〈特集：地域保健医療の政策的動向〉

Policy issues from the perspective of health economics

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1. Region as a Policy Formulation Unit

In this section, we discuss how figures change with the unit of region used, and the range of diversity among municipalities. Distribution of population and GDP among regional blocks is also discussed to see the economic potential of each regional block in Japan.

Life tables are constructed for various regional units: prefecture, medical area, and municipality. Nagano prefecture achieved the best life expectancy at birth in 1990 and Aomori ranked the worst for male, and Okinawa the best and Osaka the worst for female. The difference between the top and the bottom at prefectural level was alout 3.3 years both for male and female. Within the same prefecture, however, there were considerable differences, 3 to 4 years, in life expectancy at birth among municipal-

ities. As shown in Table 1, male life expectancy at birth for municipalities in Nagano ranged from 78. 8 years to 75.4 years, and the level of the worst municipality in Nagano was almost equal to that of the top municipality in Aomori. The situation was similar in case of life expectancy at age 70. The difference between top and bottom at prefectural level was about 2 years, and there was the same difference at municipality level within one prefecture. Therefore, the best municipality in Aomori showed longer male life expectancy at age 70 than the worst municipality in Okinawa.

Fig. 1 shows the distribution of elderly patients by annual medical expenditure. As the source data was a large-scale micro data of the elderly living in 11 prefectures, the differences in the distribution patterns among prefectures seems greater than the differences among municipalities grouped by popu-

Table 1　Differences in Life Expectancy : 1990

(In Years)

		Life Expectancy at Birth				Life Expectancy at Age 70			
		Prefecture		Municipality		Prefecture		Municipality	
Male	Top	Nagano	77. 44	Top Bottom	78. 8 75. 4	Top	Okinawa	14. 17	Top Bottom	15. 4 13. 2
	Average		76. 04			Average		12. 76		
	Bottom	Aomori	74. 18	Top Bottom	75. 5 71. 7	Bottom	Aomori	12. 08	Top Bottom	13. 5 11. 3
Female	Top	Okinawa	84. 47	Top Bottom	87. 2 82. 2	Top	Okinawa	18. 58	Top Bottom	21. 5 17. 3
	Average		82. 07			Average		16. 06		
	Bottom	Osaka	81. 16	Top Bottom	82. 6 78. 6	Bottom	Osaka	15. 38	Top Bottom	16. 3 14. 4

Source : Ministry of Health and Welfare

(from Department of PublicHealth Administration, the Institute of Public Health)

