化学療法に関する含意

治癒から緩和へと治療方針を変更することについて、医療側と患者側が話し合うことの必要性[1]

1. Wright et al. JAMA. 2008.

限界

admin. dataを使用

- 臨床の詳細情報がない

病院の症例数だけに着目

- 病院の経験と医師の経験の区別が不可能

被用者保険のデータがない

- 各病院の症例数を正確に表しているわけではない

結論

症例数の多い病院
治癒を目指した治療、延命治療
=アグレッシブな治療
→QOLを重視する治療への移行

症例数の少ない病院
緩和ケアを妨げる障壁を同定・除去

・がん治療の質の均てん化
・良質な終末期ケアの普及

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Impact of Hospital Case Volume on Quality of End-of-Life Care in Terminal Cancer Patients

Toshitaka Morishima, M.D., Jason Lee, Ph.D., Tetsuya Otsubo, Ph.D., Hiroshi Ikai, M.D., Ph.D., and Yuichi Imanaka, M.D., M.P.H., Ph.D.

Abstract

Background: Quality of end-of-life (EOL) care is gaining increasing attention. However, the relationship between hospital case volume and performance of benchmark quality indicators is not well characterized. The aim of this study was to determine whether hospital case volume affects EOL care for terminal cancer patients.
Methods: We conducted a retrospective cross-sectional study using claims data of patients who died of cancer at acute-care hospitals in Kyoto prefecture, Japan, between March 2009 and May 2010. Hospitals were grouped into tertiles based on the number of terminal cancer cases. We used multilevel logistic regression models to examine the association of the following quality indicators with the tertiles: opioid use during the last 2 months of life (indicating good quality of care), provision of intensive care unit (ICU) service or life-sustaining treatments during the last month of life (poor quality), and chemotherapy during the last month of life (poor quality).
Results: The final sample for analysis consisted of 3294 decedents from 88 hospitals. Significant associations between hospital case volume and quality of EOL care were identified after adjusting for patient and hospital characteristics. Small- and medium-volume hospitals were found to be less likely to administer opioids, and medium-volume hospitals were more likely to provide ICU service or life-sustaining treatments when compared with large-volume hospitals. No significant association between chemotherapy use and case volume was observed.
Conclusions: The results showed that the case volume of terminally ill cancer patients was associated with several aspects of quality of EOL care.

Introduction

Cancer is a leading cause of death associated with age in most industrialized nations. With the number of deaths from cancer expected to rise, there has been increased interest in the quality of end-of-life (EOL) cancer care, as seen by the numerous studies that have evaluated the quality of processes and developed quality indicators for administrative data to compare hospital performance.[1–5] Furthermore, variations in terminal cancer care among hospitals or geographic regions have been well documented, and are thought to arise from an uneven availability of palliative care services.[6–8]

Previous research has helped identify the hospital factors that affect different practice patterns in EOL care. However, little remains known about the relationship between hospital case volume and quality of EOL care. Case volume can reflect hospitals' and physicians' experience with a particular disease or procedure, which may lead to more reliable adherence to care processes and consequently a superior clinical outcome, such as quality of life (QOL).

Although EOL care for cancer patients can take place in settings other than acute-care hospitals, palliative and hospice care are not well established in Asian countries.[9] In Japan, approximately 80% of patients die at acute-care hospitals, and only 4% die at hospices.[10] These facts highlight the importance of comparing the quality of EOL care at different acute-care hospitals in Japan.

Despite some limitations, the use of administrative data allows for the reliable evaluation of certain aspects of the quality of EOL care, such as the underuse of opioids or overuse of chemotherapy at a multihospital level.[1–4] Intensive anticancer treatments during EOL are not always associated with better quality of care, when taking into account improved QOL or satisfaction with care.[11,12]

In this study, we hypothesized that hospitals with a larger case volume would be more likely to provide good-quality EOL cancer care and less likely to provide poor-quality care compared with hospitals with a smaller volume. The objective of this study was to elucidate the relationship between hospital volume and performance of quality indicators among

Department of Healthcare Economics and Quality Management, Kyoto University Graduate School of Medicine, Yoshida Konoe-cho, Sakyo-ku, Kyoto, Japan.
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acute-care hospitals using a large-scale multi-institutional administrative database.

Methods

Data source and study population

We conducted a retrospective cross-sectional study using all electronic claims data submitted from hospitals and offices in Kyoto prefecture, Japan. Paper-based claims comprise less than 10% of the total reimbursement claims, and were not included in this analysis. The database was comprised of claims information that had been submitted to National Health Insurance (NHI) and Long Life Medical Care System (LLMCS), two major insurance payers. NHI provides insurance coverage for individuals not working in companies (e.g., farmers, the self-employed, retirees, the unemployed, part-time workers, and corresponding families); LLMCS provides coverage for individuals aged 75 or older and disabled individuals aged 65 to 74 years. Information regarding patient demographics, comorbidities, diagnostic and therapeutic procedures, and administered medications is available from the database. This study was approved by the Ethics Committee at Kyoto University Graduate School of Medicine (Registration Number E-1023).

Patients were included for analysis if they died of cancer at hospitals between March 2009 and May 2010 and if they had available claims records for at least 2 months prior to death. Cancer was identified according to the *International Classification of Diseases, 10th Revision* (ICD-10; codes Cxx.x).[13] Patients who used hospice services during their last 2 months of life were excluded. Although the use of hospice services is generally indicative of good-quality care, the vast majority of Japanese patients do not benefit from specialized EOL care offered by hospices due to the low number of hospices in Japan. The inclusion of hospices in this analysis would therefore not appear to provide substantial advantage, and might potentially bias the results.

Hospital case volume

To determine whether hospital volume affects the quality of procedures, hospitals were divided into tertiles according to case volume during the study period (case numbers of 1–8, 9–40, 41–219); the first tertile represented the group of hospitals with a small volume, whereas the third tertile represented the group of hospitals with a large volume. A treatment hospital was defined as the hospital where the patient died.

Patient and hospital characteristics

Data on patient characteristics were obtained using claims data corresponding to the last 2 months of life. Based on ICD-10 codes, cancer types were classified into the following categories: lung (C34.x), stomach (C16.x), colorectum (C18.x, C19.x, C20.x), liver (C22.x), pancreas (C25.x), biliary tract (C23.x, C24.x), blood (leukemia, Hodgkin's disease, and non-Hodgkin's lymphoma; C81.x–C85.x, C91.x–C95.x), prostate (C61.x), breast (C50.x), and others (C00.x–C15.x, C17.x, C21.x, C26.x, C30.x–C33.x, C37.x–C41.x, C43.x–C49.x, C51.x–C58.x, C60.x, C62.x–C80.x, C88.x, C90.x, C96.x, C97.x). Comorbidities were scored according to ICD-10 coding algorithms for the Charlson Comorbidity Index (excluding cancer-related diseases).[14,15] Hospital characteristics included teaching status (yes or no), ownership (public, nonprofit, or private), palliative care team (present or absent), and location (urban referring to within the prefectural capital city or rural referring to anywhere outside the city).

