deaths per canton, sex, and age group recorded in the cause of death statistics in 2010 (23; 24), taking into account the percentage of external causes of deaths. In the third step, to extrapolate the costs for the year 2020 we used the (medium) reference scenario for

Swiss demographic development, as described by the Federal Statistical Office, with the number of expected deaths per canton, sex, and age group in 2020 (24; 25).

The interquartile range of the reduction of the number of hospital admissions derived from our systematic literature review determines the low and high scenario for reduction of the number of hospital admissions due to mobile specialist palliative care teams. In the final step, we calculated these low and high cost saving scenarios for all cantons.

Estimating costs of mobile specialist palliative care teams

Between June 2017 and October 2018, costs and service data of mobile specialist palliative care teams in Switzerland were collected via palliative.ch (the Swiss association for palliative care), our personal network. We invited teams from the German, Italian, and French language regions to provide data. We requested a one-year, 2017 budget from the regional mobile specialist palliative care teams and an overview of the services performed. The following data were extracted when possible: total cost of the mobile specialist palliative care teams including wages, care services, travel, administrative, organizational and local management costs; costs reimbursed by health insurance; cantonal or community financial support; donations; budget deficits; number of patients treated during one year; and type of service as first- or second-line service activities.

We excluded all teams for which information was too incomplete, or that were financed completely by the canton or a hospital because of the difficulty of separating specific costs for the mobile specialist palliative care teams and to increase the comparability between team costs.

Potential costs of mobile specialist palliative care teams per canton were calculated as follows. Health insurance reimbursements and patient cost-sharing revenue (if available and applicable) were subtracted from total team expenses to identify team costs without such reimbursement. Team costs without reimbursement were divided by the number of treated patients.

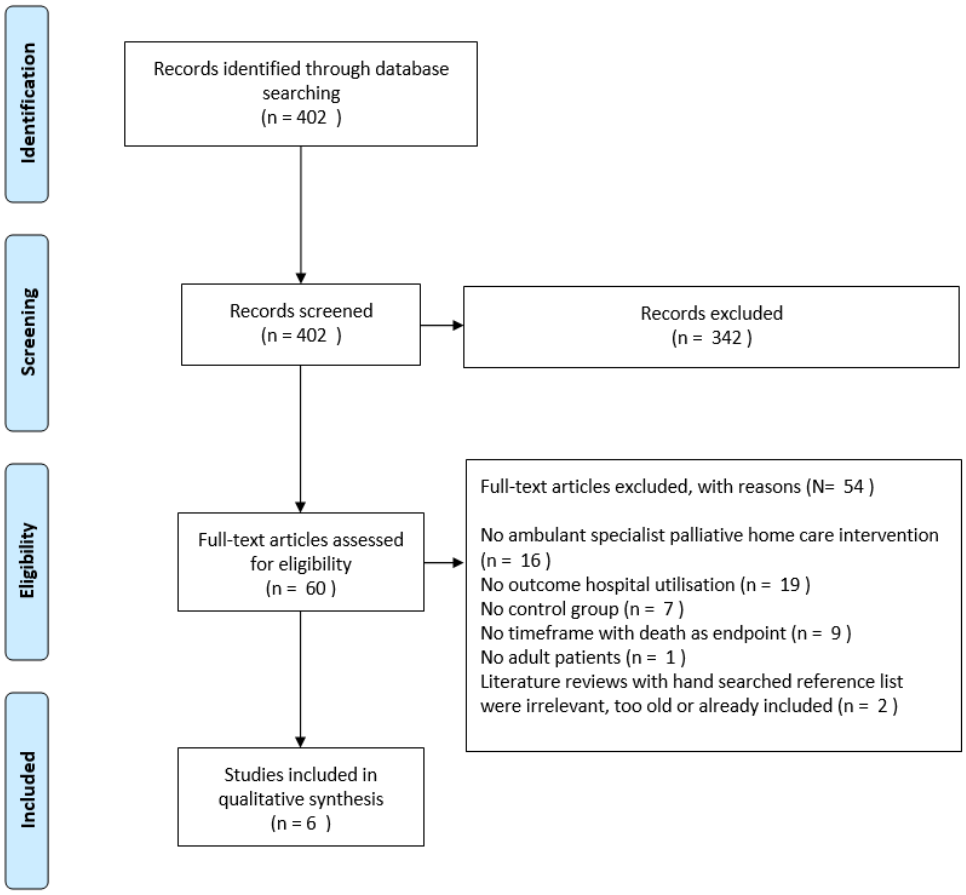
The Swiss Federal Office of Statistics provided the number of deceased patients in 2017 per canton (26). Considering that approximately 20% of all deceased are in need of specialist palliative care (4), we assume that mobile specialist palliative care teams need to be involved in 20 percent of end-of-life care situations. Costs without reimbursement per treated patient were multiplied with 20% of deaths in 2017 to obtain the potential costs without reimbursement of mobile specialist palliative care teams per canton. Costs without reimbursement of mobile specialist palliative care teams need to be financed by external means to make the teams sustainable in the current reimbursement system. Although this financial support could be delivered by a variety of bodies, here we assume these are the potential cantonal costs of mobile specialist palliative care teams.

Results

Systematic literature review

A total of 402 citations were identified by the literature search, of which 60 studies had the potential to be included and therefore underwent full text review. Figure 1 shows the study selection procedure.

Figure 1 Study selection process of systematic literature review



Study characteristics and outcomes of the included studies are shown in table 1. Eligible studies were all performed in western countries, but none in Switzerland. Five (27-31) out of six studies reported a reduction in hospital admissions in the mobile specialist palliative care group compared to the usual care group. Four (27; 29-31) of those five studies reported a statistically significant reduction in hospital admissions. Patients groups with mobile specialist palliative care teams showed an overall median cost reduction of 34% and an interquartile range of 16% to 48% for hospital admissions compared to usual care patients (16; 27-31).

