A retrospective database study investigating days spent in acute care hospitals during the last 90 days of life of cancer patients from four Swiss cantons (SAKK 89/09)

Dr. Phil Nat K.W. Matter-Walstra, MSc. R. Achermann, Dr. R. Rapold, Dr. med. D. Klingbiel, Dr. med. A. Bordoni, Dr. med. S.Dehler, Dr. I.Konzelmann,Dr. M. Mousavi, K.M. Clough-Gorr, T. Szucs, M. Schwenkglenks, B.C. Pestalozzi

On Behalf of the Network Outcomes Research / SAKK / ECPM

SAKK Helsana
Schweizerische Arbeitsgemeinschaft für Klinische Krebsforschung
Groupe Suisse de Recherche Clinique sur le Cancer
Swiss Group for Clinical Cancer Research
Gruppo Svizzero di Ricerca Clinica sul Cancro

ECPM European Center of Pharmaceutical Medicine

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Background

Number of days spent in acute hospitals (DAH) at the end of life is regarded as an important care quality indicator for cancer patients. The aim of this study was to investigate the causes of disparities in end-of-life care of cancer patients in four Swiss cantons, in terms of DAH, and discuss the possible economic impact. In the current study, the effects of demographic, geographic and patient-determined factors on DAH were investigated.

Methods

Claims data from an insurance provider with about 20% market share and patient record review identified 2086 patients, which had at least 1 cancer related hospitalization during the last 30 days prior to death. For these patients we calculated total DAH per patient during the last 90 days prior to death. Multivariable generalized linear modelling served to evaluate potential explanatory variables. These included patient age at death, gender, and cancer type (colon, hematologic, lung, breast, prostate, and all others combined), type of hospital supplementary insurance, use of complementary and alternative medicine (CAM) therapies, whether or not the patients received any kind of anti-cancer therapy, death in acute hospital and days spend in other institutions.

Table 1 Patient characteristics

Canton	Cancer type	n	%	95% CIs	Patient		n	%	95% Cis
Basel	Other	111	49.12	42.6 - 55.6	Patient type	CAM	33	14.60	10.0 – 19.2
	Lung	44	19.47	14.3 – 24.6	Gender	Male	130	57.52	51.1 – 64.0
	Colon	22	9.73	5.9 – 13.6	Insurance	Basic	70	30.97	24.9 -37.0
	Mamma	18	7.96	4.4 – 11.5		ECO	92	40.71	34.3 – 47.1
	Prostate	16	7.08	3.7 – 10.4		SP+P	64	28.32	22.4 – 34.2
	Hematological	15	6.64	3.4 – 9.9	ACT	Yes	111	49.12	42.6 – 55.6
	Patients with >3 separate hospitalizations	51	22.7	17.1 – 28.0	Died in Hospital		194	85.84	
Ticino	Other	272	51.91	47.6 – 56.2	Patient type	CAM	16	3.05	1.6 – 4.5
	Lung	81	15.46	12.4 – 18.6	Gender	Male	308	58.78	54.6 – 63.0
	Colon	36	6.87	4.7 – 9.0	Insurance	Basic	112	21.37	17.9 -24.9
	Mamma	37	7.06	4.9 – 9.3		ECO	234	44.66	40.4 – 48.9
	Prostate	47	8.97	6.5 – 11.4		SP+P	178	33.97	29.9 – 38.0
	Hematological	51	9.73	7.2 – 12.3	ACT	Yes	294	56.11	51.9 – 60.4
	Patients with >3 separate hospitalizations	65	12.4	9.6 – 15.2	Died in Hospital		426	81.30	
Valais	Other	83	60.58	52.4 – 68.8	Patient type	CAM	6	4.38	0.6 – 7.8
	Lung	31	22.63	15.6 – 29.6	Gender	Male	89	64.96	57.0 – 73.0
	Colon	7	5.11	1.4 – 8.8	Insurance	Basic	48	35.04	27.0 – 43.0
	Mamma	4	2.92	0.1 – 5.7		ECO	75	54.74	46.4 – 63.1
	Prostate	9	6.57	2.4 – 10.7		SP+P	14	10.22	5.1 – 15.3
	Hematological	3	2.19	0.0 – 4.6	ACT	Yes	53	38.69	30.5 – 46.8
	Patients with >3 separate hospitalizations	21	15.3	9.2 – 21.4	Died in Hospital		101	73.72	
Zürich	Other	583	48.62	45.8 – 51.5	Patient type	CAM	186	15.51	13.5 – 17.6
	Lung	222	18.52	16.3 – 20.7	Gender	Male	615	51.29	48.5 – 54.1
	Colon	89	7.42	5.9 – 8.9	Insurance	Basic	371	30.94	28.3 – 33.6
	Mamma	120	10.01	8.3 – 11.7		ECO	431	35.95	33.2 – 38.7
	Prostate	98	8.17	6.6 – 9.7		SP+P	397	33.11	30.4 – 35.8
	Hematological	87	7.26	5.8 – 8.7	ACT	Yes	568	47.37	44.5 – 50.2
	Patients with >3 separate hospitalizations	210	17.5	15.4 – 19.7	Died in Hospital		944	78.73	