Quality of care indicators

We used the following quality indicators of EOL care for administrative data to identify good and poor quality of care: opioid use during the last 2 months of life (good quality of care),[3,4] admission to intensive care units (ICUs) or administration of life-sustaining treatments (cardiopulmonary resuscitation, intubation, or mechanical ventilation) during the last month of life (poor quality of care),[1–4] and chemotherapy (cytotoxic agents or molecular-targeted therapies) during the last month of life (poor quality of care).[1–4] The latter two indicators are related to the outcome of QOL and satisfaction with care during EOL,[16] and have undergone testing in other health care settings.[17] Next, although opioid use has not yet been sufficiently validated as an indicator of EOL care, opioids are considered essential medicines for palliative care by the World Health Organization[18] and have been used as quality indicators.[19,20]

Statistical analysis

Initial bivariate analysis was performed to compare the proportion of patients who received each procedure by tertile of case volume using a χ^2 test. To examine the impact of case volume on the quality of care, multilevel (hierarchical) logistic regression models for patients nested within hospitals with a random intercept at level 2 were developed for each quality indicator. Multilevel modeling allowed us to adjust for variable clustering in two levels. In the first model for each quality indicator, patient characteristics were entered at level 1, and hospital volume tertiles were entered at level 2. In the second model for each indicator, hospital characteristics were added at level 2 in addition to the variables included in the first model. The second model was used to examine whether quality of EOL care was affected by hospital case volume or hospital characteristics. In both models, the large-volume hospital group was used as the reference category.

Binary results (e.g., whether a particular procedure was performed or not) were used as response variables for each regression model. The following patient characteristics were used as explanatory variables for both the first and second model: sex, age group at death (years: <65, 65–69, 70–74, 75–79, 80–84, ≥ 85), cancer type, and Charlson Comorbidity Index (excluding cancer-related diseases; 0–1, 2, 3, ≥ 4). The hospital characteristics of teaching status, ownership, palliative care team status, and location were used as explanatory variables for the second model.

The goodness of fit of the models was compared by using the Akaike information criterion (AIC), with smaller values indicating a better fit. We used IBM SPSS version 19 (SPSS Inc., Chicago, IL) for data manipulation, and SAS version 9.2 (SAS Institute Inc., Cary, NC) for analyses. Two-sided tests were used and a $p < 0.05$ was considered to be statistically significant.

Results

A total of 3535 patients who died of cancer at hospitals with available claims records for at least 2 months prior to death were selected for analysis. Patients who used hospice services

during their last 2 months of life ($n=241$) were excluded. Thus, 3294 patients corresponding to 88 hospitals were analyzed. Patient characteristics are presented in Table 1. Four percent of the patients died at small-volume hospitals, 19% at medium-volume hospitals, and 77% at large-volume hospitals. There were more men (60.6%) than women across hospital tertiles. The majority of decedents were in the 75 to 79 age group (22.0%). Patients who died at small- and medium-volume hospitals were older and had more comorbidities compared with patients who died at large-volume hospitals. The most common type of cancer at medium- and large-volume hospitals was lung cancer, whereas lung cancer and stomach cancer were the most common at small-volume hospitals.

Approximately a third of the hospitals were grouped into each tertile (Table 2). Among all tertiles, 26% of the hospitals were teaching hospitals. Across each condition, large-volume hospitals were more likely to be teaching institutions and publicly owned, compared with hospitals with a smaller volume.

The unadjusted performance proportions across each quality indicator by tertile are presented in Table 3. Approximately half (51.0%) of the study patients received opioids during the last 2 months of life; 10% were provided with ICU service or received life-sustaining treatment during the last month; 8% underwent chemotherapy during the last month. Performance proportions on all indicators were significantly different across tertiles.

TABLE 1. STUDY POPULATION CHARACTERISTICS BY TERTILE OF CASE VOLUME

	Hospital case volume		
	Small	*Medium*	*Large*
No. of patients ($n=3294$)	128	627	2539
Women	58 (45.3)	257 (41.0)	983 (38.7)
Age, years			
≤64	2 (1.6)	61 (9.7)	334 (13.2)
65–69	6 (4.7)	59 (9.4)	341 (13.4)
70–74	12 (9.4)	67 (10.7)	389 (15.3)
75–79	22 (17.2)	127 (20.3)	576 (22.7)
80–84	29 (22.7)	135 (21.5)	497 (19.6)
≥85	57 (44.5)	178 (28.4)	402 (15.8)
Cancer type			
Lung	26 (20.3)	143 (22.8)	475 (18.7)
Stomach	26 (20.3)	98 (15.6)	350 (13.8)
Colorectum	20 (15.6)	85 (13.6)	281 (11.1)
Liver	10 (7.8)	55 (8.8)	271 (10.7)
Pancreas	5 (3.9)	40 (6.4)	229 (9.0)
Biliary tract	7 (5.5)	33 (5.3)	122 (4.8)
Blood	1 (0.8)	23 (3.7)	181 (7.1)
Prostate	9 (7.0)	21 (3.3)	67 (2.6)
Breast	2 (1.6)	16 (2.6)	63 (2.5)
Other	22 (17.2)	113 (18.0)	500 (19.7)
Charlson Comorbidity Index			
0–1	30 (23.4)	157 (25.0)	925 (36.4)
2	20 (15.6)	132 (21.1)	514 (20.2)
3	24 (18.8)	98 (15.6)	339 (13.4)
≥4	54 (42.2)	240 (38.3)	761 (30.0)

Values are expressed as number of patients (column percentage). Because of rounding, percentages may not add up to 100%. Volume group ranges: small volume=1–8, medium volume=9–40, and large volume=41–219 terminally ill cancer patients during the study period.

TABLE 2. HOSPITAL CHARACTERISTICS BY TERTILE OF CASE VOLUME

	Hospital case volume		
	Small	*Medium*	*Large*
No. of hospitals ($n=88$)	32	28	28
Teaching hospitals	1 (3.1)	2 (7.1)	20 (71.4)
Ownership			
Public	2 (6.2)	2 (7.1)	10 (35.7)
Nonprofit	0 (0)	0 (0)	6 (21.4)
Private	30 (93.8)	26 (92.9)	12 (42.9)
Presence of palliative care team	0 (0)	0 (0)	5 (17.9)
Urban location	20 (62.5)	19 (67.9)	15 (53.6)

Values are expressed as number of hospitals (column percentage). Volume group ranges: small volume=1–8, medium volume=9–40, and large volume=41–219 terminally ill cancer patients during the study period.