Table 1 Study characteristics and outcomes of the eligible studies of the systematic literature review

First author	Round, J.	Sudat, S.	Chapman, M.
Publication year	2015	2017	2016
Country	UK	USA	Australia
Study population	Deceased adults nondisease specific	Deceased non-disease specific	Nondisease specific elderly living in residential homes
Control or comparison group	Usual care historical comparison and control group	Each AIM enrollee was matched with at least four non- AIM controls using “genetic matching”	Matched with historical decedents in residential homes using propensity score
Study size	6715 intervention 2265 controls	1352; 1 month prior to death 1051 ; 2 months prior to death 869 ; 3 months prior to death 6246 controls	104 intervention 173 controls
Proportional reduction of hospitalizations in intervention group compared to control group (%)	2; to historical comparison	12 ; 3 months before death 11 ; 2 months before death 25 ; 1 month before death	20
Timeframe measurement	Last 8 weeks before death	Last 3 months before death	Last 3 months before death
Ambulant intervention	Marie Curie Delivering Choice Program (DCP), which aimed to increase the opportunities for end-of-life patients to be cared for and die in the place of their choice.	A home-based support program called Advanced Illness Management (AIM). A palliative care option within home health and includes physician- and call-center-based telephonic support, hospital-based care liaisons, and nursing and social work home visits.	Monthly "Palliative Care Needs Round" facilitated by a palliative care nurse practitioner and staff in four residential facility.
Study design/data	Retrospective administrative hospital data study	Retrospective observational claim data study	Observational quasiexperimental study

Continuation of table 1

First author	Lustbader, D.	Cassel, B.	Riolfi, M.
Publication year	2017	2016	2014
Country	USA	USA	Italy
Study population	Deceased	Deceased Cancer, Chronic obstructive pulmonary disease, Heart failure, Dementia patients	Deceased cancer patients
Control or comparison group	Usual care decedents in same region (not matched)	Propensity-based matching usual care deceased	Usual care decedents in same region (not matched)
Study size	82 intervention 569 controls	370 intervention 1075 controls	160 intervention 242 controls
Proportional reduction of hospitalizations in intervention group compared to control group (%)	34	45.0 ; Cancer patients 45.6 ; Dementia patients 50.7 ; COPD patients 52.9 ; Heart failure patients	69.2
Timeframe measurement	Last months before death	last month before death	Last 2 months before death
Ambulant Intervention	This program provides many elements of traditional home-based primary care and case management programs such as nurse home visits, but differs in the provision of 24/7 coverage, team-based care, use of telemedicine, and specialty level palliative care. Patients were heart failure, COPD, cancer, or severe dementia patients.	Early Palliative care: in-home medical consultation, ongoing evidence-based prognostication of further survival, caregiver support, advance healthcare planning, providing pain management, education to promote individual and family awareness of illness trajectory and treatment choices, psychosocial and spiritual support.	The team of 2 palliative care physicians and 30 nonspecialist nurses, who cooperate with GPs. 24 hour (on-call) availability, at least one specialist medical examination a week is guaranteed for all terminally ill patients being cared for at home.
Study design/data	Retrospective observational claim data study	Retrospective observational claim data study	Retrospective administrative hospital data study

Potential hospital cost impact of mobile specialist palliative care teams

Total insurance data for the period 2008-2010 included 105 370 deceased patients. All data of deceased persons who 1) were younger than 19 years (562 insured persons), 2) died from an external cause (5334 insured persons), 3) could not be linked to the cause-of-death statistics of the Federal Statistical Office (5111 insured persons), and 4) for whom data on the canton of residence were missing (53 insured persons) were excluded. The calculations are therefore based on the data of 94 310 deceased persons.

The insurers paid an average of 12 418 CHF per patient in the last three months of life. The amount varied from 8137 CHF in the canton of Appenzell-Ausserrhoden to 16 115 CHF in the canton of Geneva (Map 1). About 54% of these costs were hospital costs (table 2). Fifty-seven percent of patients in our insurance database were hospitalized at least once in the last three months of their lives, with figures varying from 48% in the canton Appenzell-Ausserrhoden to 64% in Basel. Insurance companies incurred average hospital costs during the last three months of life of CHF 11 659 per hospitalized patient, with costs varying from a few francs to over CHF 600 000 per patient. While the canton of Glarus paid a mean of CHF 7869 per hospitalized patient, Geneva paid CHF 15,377. Insurance companies received no invoices for the last three months of life of 1517 persons who died.

For the year 2010, the Federal Statistical Office recorded the deaths of 62 213 people over 19 years of age. Of these, 3477 died from an external cause. For these deaths, the extrapolated insurance and cantonal costs from the insurance data for 2008-2010 were 1.6 billion CHF for the last three months of life. This means that the nationwide coverage with mobile palliative care teams could have saved CHF 141 to 425 million in 2010, including 77 to 233 million saved for the cantons (16% respectively 48% scenario, table 3).

For the year 2020, the Swiss Federal Statistical Office estimates 67 021 deaths among those aged 20 years and older according to its reference scenario for population development (table 4). Assuming the same proportion of external causes of death as in 2010, a total of 64 060 people would die of a natural cause of death in 2020. Extrapolated on the basis of the costs incurred per canton, sex, and age group in the years 2008-2010, the costs to be paid by insurers and cantons together for the last three months of life of dying persons will amount to CHF 1.739 billion in 2020 (2010 price level). The widespread introduction of mobile palliative care teams could save up to CHF 445 million in 2020, over CHF 240 million of which represents cantonal savings alone (price level in 2010 and 48% according to the savings scenario). Even with a minimal savings potential of the 16 percent scenario, a total of almost 150 million Swiss francs could be saved in 2020 for care in the last three months of life (table 4).