ACT = anti-cancer therapies, CAM = complementary/alternative medicine, ECO = basic hospital supplementary insurance (hospitalization on general ward with free choice of hospital across Switzerland), SP+P = semi-private or private hospital supplementary insurance

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Literature:

1. Matter-Walstra, K., Achermann, R., Rapold, R., Klingbiel, D., Bordoni, A., Dehler, S., Jundt, G., Konzelmann, I., Clough-Gorr, K., Szucs, T., Pestalozzi, B. & Schwenkglenks, M. 2015. Cancer-Related Therapies at the End of Life in Hospitalized Cancer Patients from Four Swiss Cantons: SAKK 89/09. *Oncology,* 88**,** 18-27.
2. Matter-Walstra, K. M., Achermann, R., Rapold, R., Klingbiel, D., Bordoni, A., Dehler, S., Jundt, G., Konzelmann, I., Clough-Gorr, K., Szucs, T., Schwenkglenks, M. & Pestalozzi, B. C. 2014. Delivery of health care at the end of life in cancer patients of four swiss cantons: a retrospective database study (SAKK 89/09). *BMC Cancer,* 14**,** 306-317.

Results

Mean DAH for all four cantons was 26 days. In the multivariable model, using complementary and alternative medicine (DAH=33.9; +8.8 days compared to non-users) and canton of residence (for patient receiving anti-cancer therapy, Zürich DAH=22.8 versus Basel DAH=31.4; for other patients, Valais DAH=22.7 versus Ticino DAH=33.7) had the strongest influence. Age at death and days spent in other institutions were additional significant predictors. **High rates of dying in an acute hospital (BS 86% and TI 81%) correspond to national highest hospital bed densities and hospitalization rates in these cantons** (data not shown).

Figure 1. Relationship between age at death and days spent in acute hospitals or other institutions during the last 90 days prior to death. O—O = days spent in an acute hospital, ■—■ = days spent in other institutions, ⊥ T = 95% confidence intervals, bars show number of patients within the age group. Hosp=acute hospital, LOS=length of stay, Inst.=institutes