Hospital case volume and quality of care

The effects of case volume on the quality of EOL care (the first model without hospital characteristics) are shown in Table 4. Three models were generated to help identify the statistical association between hospital case volume and quality indicators. Significant associations were identified after adjusting for patient characteristics. Patients with advanced cancer were found to be less likely to receive opioids during the last 2 months of life at small-volume hospitals (adjusted odds ratio [OR], 0.59; 95% confidence interval [CI], 0.39–0.89) and medium-volume hospitals (adjusted OR, 0.73; 95% CI, 0.60–0.89), compared with large-volume hospitals. Patients were more likely to be admitted to the ICU or receive life-sustaining treatments during the last month at medium-volume hospitals (adjusted OR, 1.94; 95% CI, 1.45–2.60), compared with large-volume hospitals. There was no significant association between case volume and chemotherapy during EOL.

Among patient characteristics, older patients, patients with liver or blood cancer, and patients with higher Charlson Comorbidity Index scores were less likely to receive opioids at the EOL. Patients with liver or biliary tract cancer were less likely to be admitted to the ICU or receive life-sustaining treatments,

TABLE 3. PERFORMANCE OF QUALITY INDICATORS BY TERTILE OF CASE VOLUME

	Hospital case volume			
	Small (n=128)	*Medium (n=627)*	*Large (n=2539)*	P *value*
Good-quality care				
Opioid use[a]	43 (33.6)	272 (43.4)	1366 (53.8)	<0.001
Poor-quality care				
ICU or life-sustaining treatments[b]	14 (10.9)	95 (15.2)	220 (8.7)	<0.001
Chemotherapy[b]	3 (2.3)	36 (5.7)	218 (8.6)	0.004

Values are expressed as number of patients (%).
P values were calculated using χ^2 tests.
[a]Identified during the last 2 months of life.
[b]Identified during the last month of life. Volume group ranges: small volume=1–8, medium volume=9–40, and large volume=41–219 terminally ill cancer patients during the study period.
ICU, intensive care unit.

TABLE 4. QUALITY INDICATORS, HOSPITAL CASE VOLUME, AND PATIENT AND HOSPITAL CHARACTERISTICS

	Odds ratio (95% confidence interval)					
	Opioid use		*ICU or life-sustaining treatments*		*Chemotherapy*	
	1st model	*2nd model*	*1st model*	*2nd model*	*1st model*	*2nd model*
Case volume[a]						
Small	0.59 (0.39–0.89)*	0.54 (0.35–0.83)**	1.30 (0.70–2.42)	0.98 (0.51–1.88)	0.45 (0.14–1.49)	0.44 (0.13–1.49)
Medium	0.73 (0.60–0.89)**	0.67 (0.53–0.86)**	1.94 (1.45–2.60)***	1.50 (1.05–2.14)*	0.80 (0.54–1.20)	0.78 (0.48–1.25)
Patient-level variables						
Sex						
Women	1.18 (1.00–1.39)	1.19 (1.00–1.40)	1.06 (0.81–1.38)	1.05 (0.80–1.36)	0.87 (0.64–1.18)	0.87 (0.64–1.18)
Age[b], years						
65–69	0.90 (0.65–1.24)	0.91 (0.66–1.25)	0.65 (0.38–1.10)	0.65 (0.39–1.10)	0.64 (0.39–1.06)	0.64 (0.39–1.06)
70–74	0.63 (0.46–0.86)**	0.64 (0.47–0.87)**	1.00 (0.63–1.59)	1.03 (0.65–1.65)	0.61 (0.37–1.00)	0.60 (0.37–0.98)*
75–79	0.48 (0.36–0.64)***	0.48 (0.36–0.64)***	0.85 (0.55–1.32)	0.88 (0.57–1.37)	0.73 (0.48–1.13)	0.73 (0.47–1.12)
80–84	0.28 (0.21–0.38)***	0.28 (0.21–0.38)***	0.91 (0.59–1.41)	0.95 (0.61–1.48)	0.45 (0.28–0.73)**	0.45 (0.28–0.73)**
≥85	0.20 (0.15–0.28)***	0.20 (0.15–0.28)***	0.76 (0.48–1.19)	0.79 (0.50–1.24)	0.25 (0.14–0.44)***	0.25 (0.14–0.44)***
Cancer type[c]						
Stomach	0.82 (0.63–1.07)	0.81 (0.63–1.06)	1.04 (0.68–1.57)	1.03 (0.68–1.56)	1.33 (0.82–2.16)	1.31 (0.80–2.12)
Colorectum	1.10 (0.83–1.46)	1.09 (0.82–1.44)	1.05 (0.68–1.63)	1.05 (0.68–1.63)	0.66 (0.35–1.25)	0.64 (0.34–1.22)
Liver	0.43 (0.32–0.58)***	0.43 (0.32–0.58)***	0.55 (0.32–0.93)*	0.55 (0.32–0.93)*	0.49 (0.23–1.03)	0.48 (0.23–1.01)
Pancreas	1.09 (0.80–1.50)	1.09 (0.80–1.50)	0.60 (0.34–1.08)	0.60 (0.34–1.08)	0.90 (0.48–1.67)	0.88 (0.47–1.64)
Biliary tract	0.98 (0.67–1.43)	0.97 (0.66–1.42)	0.39 (0.17–0.89)*	0.38 (0.17–0.87)*	0.42 (0.15–1.23)	0.41 (0.14–1.19)
Blood	0.34 (0.24–0.49)***	0.34 (0.24–0.49)***	2.08 (1.28–3.36)**	2.15 (1.33–3.47)**	8.39 (5.03–14.01)***	8.09 (4.83–13.53)***
Prostate	0.85 (0.53–1.37)	0.85 (0.53–1.36)	1.32 (0.66–2.63)	1.27 (0.64–2.52)	1.71 (0.74–3.97)	1.65 (0.71–3.83)
Breast	0.93 (0.54–1.62)	0.94 (0.54–1.63)	1.20 (0.54–2.66)	1.14 (0.52–2.51)	3.14 (1.49–6.61)**	2.95 (1.40–6.23)**
Other	0.80 (0.63–1.02)	0.80 (0.63–1.02)	1.03 (0.70–1.51)	1.02 (0.70–1.50)	1.19 (0.75–1.89)	1.16 (0.73–1.84)
Charlson Comorbidity Index[d]						
2	0.99 (0.80–1.23)	1.00 (0.80–1.23)	1.33 (0.94–1.88)	1.32 (0.93–1.87)	1.21 (0.84–1.75)	1.19 (0.82–1.72)
3	0.84 (0.66–1.07)	0.84 (0.66–1.06)	1.13 (0.75–1.70)	1.11 (0.74–1.66)	1.04 (0.68–1.60)	1.03 (0.67–1.58)
≥4	0.65 (0.53–0.79)***	0.65 (0.53–0.79)***	1.67 (1.22–2.30)**	1.59 (1.16–2.19)**	0.80 (0.54–1.17)	0.78 (0.53–1.15)
Hospital-level variables						
Teaching status[e]						
Nonteaching		0.94 (0.76–1.17)		1.59 (1.13–2.26)**		1.32 (0.88–1.99)
Ownership[f]						
Nonprofit		0.95 (0.74–1.21)		0.66 (0.44–1.00)		1.10 (0.73–1.65)
Private		1.33 (1.04–1.71)*		0.76 (0.51–1.14)		0.73 (0.46–1.14)
Palliative care team[g]						
Present		1.18 (0.91–1.53)		1.00 (0.65–1.53)		0.83 (0.53–1.30)
Location[h]						
Urban		0.80 (0.66–0.96)*		1.60 (1.17–2.19)**		1.30 (0.90–1.87)
Model fit statistics						
AIC	4226.5	4225.4	2113.8	2106.6	1651.4	1656.5