Map 1 Mean costs of deceased (N= 94310) paid by insurance in the last three months of life (insurance data 2008-2010) reported by canton

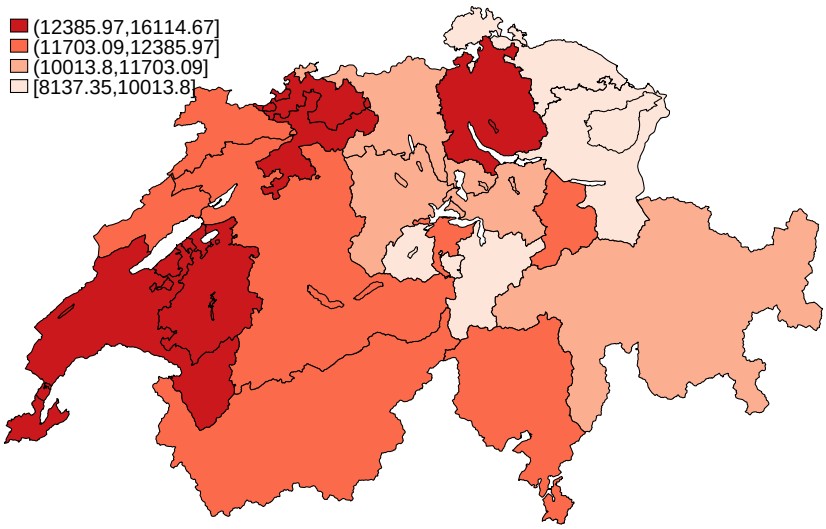


Table 2 Mean costs per patient in the last three months of life paid by insurance by cost type (2008-2010)

Canton	Hospital	Nursing Home	Outpatient	Spitex	Other
Zurich	6465	2663	2516	470	337
Bern	6162	2573	2357	463	210
Lucerne	6532	2554	2133	284	155
Uri	4628	2226	1709	213	60
Schwyz	7296	2132	2409	304	181
Obwalden	6375	1929	2274	346	354
Nidwalden	5872	1700	2364	516	130
Glarus	4017	2158	2067	266	120
Zug	7070	2487	2294	285	196
Fribourg	6211	2281	3109	360	539
Solothurn	6430	1658	2317	456	171
Basel	8497	1559	2942	399	456
Basel District	8127	1520	2946	466	286
Schaffhausen	4196	2477	2456	369	149
Appenzell-Ausserhoden	3641	2064	1948	344	140
Appenzell-Innerhoden	5138	1458	1278	450	180
St. Gallen	5213	2042	2205	352	202
Grisons	5546	1932	2548	501	295
Aargau	5738	1838	2463	341	209
Thurgau	4824	2201	2204	441	302
Ticino	7733	1413	2516	403	321
Vaud	7587	1934	4987	636	504
Valais	6452	1662	2827	402	405
Neuchâtel	5887	2642	2590	495	353
Geneve	9265	1939	3733	703	475
Jura	6660	2505	2091	452	146

Table 3 Extrapolation of costs and possible savings for all deceased in 2010 during last three months of life (in million CHF).

			Hospitalization reduction 16%			Hospitalization reduction 48%		
Cantons	**Registered deaths***	**Estimated hospital costs**	**Total**	**Canton**	**Health insurers**	**Total**	**Canton**	**Health insurers**
Zurich	9585	148.47	23.76	13.07	10.69	71.27	39.20	32.07
Bern	8482	127.86	20.46	11.25	9.21	61.37	33.76	27.62
Lucerne	2664	43.68	6.99	3.84	3.15	20.97	11.53	9.44
Uri	334	3.60	0.58	0.32	0.26	1.73	0.95	0.78
Schwyz	903	15.55	2.49	1.37	1.12	7.47	4.11	3.36
Obwalden	217	2.99	0.48	0.26	0.21	1.43	0.79	0.64
Nidwalden	274	3.96	0.63	0.35	0.28	1.90	1.04	0.85
Glarus	381	3.73	0.60	0.33	0.27	1.79	0.98	0.81
Zug	666	10.82	1.73	0.95	0.78	5.19	2.86	2.34
Fribourg	1758	25.40	4.06	2.24	1.83	12.19	6.71	5.49
Solothurn	2052	29.79	4.77	2.62	2.14	14.30	7.86	6.43
Basel	2046	34.17	5.47	3.01	2.46	16.40	9.02	7.38
Basel District	2103	36.09	5.77	3.18	2.60	17.32	9.53	7.80
Schaffhausen	655	7.15	1.14	0.63	0.52	3.43	1.89	1.55
Appenzell-A	456	4.58	0.73	0.40	0.33	2.20	1.21	0.99
Appenzell-I	103	1.64	0.26	0.14	0.12	0.79	0.43	0.36
St. Gallen	3534	45.70	7.31	4.02	3.29	21.94	12.07	9.87
Grisons	1505	19.59	3.13	1.72	1.41	9.40	5.17	4.23
Aargau	4024	52.90	8.46	4.66	3.81	25.39	13.97	11.43
Thurgau	1798	21.81	3.49	1.92	1.57	10.47	5.76	4.71
Ticino	2838	45.68	7.31	4.02	3.29	21.93	12.06	9.87
Vaud	4969	80.03	12.81	7.04	5.76	38.42	21.13	17.29
Valais	2267	33.15	5.30	2.92	2.39	15.91	8.75	7.16
Neuchâtel	1505	19.51	3.12	1.72	1.40	9.37	5.15	4.21
Geneve	2961	58.61	9.38	5.16	4.22	28.13	15.47	12.66
Jura	656	9.33	1.49	0.82	0.67	4.48	2.46	2.01
Total	58 736	885.79	141.72	77.96	63.78	425.19	233.86	191.35

* Number of deaths from mortality statistics excluding external cause of death; Appenzell-I Appenzell-Innerrhoden, Appenzell-A Appenzell-Ausserrhoden

Table 4 Extrapolation of costs and possible savings for all deceased 2020, last three months of life (in million CHF)