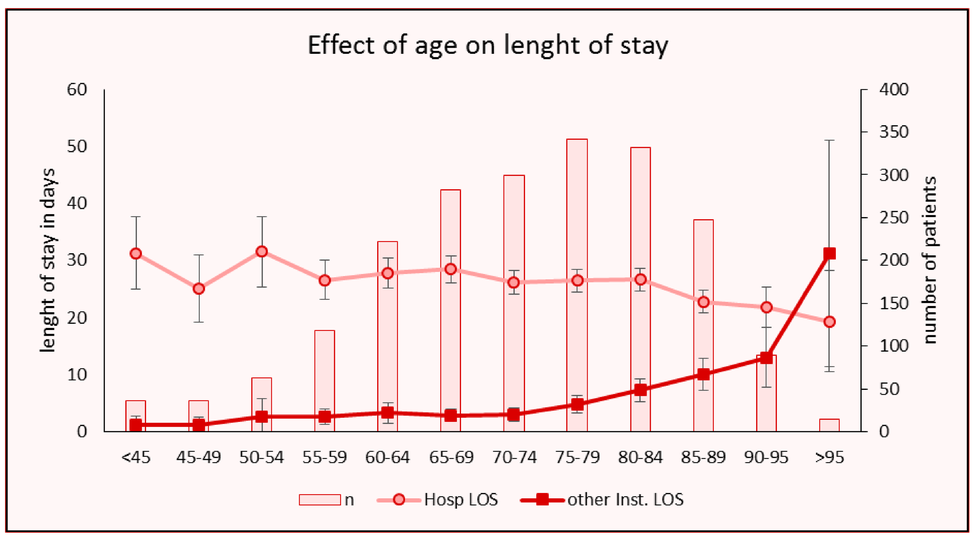
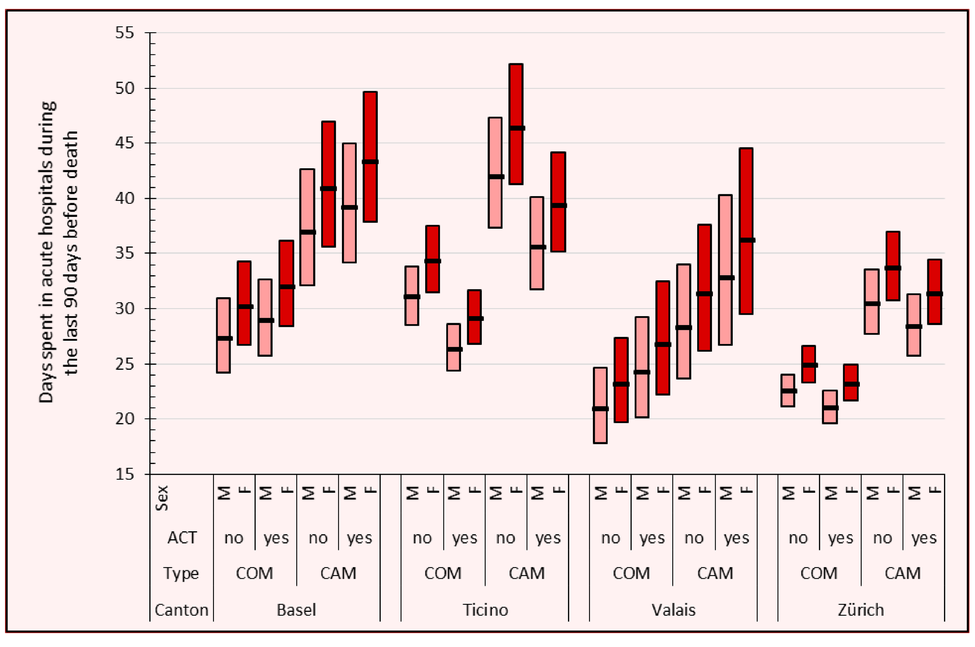


Figure 2. Estimated days spent in acute hospitals, results of the multivariable model for a patient with a mean age at death of 72.4 and a mean DOI of 5.4 days. DOI = days in other institutions, ACT = anti-cancer therapies, COM = conventional medicine only, CAM = complementary alternative medicine, F = female, M = male. —= Mean, Bars represent 95% confidence interval



Discussion and Conclusion

Compared to other European countries, cancer patients from four Swiss cantons showed high DAH during the last 90 days of life, as well as high percentage patients dying in acute hospitals. Several factors such as canton of residence but also the use of CAM influence DAH. Resulting differences are likely to have financial impact, as DAH is a major cost driver for end-of-life care. **Whether these high DAH are supply or demand driven and whether patients would prefer fewer days in hospital remains to be established.**

Email: Klazien.matter@unibas.ch