*$p<0.05$; **$p<0.01$; ***$p<0.001$.

Referent category: [a]large, [b]<65 years, [c]lung, [d]0–1, [e]teaching, [f]public, [g]absent, [h]rural.

Opioid use during the last 2 months of life was considered to be an indicator of good quality of care. ICU admission, life-sustaining treatments during the last month of life, and chemotherapy use during the last month were considered indicators of poor quality of care. The 1st model includes patient characteristics as explanatory variables, and the 2nd model includes both patient and hospital characteristics as explanatory variables.

Volume group ranges: small volume=1–8, medium volume=9–40, and large volume=41–219 terminally ill cancer patients during the study period.

ICU, intensive care unit; AIC, Akaike information criterion.

whereas patients with blood cancer and patients with more comorbidities were more likely to receive such procedures. Older patients were less likely to undergo chemotherapy, whereas patients with blood or breast cancer were more likely to undergo chemotherapy, compared with patients with lung cancer.

Hospital case volume, hospital characteristics and quality of care

Results from the second model where hospital characteristics were entered in addition to the variables included in the first model are also presented in Table 4. After adjusting for patient and hospital characteristics, hospital case volume remained significantly associated with opioid use. For ICU admission or life-sustaining treatments, patients at medium-volume hospitals remained more likely to undergo such admission or procedures, compared with large-volume hospitals. Finally, the results still showed no association between hospital case volume and chemotherapy in the second model.

Each of the patient characteristics yielded ORs similar to those in the first model that did not include hospital characteristics. Among hospital characteristics, patients at urban

hospitals were less likely to receive opioids, whereas patients at private hospitals were more likely to receive opioids. Patients at nonteaching or urban hospitals were more likely to be admitted to the ICU or receive life-sustaining treatments. The AIC indicated that the second, the second, and the first models were superior to each alternative model for evaluating opioid use, ICU admission or life-sustaining treatments, and chemotherapy, respectively.

Discussion

In this study, we determined the relationship between hospital case volume and quality of EOL care. To our knowledge, this is the first multi-institutional study to demonstrate a relationship between case volume and performance of benchmark quality indicators for EOL care.

Our analysis showed that patients had a lower frequency of opioid use for EOL care at small- and medium-volume hospitals after adjusting for patient and hospital characteristics. Although physicians may be reluctant to prescribe opioids for fear of causing addiction or drug abuse,[21] one previous study has shown that the number of patients for whom physicians have administered opioids in the past year correlates negatively with their concern and correlates positively with their confidence and comfort level in prescribing opioids.[22] Although these findings were at the physician level, they may also be underlying factors of our findings in this hospital-level analysis.

Our analysis also revealed that patients at medium-volume hospitals were more likely to undergo ICU admission or receive life-sustaining treatments during the last month of life when compared with large-volume hospitals. A possible interpretation of this observation is that physicians who attend fewer terminally ill patients feel a need to provide the most aggressive procedure or treatment. On the other hand, patients at small-volume hospitals were not associated with the probability of such procedures, possibly because there may not be sufficient health care resources for such intensive care at small-volume hospitals. ICU service and life-sustaining treatments may be difficult to conduct at resource-constrained hospitals even when cases require them.

The results did not show any significant association between hospital case volume and the frequency of chemotherapy use during the last month of life after adjusting for patient characteristics only, or for both hospital characteristics and patient characteristics. This may support the supposition that physicians may not be able to accurately predict patient survival time or know when to halt aggressive anticancer therapy, even with increased experience in EOL care.[23]

Our findings can be interpreted in other ways. The relationship between hospital case volume and quality of care may be explained by a hospital-level complex system of unmeasurable structure variables that relate to EOL care. These variables include reminders in electronic health records or clinical flow charts, clinical teams whose sole responsibility is to manage terminally ill patients, physician education programs, and patient education seminars. An alternative interpretation may be the presence of selective mechanisms, such as "selective allocation" and "selective referral," in which causality runs from quality of care to volume.[24] However, these aspects are not measurable using our data, and thus could not be adjusted for in this analysis.

The observed associations between case volume and quality of EOL care for patients with cancer may have implications for policy and health care system reform. A policy that supports the regionalization of EOL care, such as selective referrals to large-volume hospitals, may be advocated. Although initiatives to concentrate care to specific hospitals may result in improvements to the quality of care, there may also be issues such as a possible reduction in the equity of overall patient access. Alternatively, our findings may lead to the promotion of optimal EOL care, especially to hospitals with a smaller volume. Improvement of EOL care would require efforts to overcome various existing barriers.[25]

Our study also showed that a large number of patients with terminal cancer underwent aggressive procedures and/or did not receive opioids. This relatively high proportion of patients who had received poor quality of care is consistent with previous studies.[1–3] Highly intensive treatments for terminally ill patients in the final stages of life do not necessarily lead to better QOL.[11,12] Such poor quality of terminal cancer care may reflect a lack of discussion among health care professionals, patients, and their families about a transition from curative to palliative care.[26] Therefore, there still remains room for improvement in the overall quality of EOL care.