			Hospitalization reduction 16%			Hospitalization reduction 48%		
Cantons	**Registered deaths***	**Estimated hospital costs**	**Total**	**Canton**	**Health insurers**	**Total**	**Canton**	**Health insurers**
Zurich	11 142	155.89	24.94	13.72	11.22	74.83	41.16	33.67
Bern	9222	127.70	20.43	11.24	9.19	61.29	33.71	27.58
Lucerne	3100	46.78	7.48	4.12	3.37	22.45	12.35	10.10
Uri	295	2.87	0.46	0.25	0.21	1.38	0.76	0.62
Schwyz	1127	17.77	2.84	1.56	1.28	8.53	4.69	3.84
Obwalden	256	3.16	0.51	0.28	0.23	1.52	0.83	0.68
Nidwalden	306	3.67	0.59	0.32	0.26	1.76	0.97	0.79
Glarus	365	3.39	0.54	0.30	0.24	1.63	0.89	0.73
Zug	830	12.21	1.95	1.07	0.88	5.86	3.22	2.64
Fribourg	2235	29.76	4.76	2.62	2.14	14.29	7.86	6.43
Solothurn	2300	30.46	4.87	2.68	2.19	14.62	8.04	6.58
Basel	1969	30.69	4.91	2.70	2.21	14.73	8.10	6.63
Basel District	2531	39.23	6.28	3.45	2.82	18.83	10.36	8.47
Schaffhausen	734	7.31	1.17	0.64	0.53	3.51	1.93	1.58
Appenzell-A	466	4.30	0.69	0.38	0.31	2.06	1.14	0.93
Appenzell-I	123	1.41	0.23	0.12	0.10	0.68	0.37	0.30
St. Gallen	3950	47.09	7.53	4.14	3.39	22.60	12.43	10.17
Grisons	1773	21.08	3.37	1.85	1.52	10.12	5.56	4.55
Aargau	4904	59.05	9.45	5.20	4.25	28.34	15.59	12.76
Thurgau	2003	22.52	3.60	1.98	1.62	10.81	5.95	4.86
Ticino	3328	50.42	8.07	4.44	3.63	24.20	13.31	10.89
Vaud	5645	83.31	13.33	7.33	6.00	39.99	21.99	18.00
Valais	2856	37.56	6.01	3.30	2.70	18.03	9.91	8.11
Neuchâtel	1559	18.48	2.96	1.63	1.33	8.87	4.88	3.99
Geneve	3444	62.41	9.99	5.49	4.49	29.96	16.48	13.48
Jura	681	8.80	1.41	0.77	0.63	4.23	2.32	1.90
Total	67 144	927.32	148.37	81.58	66.74	445.12	244.8	200.28

* Number of deaths from mortality statistics excluding external cause of death; Appenzell-I Appenzell-Innerrhoden, Appenzell-A Appenzell-Ausserrhoden

Potential costs of mobile specialist palliative care teams

The mean overall expense of four mobile specialist palliative care teams was 2023 CHF per treated patient in 2017. Thirty-one percent of the costs was covered by health insurers and 0.3% by patients' out of pocket payments. Thus the net unreimbursed expense was 1401 CHF per treated patient. We did not consider donations because these fluctuate between years and in any event reduced the mean expenses without reimbursement by only 52 CHF. Table 5 shows, for the four example cantons, which costs are not reimbursed by health care insurers, and patients' cost participation in

the current health care system and the 2017 care services if all patients in need of mobile specialist palliative care had access to it.

Table 5 Costs of mobile specialist palliative care teams showing cost of regional team extrapolated to whole canton (in Swiss francs)

Region	Available services	Total cost of care per treated patient	Total cost of care (not reimbursed*) per treated patient	Total cost (not reimbursed*) given canton-wide availability of mobile specialist palliative care
St. Gallen	Advice for patients Symptom control Advice on specialized care (Port-a-Cath/Pleurix) Emergency planning 24-hour on-call service Consulting to other institutions (e.g. nursing homes/homes for the disabled)	1919	1474	1 089 002
Grisons	Advice for patients Symptom control Technical consulting/training (pumps, Port-a-Cath etc.) Emergency planning 24-h reachability, no emergency interventions outside office hours	1513	1095	489 294
Bern	Advice for patients Symptom control Advice on specialized care (Port-a-Cath/Pleurix) Emergency planning 24-hour on-call service Consulting to other institutions (e.g., nursing homes/homes for the disabled)	2341	1445	265 2447
Fribourg	Advice for patients Symptom control Advice on specialized care (Port-a-Cath/Pleurix) Emergency planning 24-hour on-call service Consulting to other institutions (e.g., nursing homes/homes for the disabled)	2319	1590	577 569
Mean	-	2023	1401	-

*Total annual expenses of mobile specialist palliative care teams minus health insurer reimbursement minus patient out of pocket payment, in 2017

Potential costs and savings of mobile specialist palliative care teams

Figure 2 shows the potential costs and savings of mobile specialist palliative care teams if available for all Swiss patients in need of them. Total potential costs of canton-wide mobile specialist palliative care in 2017 were 27.1 million CHF of which 18.8 million (69%) would not have been reimbursed and therefore in need of governmental financial support (e.g., from cantons) or other additional funding.

Conclusion

Results summary

This study estimated the potential costs and hospital cost reduction for Swiss cantons of nationwide availability of mobile specialist palliative care teams. The potential total cost savings in 2020 for all cantons are expected to be around 81.5 million CHF (restrictive scenario), and total overall costs 18.8 million CHF. The savings delivered by mobile specialist palliative care teams are therefore expected to be greater than four times their cost.

Limitations of the study

A limitation of this study is that its health insurance database reflects only the situation between 2008 and 2010. More recent nationwide cost data were not available. Medical treatment and hospital costs are likely to have increased during this time (±3% per year (32)). The analyses were set up to be restrictive, and therefore do not correct for this unknown rise in prices. This may have led to an underestimation of the potential reduction in hospital costs. Apart from the normal inflation of costs between 2010 and 2020, hospital costs were also influenced by the DRG-payments system that was introduced in 2012. The DRG reimbursement system may have reduced the length of stay in hospitals and hospital expenses per patient. Nevertheless, after 2012 hospital costs steady increased as before (32). We considered an underestimation of the hospital cost reduction more acceptable than overestimation, and this impact on our analyses might therefore be ignored.