Limitations

Our study has the following limitations. First, detailed clinical information, such as patient QOL, satisfaction, and preferences for EOL care, could not be addressed using an administrative database. This is a common limitation of studies based on administrative data, but this limitation is offset by the ability to analyze large patient volumes and conduct hospital and regional comparative analyses. Second, we were unable to distinguish between physician- and hospital-related effects. To distinguish between the effects of physician and hospital factors, further studies should be conducted using physician volume and distribution data when available. Furthermore, many studies that analyzed the effects of case volume have similarly not been able to simultaneously adjust for physician and hospital volume measures. Third, the differences between patients who received curative care and palliative care may not be random, and these findings may therefore be affected by possible selection bias. Finally, data from all health insurers in Kyoto prefecture were not available. However, the two major insurers' data that were used in this study cover the majority of elderly people.

Conclusions

This study demonstrated that large-volume hospitals were more likely to provide opioids and less likely to provide intensive care for terminally ill cancer patients when compared with hospitals with a smaller case volume. We believe that these results may help promote efforts among policy makers and clinical leaders to establish a uniform quality of palliative care service so that terminally ill cancer patients receive optimal care wherever they are treated. To accomplish this goal, further research exploring effective interventions to overcome barriers to good quality of EOL care among hospitals with a smaller volume is still required.

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Author Disclosure Statement

No competing financial interests exist.

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Address correspondence to:
Yuichi Imanaka, M.D., M.P.H., Ph.D.
Department of Healthcare Economics and Quality Management
Graduate School of Medicine, Kyoto University
Yoshida Konoe-cho, Sakyo-ku
Kyoto, 606-8501
Japan

E-mail: imanaka-y@umin.net

C2 2 3

在宅医療が患者の終末期医療費に与える影響の検証
京都府の診療報酬明細書データベースを用いた実証研究

[redacted]

【目的】[redacted]

【方法】[redacted]

【結果】[redacted]

【考察】[redacted]

【まとめ】[redacted]

在宅医療が癌患者の終末期医療費に与える影響の検証

京都府の診療報酬明細書データベースを用いた実証研究

Presented at the 50th Annual Congress of JSHA
on October 19, 2012

京都大学大学院医学研究科
医療経済学分野
森島敏隆、大坪徹也、今中雄一

背景

死亡者数の増加

- 120万人（2010年）→150万人以上（2025年）に増加

終末期医療費の増加

- 終末期に高額な医療費
- 終末期医療費が増加する見込

政府の政策

- 在院日数短縮と看取り場所確保のために在宅医療を推進[1]
- 在宅医療の推進のために在宅療養支援診療所（在支診）を整備[2]

政策の結果は？

- 終末期医療費を増やす？減らす？
  - 外国では在宅医療は終末期医療費を減らすとの報告[3]

1. 医療費適正化に関する施策についての基本的な方針（厚生労働省）2008
2. 在宅医療・介護あんしん（厚生労働省）2012
3. Brumley et al. J Am Geriatr Soc. 2007

目的

①在宅医療の推進が末期がん患者の終末期医療費に及ぼす影響の検証

②在支診の整備が末期がん患者の終末期医療費に及ぼす影響の検証

3

方法、デザイン、データ

- デザイン
  Cross-sectional
- データソース
  京都府の国民健康保険と後期高齢者医療制度の診療報酬明細書のデータベース
- 研究対象患者
  包含基準 (n=3094)
  - ✓ 2009年4月～2010年5月にがん (ICD-10 codes: Cxx.x)で死亡
  - ✓ 京都府内に居住
  - ✓ 死亡月を含む終末期3か月間の診療報酬明細書が利用可能

  除外基準 (n=11)
  - ✓ 期間中のがん死亡患者が10人未満の市町村と、その市町村に居住する患者

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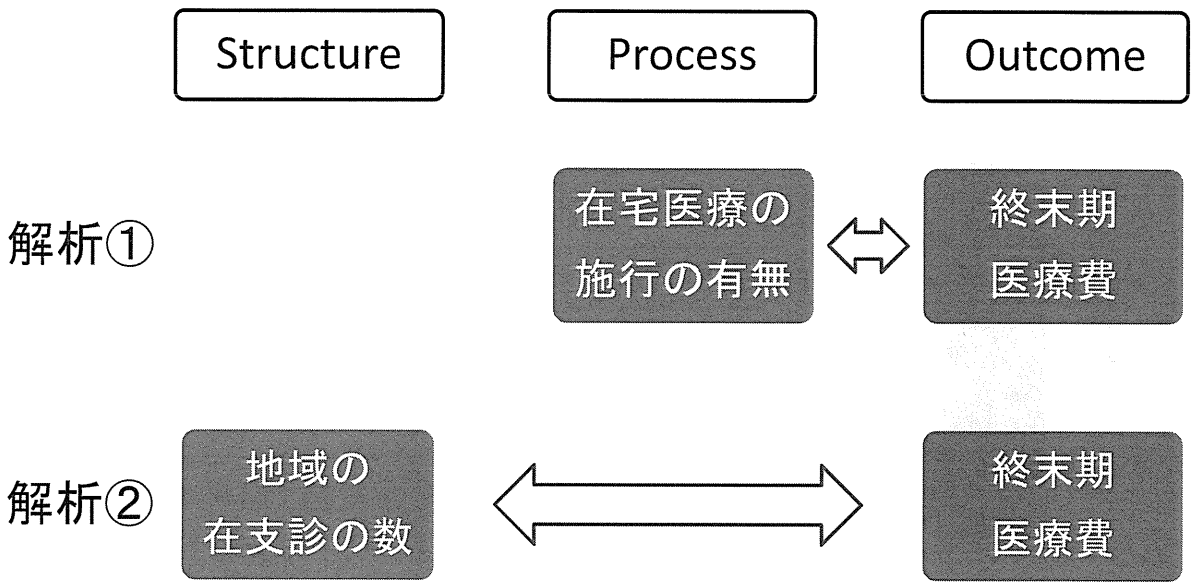
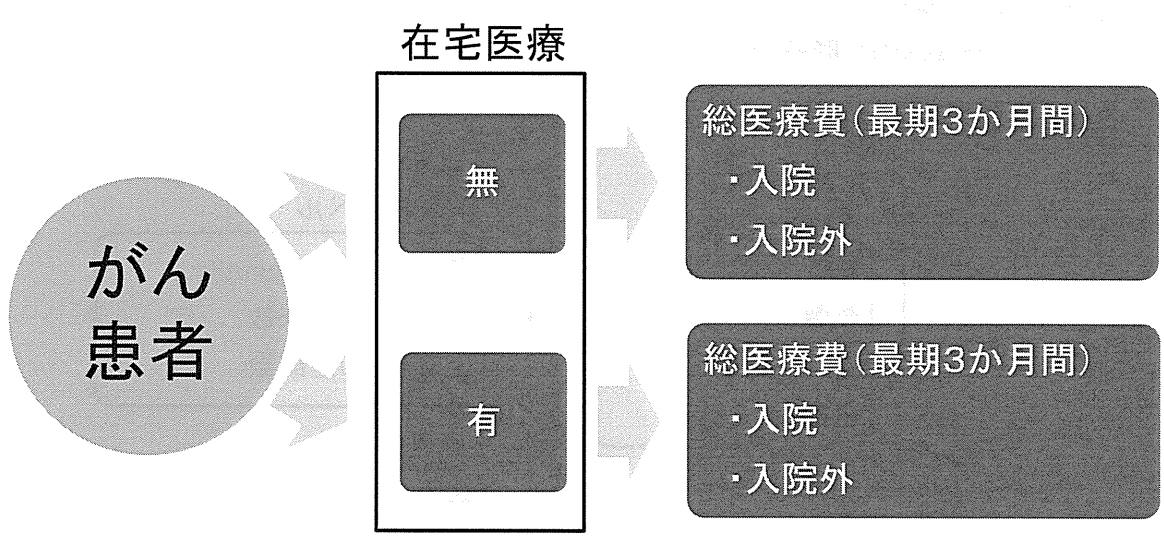
解析の概要



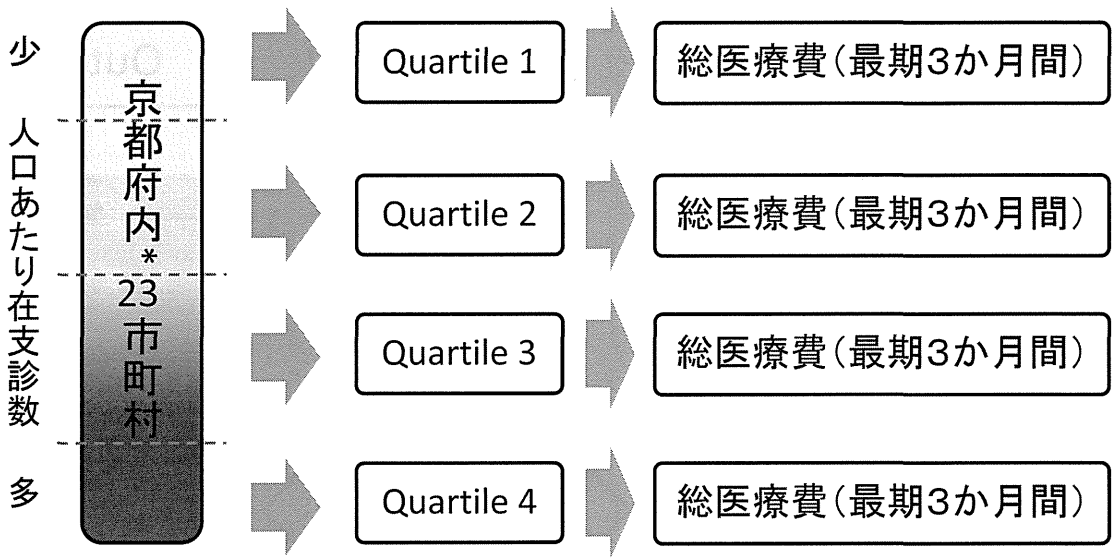
解析①（ProcessとOutcomeの関係）



在宅医療：　在宅患者訪問診療料か在宅末期医療総合管理料を終末期3か月間に1回以上算定

総医療費：病院と診療所と調剤薬局の合計
入院医療費：病院と診療所の合計
入院外医療費：病院と診療所と調剤薬局の合計

解析②（StructureとOutcomeの関係）



*患者数が10人未満の3市町村を除外

統計手法

目的変数：医療費
モデル：一般化線形モデル（ガンマ分布、ログリンク）

説明変数：

解析①

患者レベル
- 在宅医療の有無
- 年齢*
- がんの部位†
- 併存症‡

解析②（マルチレベル§）

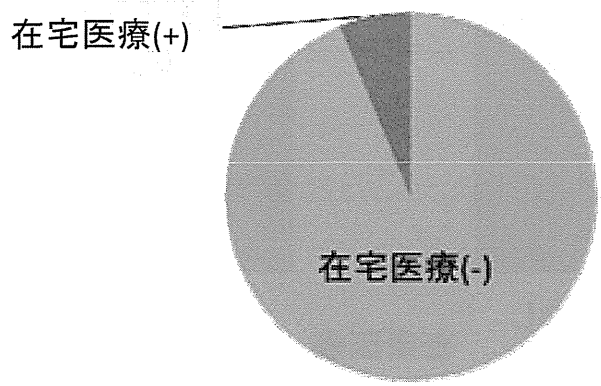
市町村レベル
- 在支診の数のQuartile
- 人口あたり病床数
- 人口あたり医師数

患者レベル
- 年齢*
- がんの部位†
- 併存症‡

*年齢カテゴリー：<65, 65-69, 70-74, 75-79, 80-84, 85≤
†がんの部位：肺、胃、大腸、肝、胆、膵、血液（白血病とリンパ腫）、前立腺、乳、その他
‡併存症カテゴリー：がん以外の疾患をCharlson Indexに従ってスコア化（0-1, 2, 3, 4-）
§ランダム切片モデル