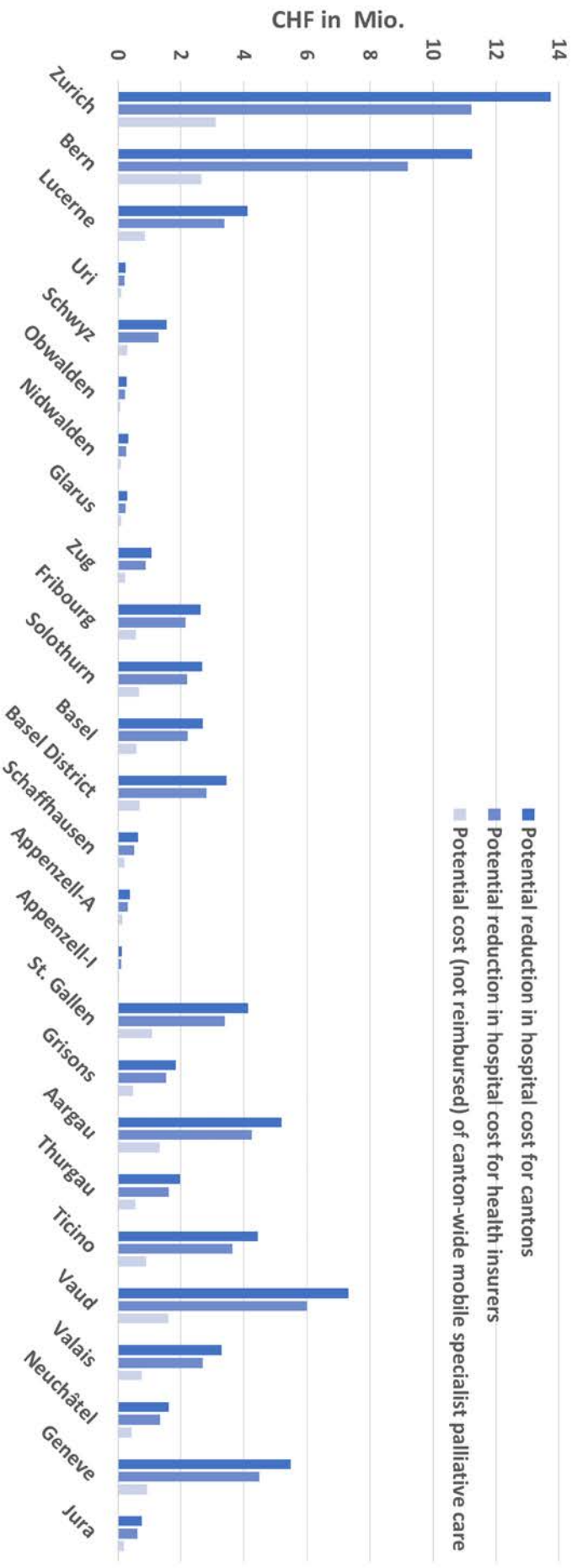
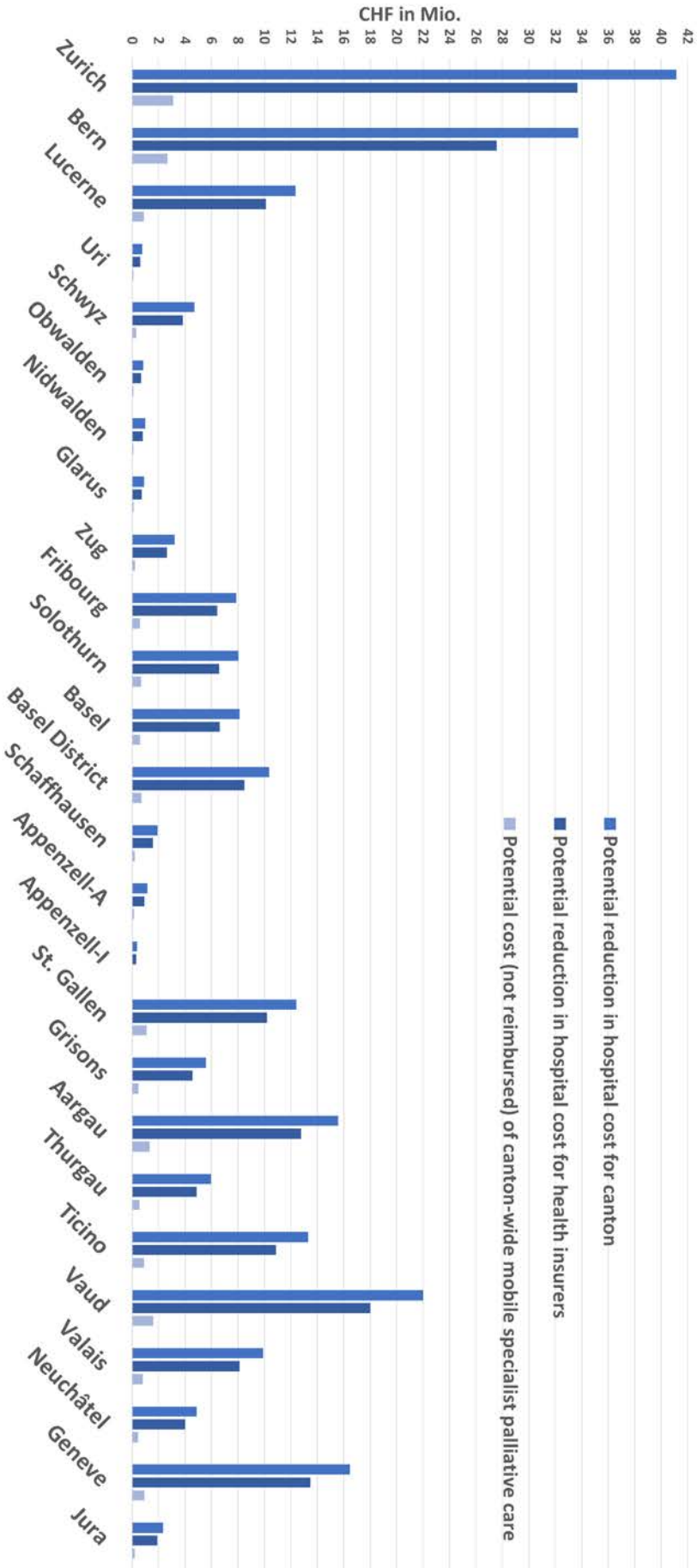


Figure 2 Potential costs of mobile specialist palliative care teams compared to the potential reduction of hospital cost (16% hospitalization reduction scenario).