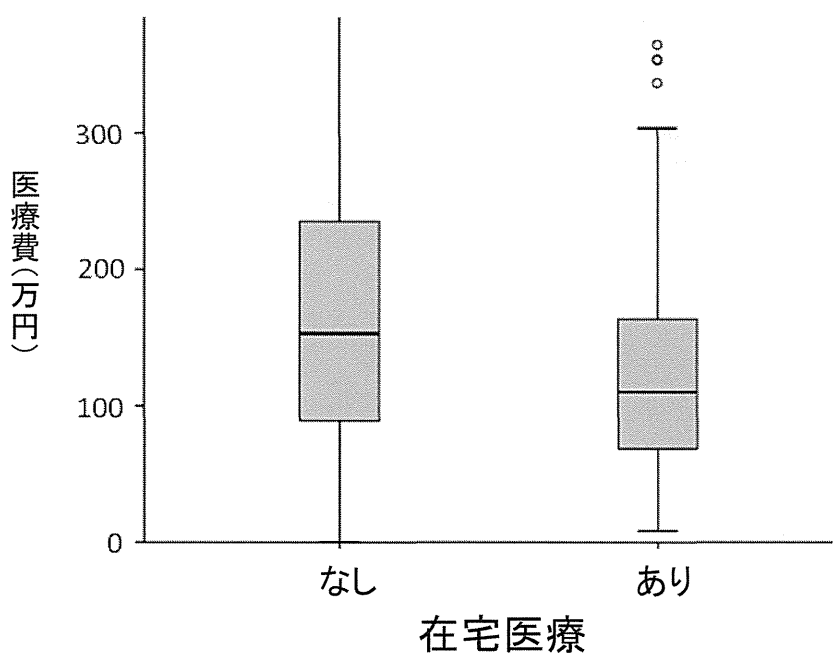
結果

- 患者数:　　3083人（23市町村）

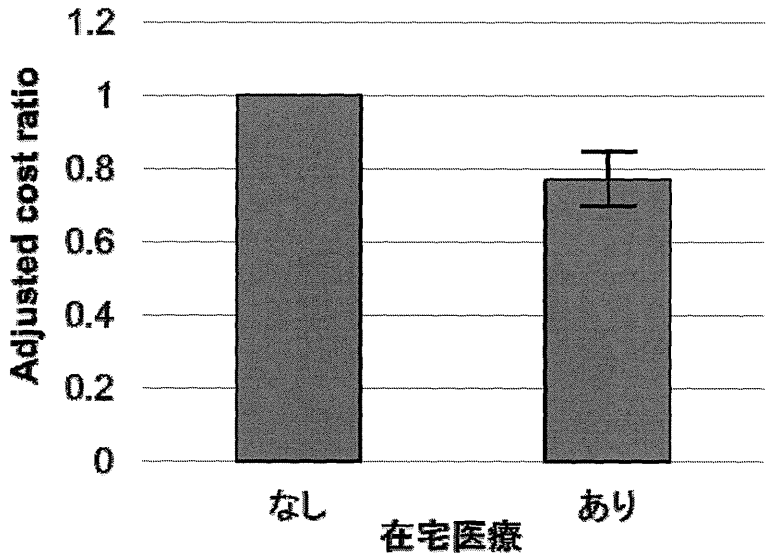


終末期医療費（3か月間）

中央値：¥1,497,000（四分位範囲：¥874,000—¥2,310,000）



解析①（在宅医療の有無と医療費）



患者数　2892 (94%)　191 (6%)

Cost ratio：　在宅医療を利用しない患者との比較
エラーバー：　95%信頼区間を表す。

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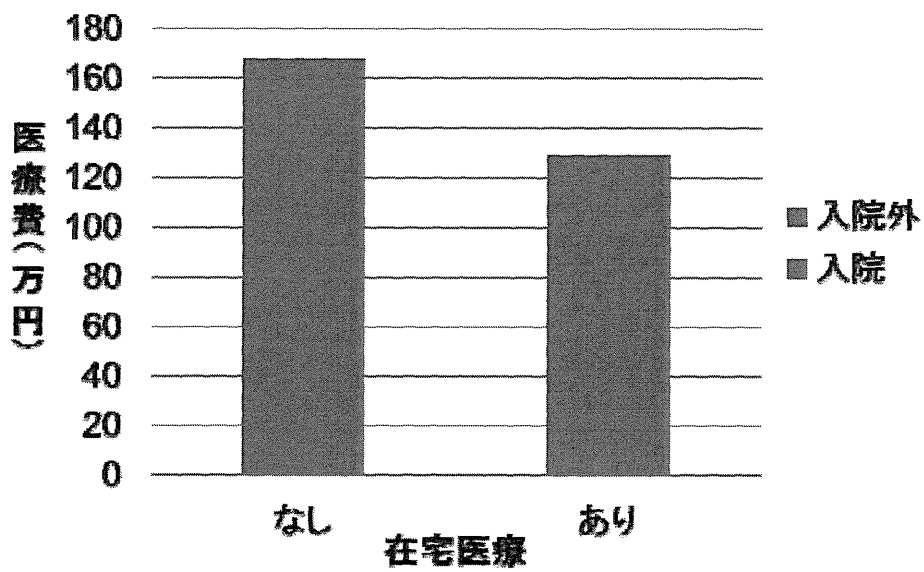
医療費の内訳



患者数　2892 (94%)　191 (6%)

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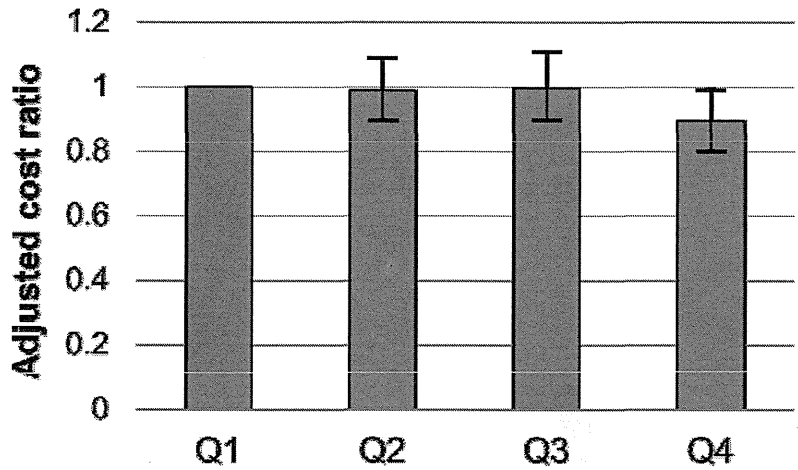
解析②（在支診の多少と医療費）