Figure 3 Potential costs of mobile specialist palliative care teams compared to the potential reduction of hospital cost (48% hospitalization reduction scenario).



A further limitation was that we did not have cost examples of mobile specialist palliative care teams from all cantons. Health care cost and cost that are not reimbursed differ between cantons and teams. Not all operational mobile specialist palliative care teams receive ambulant health insurance reimbursement of palliative nursing services, or patient out-of-pocket payments (33). Although, the largest part of the total cost was not reimbursed for our example teams (69%). However, even without the health insurers cost sharing support cantonal savings were still much larger than their costs for mobile specialist palliative care teams.

The study analyses make carefully considered assumptions and extrapolations about potential rather than real costs. Although only potential costs are analyzed, these results are distinctive for three reasons. The estimates focus on specialist palliative home care, instead of general home care, and use data from the last three months of life instead of longer intervals, less close to death; the literature review selected hospital admissions outcomes instead of more country-specific cost outcomes; and the results are canton-specific.

Discussion

The cost per patient was lowest in Grisons. The four example mobile specialist palliative care teams offered similar services, with the exception of Grisons, which did not have an after-office-hours, emergency deployment service. The study results do not show whether these are correlated. The length of care and the intensity of the care provided by mobile specialist palliative care was not available, and therefore not taken into consideration. Higher team costs per patient are not always undesirable. Higher costs might indicate that the team provides a wider range of indirect and direct care, and/or a higher level of specialist competence. As a result, differences in total team costs per treated patient should not be interpreted as being indicative of efficiency.

Many health service studies in palliative care assume that a reduction in hospital admissions near to death indicate a better quality of end-of-life care. This study did not assume or provide evidence concerning this. Results are descriptive and provide only cost analyses, and therefore should be interpreted with caution. At the patient level, having fewer hospital admissions near death may not automatically mean a better quality of care. Unexpected emergencies (e.g., bone fractures), anticipated symptoms that are more quickly resolved in the hospital (e.g., sudden dyspnea)(34), or technically challenging medical situations may all be treated in a hospital near to the patient without decreasing the quality of care (34). Better availability of all levels of palliative care including advanced care planning at home could decrease as well as an increase costs when studied within a single hospital. A lower consumption of intensive and expensive, emergency treatments of palliative patients who prefer to be treated at home would reduce hospital costs. However, a shift in case mix of a single hospital population could increase hospital costs. With better availability of ambulant palliative care options, medically uncomplicated and therefore inexpensive patients can go or stay at home, and hospital beds may be occupied with more medically challenging patients (16). Further, it is important to be aware that a reduction of hospital costs could lead to an increase of costs in other sectors including costs of informal care providers such as family members.

The potential costs of mobile specialist palliative care teams are based on teams that are partially imbedded in the infrastructure and organization of basic home care and different organizations. When scaling up to nation-wide availability, costs associated with upsizing must be included to achieve more precise cost estimation. For example, time for planning and information exchange between team members grows with the size of the team, as do travel costs to remote areas and other types of overhead per treated patient.

Conclusion and future steps

Conclusion

Mobile specialist palliative care teams can potentially reduce health care costs in 2020 by an amount much larger than the cost of those teams. The trend to partially redirect inpatient care to the outpatient sector (35) may extend to mobile specialist palliative care teams, which can deliver an economic benefit at the cantonal level.

Future steps

Nationwide availability of mobile specialist palliative care has economic advantages. Such availability would also improve the equality of access to care among patients and would align with end-of-life preferences of Swiss patients. Palliative care networks can be valuable promotors of integrated health care deliver benefits in care quality and increase home care, and thereby increase patient self-determination and satisfaction with care at the end of life. The effect of mobile specialist palliative care availability on the direct or indirect costs of the patients and their informal caregivers are unknown and should be monitored. Future studies should examine patients' and informal caregivers' out-of-pocket costs, and the long-term health and financial effects of informal caregivers (e.g. potential career stagnation). Future studies should also examine the intensity of care provision to improve comparability of teams. The comparison of mobile specialist palliative care teams would be facilitated with standardized documentation of the service spectrum. If all costs are not included in a full cost analysis, it is difficult to critically appraise the best use of scarce resources in end-of-life care.

In general, to improve health care, and economic predictions and evaluations, nationwide data must be transparently recorded for inpatient, outpatient, and long-term care to be able to make clear statements or benchmark comparisons. In the absence of national databases, smaller but comprehensive analyses of specialist palliative care costs and effects (monetary and psychosocial) could be performed to identify the size and direction of correlated effects applicable for the Swiss health care system. The development of an exhaustive model for the potential economic impact of mobile specialist palliative care teams' within palliative care networks can create a solid basis for future political decisions and future research combining economic and qualitative outcomes.