	Q1	Q2	Q3	Q4
市町村数	6	6	5	6
患者数	288	441	2011	343

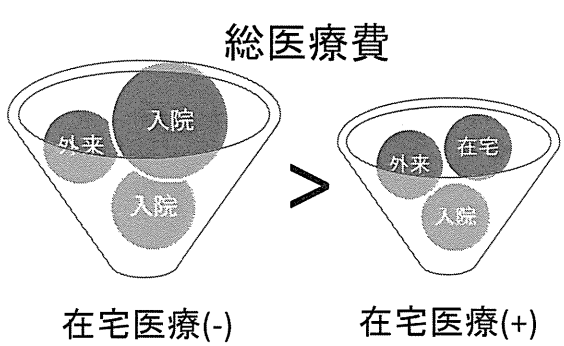
少　人口あたり在支診の数　多

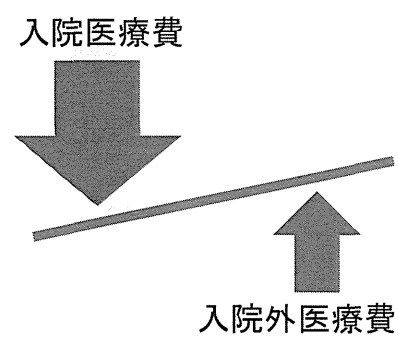
Cost ratio：　Q1との比較
エラーバー：　95%信頼区間

考察1

在宅医療と医療費　ProcessとOutcomeの関係

- 在宅医療⇒終末期がん患者の医療費の抑制を示唆
- 終末期医療の場が入院→入院外にシフト
- 入院医療費の減少分＞入院外医療費の増加分

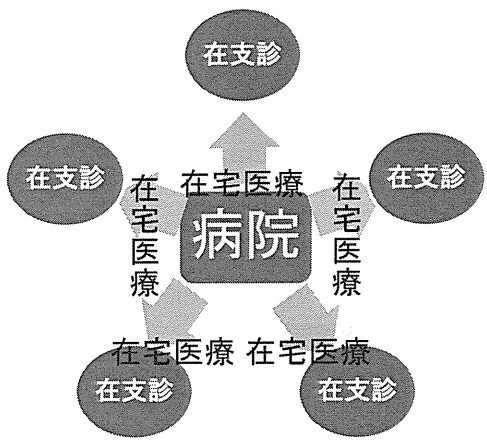


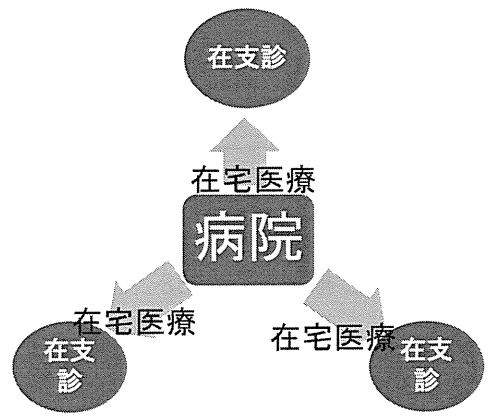


考察2

在支診と医療費 StructureとOutcomeの関係

- 在支診の設置⇒終末期がん患者の医療費の抑制を示唆
- 在支診が多い地域では在宅医療にアクセスしやすいのかも





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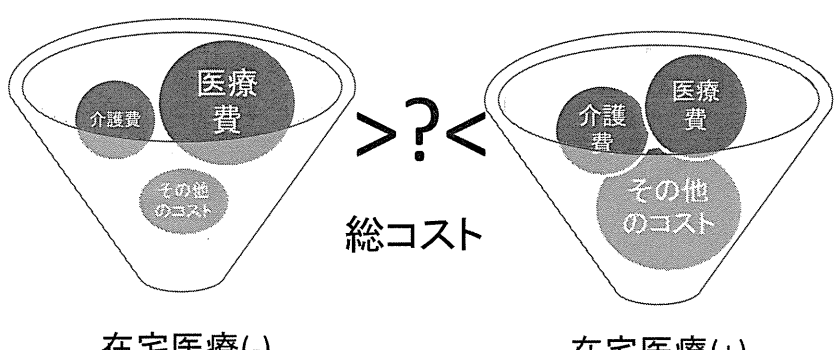
解釈に注意を要する点

- 医療費だけに着目
- 在宅医療は介護費、患者・家族・社会の負担を増やす可能性
- 総コスト（＝医療費＋介護費＋患者・家族・社会の負担）と在宅医療の有無の関係は不明。
  外国で家族・社会の負担を含む終末期費用が高くなるか低くなるかは研究によって異なる (Zimmermann, JAMA 2008)



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限界

診療報酬明細書データ

- 個々の患者の在宅医療の適応・希望の有無を考慮せず

Cross-sectional study

- 因果関係は不明

在宅医療の提供者 ≠ 在支診

結論

医療費の視点

- 在宅医療の推進
  ⇒がん終末期医療費の抑制
- 在支診の設置を促進
  ⇒がん終末期医療費の抑制

今後の検討

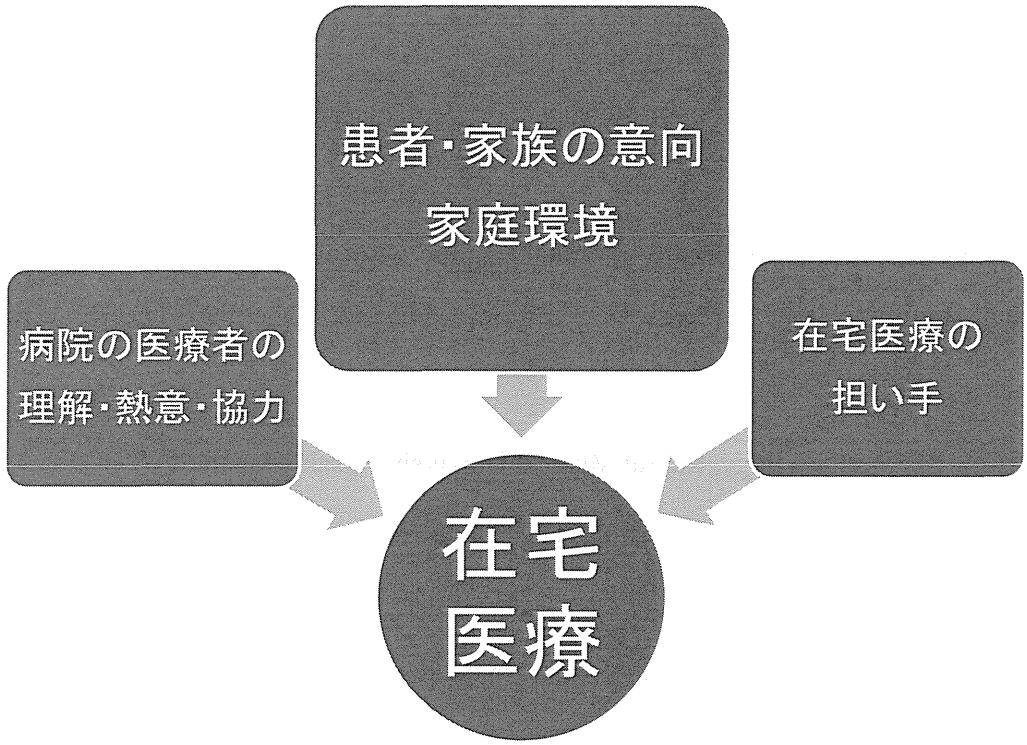
- 介護費の合算
- 患者・家族や社会の費用・負担の合算

Thank you very much for your attention

Contact information
京都大学　医療経済学分野
森島　敏隆　Toshitaka Morishima, MD

e-mail to: morishima.t@hotmail.co.jp

Appendix



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とはいっても、在宅医療ができない（向かない）患者もいる

- ◆独居者
- ◆最期まであきらめたくない患者
  - ◆若年者
  - ◆化学療法などが奏功
- ◆在宅での緩和ケアが不可能
  - ◆激しい苦痛・疼痛

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