Appendix 1

Medline PubMed literature search	
Concept 1 **Palliative care**	MeSH "Palliative Care"[Majr] OR "Palliative Medicine"[Majr] **OR** Search words palliativ*[Title/Abstract] OR palliativ*[Transliterated Title] **OR** German Search words (Palliative versorgung[Transliterated Title] OR versorgung am lebens ende[Transliterated Title] OR Palliative care[Transliterated Title] OR Palliativmedizin[Transliterated Title] OR Palliativpflege Transliterated Title] OR Palliativbehandlung[Transliterated Title] OR Sterbebegleitung[Transliterated Title])
OR	
Concept 2 **End-of-life**	MeSH "Terminal Care"[Mesh:NoExp] **OR** Search words end of life [Title/Abstract] end of life[Title/Abstract] OR last month* of life[Title/Abstract] OR last year of life[Title/Abstract] OR end-of-life care[Title/Abstract] OR last day* of life[Title/Abstract] OR "end of life phase*" OR incurable patient*[Title/Abstract] OR last stage of the disease[Title/Abstract] OR “die at home”[Title/Abstract] OR life care end*[Title/Abstract]
AND	
Concept 3 **Cost**	MeSH "Health Expenditures"[Mesh] OR "Costs and Cost Analysis"[Mesh:NoExp] OR "Cost-Benefit Analysis"[Mesh] OR "Cost Savings"[Mesh] OR "Health Care Costs"[Mesh:NoExp] **OR** Search words cost[Title/Abstract] OR costs[Title/Abstract] OR cost-effectiveness[Title/Abstract] OR savings[Title/Abstract]
AND	
Concept 4 **Ambulant care**	MeSH "Ambulatory Care"[Mesh] OR "Outpatients"[Mesh] OR "Primary Health Care"[Mesh:NoExp] **OR** Search words ambulant*[Title/Abstract] OR "home care"[Title/Abstract] OR spitex[Title/Abstract] OR spitex[Transliterated Title] OR home-based[Title/Abstract] OR outpatient*[Title/Abstract] OR domiciliary[Title/Abstract] OR primary care [Title/Abstract]
AND	
Concept 5 **Outcome measures hospital**	MeSH "Patient Readmission"[Mesh] OR "Length of Stay"[Mesh] OR "Health Services Research"[Mesh] **OR** Search words hospital readmission*[Title/Abstract] OR hospital admission*[Title/Abstract] OR rehospitalization*[Title/Abstract] OR rehospitalisation*[Title/Abstract] OR length of stay[Title/Abstract] OR hospital utilization* [Title/Abstract] OR days in hospital [Title/Abstract]

And	
NOT letters, comments, or editorials	Step 1: Editorial[pt] OR Letter[pt] OR Case Reports[pt] OR Comment[pt] Step 2: NOT (step 1)
Not age below 19 years	No effect on number of found paper therefore can be ignored
Filter German, English	
Filter publication date 20121127-20183009	

Combination: Palliative care (Concept 1 OR concept 2: mesh OR search words) AND Ambulant care (Concept 4: mesh OR search words) AND (Costs (Concept 3: mesh OR search words) OR Outcome measures hospital (Concept 5: mesh OR search words)) NOT (Letters, comments, editorials), FILTER language (German, English), publication date 2012.11.27- 27.11.2017) = 402 results

Appendix 2

Potential costs of mobile specialist palliative care teams compared to the potential reduction of hospital costs (16% hospitalization reduction scenario, in million CHF).

Cantons	Potential costs of canton-wide mobile specialist palliative care	Potential costs (not reimbursed) of canton-wide mobile specialist palliative care
Zurich	4.48	3.10
Bern	3.83	2.65
Lucerne	1.24	0.86
Uri	0.15	0.10
Schwyz	0.43	0.30
Obwalden	0.11	0.08
Nidwalden	0.14	0.09
Glarus	0.15	0.11
Zug	0.32	0.22
Fribourg	0.83	0.58
Solothurn	0.99	0.68
Basel	0.86	0.59
Basel District	1.00	0.69
Schaffhausen	0.30	0.21
Appenzell-A	0.20	0.14
Appenzell-I	0.05	0.03
St. Gallen	1.57	1.09
Grisons	0.71	0.49
Aargau	1.91	1.32
Thurgau	0.80	0.56
Ticino	1.31	0.91
Vaud	2.33	1.61
Valais	1.12	0.77
Neuchâtel	0.65	0.45
Geneve	1.35	0.94
Jura	0.27	0.19

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References

1. Radbruch L, Payne S. 2010. White Paper on standards and norms for hospice and palliative care in Europe: part 2 *European Journal Of Palliative Care* 17:22-33
2. Stettler P, Bischof S, Bannwart L.2018 Bevölkerungsbefragung Palliative Care 2017.Ergebnisse der Befragung 2017 und Vergleich zur Erhebung von 2009, Federal Office of Public Health, Bern
3. Luta X, Panczak R, Maessen M, Egger M, Goodman DC, et al. 2016. Dying among older adults in Switzerland: who dies in hospital, who dies in a nursing home? *BMC palliative care* 15:83
4. Grünig A. 2014. Indikationskriterien für spezialisierte Palliative Care. Reportnr. GP 03.11 1500 d 800 f 30EXT1106, Bern
5. Gomez-Batiste X, Blay C, Martinez-Munoz M, Lasmarias C, Vila L, et al. 2016. The Catalonia WHO Demonstration Project of Palliative Care: Results at 25 Years (1990-2015). *J Pain Symptom Manage* 52:92-9
6. Gomes B, Calanzani N, Curiale V, McCrone P, Higginson IJ. 2013. Effectiveness and cost-effectiveness of home palliative care services for adults with advanced illness and their caregivers. *Cochrane Database Syst Rev*:CD007760
7. Paz-Ruiz S, Gomez-Batiste X, Espinosa J, Porta-Sales J, Esperalba J. 2009. The costs and savings of a regional public palliative care program: the Catalan experience at 18 years. *J Pain Symptom Manage* 38:87-96
8. Fassbender K, Fainsinger R, Brenneis C, Brown P, Braun T, Jacobs P. 2005. Utilization and costs of the introduction of system-wide palliative care in Alberta, 1993-2000. *Palliat Med* 19:513-20
9. Higginson IJ, Finlay IG, Goodwin DM, Hood K, Edwards AG, et al. 2003. Is there evidence that palliative care teams alter end-of-life experiences of patients and their caregivers? *J Pain Symptom Manage* 25:150-68
10. Morrison RS, Penrod JD, Cassel JB, Caust-Ellenbogen M, Litke A, et al. 2008. Cost savings associated with US hospital palliative care consultation programs. *Arch Intern Med* 168:1783-90
11. Federal Office of Public Health (FOPH). 2011. Kosteneffektivität von Palliative Care-Literaturanalyse, Bern
12. Gomez-Batiste X, Tuca A, Corrales E, Porta-Sales J, Amor M, et al. 2006. Resource consumption and costs of palliative care services in Spain: a multicenter prospective study. *J Pain Symptom Manage* 31:522-32
13. Serra-Prat M, Gallo P, Picaza JM. 2001. Home palliative care as a cost-saving alternative: evidence from Catalonia. *Palliat Med* 15:271-8
14. Dalal S, Bruera E. 2017. End-of-Life Care Matters: Palliative Cancer Care Results in Better Care and Lower Costs. *Oncologist* 22:361-8
15. May P, Garrido MM, Cassel JB, Kelley AS, Meier DE, et al. 2017. Cost analysis of a prospective multi-site cohort study of palliative care consultation teams for adults with advanced cancer: Where do cost-savings come from? *Palliat Med* 31:378-86
16. Round J, Drake R, Kendall E, Addicott R, Agelopoulos N, Jones L. 2015. Evaluating a complex system-wide intervention using the difference in differences method: the Delivering Choice Programme. *BMJ supportive & palliative care* 5:26-33
17. Candy B, Holman A, Leurent B, Davis S, Jones L. 2011. Hospice care delivered at home, in nursing homes and in dedicated hospice facilities: A systematic review of quantitative and qualitative evidence. *International journal of nursing studies* 48:121-33
18. Morrison RS, Dietrich J, Ladwig S, Quill T, Sacco J, et al. 2011. Palliative care consultation teams cut hospital costs for Medicaid beneficiaries. *Health affairs (Project Hope)* 30:454-63

19. Gomez-Batiste X, Porta-Sales J, Pascual A, Nabal M, Espinosa J, et al. 2007. Catalonia WHO palliative care demonstration project at 15 Years (2005). *J Pain Symptom Manage* 33:584-90
20. Telser H, Fischer B, Trost M. 2014. Machbarkeitserklärung für eine Kosten-/Nutzenstudie im Bereich Palliative Care, Polynomics, Olten
21. von Wyl V, Telser H, Weber A, Fischer B, Beck K. 2018. Cost trajectories from the final life year reveal intensity of end-of-life care and can help to guide palliative care interventions. *BMJ supportive & palliative care* 8:325-34
22. Panczak R, Luta X, Maessen M, Stuck A, Berlin C, et al. 2016. Regional variation of cost of care in the last 12 months of life in Switzerland: small-area analysis using insurance claims data. *Medical Care*
23. Federal Statistical Office (FSO). 2011. Switzerland's population 2010, Neuchatel
24. Federal Statistical Office (FSO). 2018. STAT-TAB Interactive tabels, Neuchatel (https://www.bfs.admin.ch/bfs/de/home/dienstleistungen/forschung/stat-tab-online-datenrecherche.html)
25. Federal Statistical Office (FSO). 2015. Szenarien zur Bevölkerungsentwicklung der Schweiz. *BFS Aktuell*, Neuchatel
26. Federal Statistical Office (FSO). 2018. Natürliche Bevölkerungsbewegung 2017, Neuchatel (https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/geburten-todesfaelle/todesfaelle.assetdetail.5509870.html)
27. Sudat SE, Franco A, Pressman AR, Rosenfeld K, Gornet E, Stewart W. 2017. Impact of home-based, patient-centered support for people with advanced illness in an open health system: A retrospective claims analysis of health expenditures, utilization, and quality of care at end of life. *Palliat Med*: DOI: 10.1177/0269216317711824
28. Chapman M, Johnston N, Lovell C, Forbat L, Liu WM. 2016. Avoiding costly hospitalisation at end of life: findings from a specialist palliative care pilot in residential care for older adults. *BMJ supportive & palliative care:* doi:10.1136/bmjspcare-2015-001071
29. Lustbader D, Mudra M, Romano C, Lukoski E, Chang A, et al. 2017. The Impact of a Home-Based Palliative Care Program in an Accountable Care Organization. *J Palliat Med* 20:23-8
30. Cassel BJ, Kerr KM, McClish DK, Skoro N, Johnson S, et al. 2016. Effect of a Home-Based Palliative Care Program on Healthcare Use and Costs. *J Am Geriatr Soc* 64:2288-95
31. Riolfi M, Buja A, Zanardo C, Marangon CF, Manno P, Baldo V. 2014. Effectiveness of palliative home-care services in reducing hospital admissions and determinants of hospitalization for terminally ill patients followed up by a palliative home-care team: a retrospective cohort study. *Palliat Med* 28:403-11
32. Federal Statistical Office (FSO). 2018. Kosten und Finanzierung des Gesundheitswesens *(*https://www.bfs.admin.ch/bfs/de/home/statistiken/gesundheit/kosten-finanzierung/kosten.assetdetail.6386452.html)
33. Wächter M., Bommer A. 2014. Mobile palliative care services in Switzerland: An inventory from the perspective the service providers, Hochschule Luzern, Luzern
34. Eychmüller S. 2016. Palliativmedizin Essentials: Das 1x1 der Palliative Care. Bern
35. Federal Office of Public Health (FOPH). 2018. Änderung der Krankenpflege-Leistungsverordnung (KLV) betreffend «Ambulant vor Stationär». (https://www.bag.admin.ch/bag/de/home/versicherungen/krankenversicherung/krankenversicherung-revisionsprojekte/konsultation-ambulant-vor-stationaer.html)