(a) 4 Prefectures

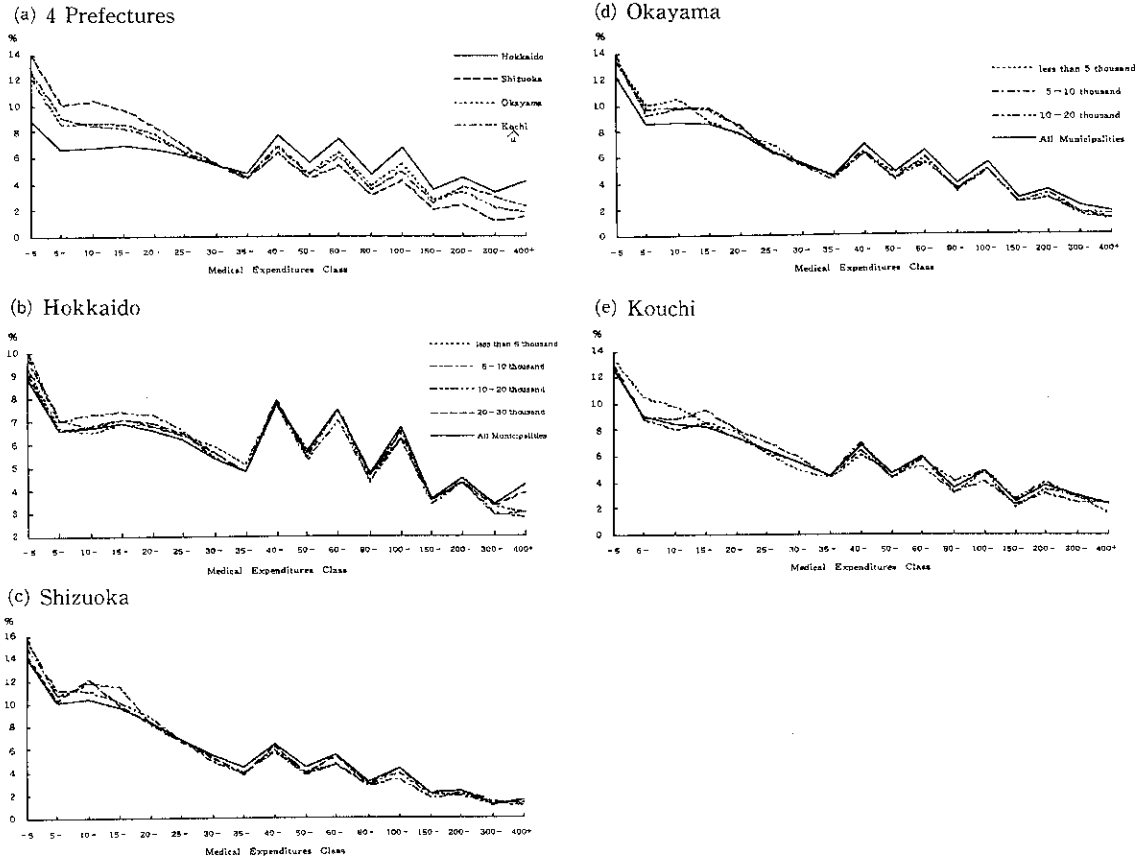(d) Okayama

(b) Hokkaido

(e) Kouchi

(c) Shizuoka

Fig. 1   Distribution of Medical Expenditures according to Municipalities grouped by Population Size within
Prefecture : 1992

lation size within one prefecture. Nevertheless, it is observed from Fig. 1 that the distribution patterns of municipalities in one prefecture tend to differ from the prefecture average as population size becomes smaller.

If we divide Japan into 9 traditional regional blocks, various resources are quite unevenly distributed among regional blocks as shown in Table 2. Various socio-economic data are obtained by prefecture, and region is often interpreted as prefecture. However, prefecture is not necessarily an ideal unit for regional policy formulation and implementation, especially from the point of view of consumers. In order to realize decentralization in decision-making and customers oriented policy for-

mulation, it is inevitable to rearrange the distribution of administrative functions among central, regional and local governments. In forming regional blocks, traditional grouping was used as a basis. Niigata was included in Hokuriku ; Chubu consisted of Tokai region, Yamanashi, and Nagano ; Okinawa was included in Kyushu ; and 4 prefectures in Kanto region, namely Tokyo, Kanagawa, Saitama and Chiba, were subgrouped as Metropolitan. The shares of land and population in Kyushu are well balanced, whereas Hokkaido and Metropolitan show a sharp contrast in the unbalanced shares of land and population : 4.5 percent of the total population live in 23 percent of the land, and more than one-fourth of the total population are concentrated

Table 2 Regional Distribution

		Total	Hokkaido	Tohoku	Kanto	Metropolitan	Hokuriku	Chubu	Kinki	Chugoku	Shikoku	Kyusyu
Land (100Km²)		3648	834	628	320	134	221	447	272	317	188	421
%		100.0	22.9	17.2	8.8	3.7	6.1	12.3	7.5	8.7	5.2	11.5
Population (thousand)	1992											
Total		12450	566	976	3904	3220	559	1739	2055	777	418	1456
65+		16243	740	1493	4215	3306	897	2270	2476	1248	712	2192
Rate of 65+ (%)		13.0	13.1	15.3	10.8	10.3	16.0	13.1	12.0	16.1	17.0	15.1
Total %		100.0	4.5	7.8	31.4	25.9	4.5	14.0	16.5	6.2	3.4	11.7
65+ %		100.0	4.6	9.2	25.9	20.4	5.5	14.0	15.2	7.7	4.4	13.5
GDP (100 billion yen)	1991	3794	148	240	1385	1185	154	545	652	214	102	356
%		100.0	3.9	6.3	36.5	31.2	4.1	14.4	17.2	5.6	2.7	9.4
Number of Diet seats	1994	500	22	42	143	117	25	73	80	34	20	61
%		100.0	4.4	8.4	28.6	23.4	5.0	14.6	16.0	6.8	4.0	12.2

Note.   Metropolitan   : Tokyo , Kanagawa , Saitama and Chiba
        Hokuriku   : Niigata , Toyama , Ishikawa and Fukui
        Chubu   : Yamanashi , Nagano , Gifu , Shizuoka , Aichi and Mie

in Metropolitan which shares only 4 percent of the land (Table 2). The shares of total population and elderly aged 65 or over are equal in Hokkaido and Chubu. As aging has advanced in Shikoku, Chugoku, and Hokuriku, the share of the elderly are greater in there regions. The balance between population and number of Diet seats has been adjusted fairly well in 1994, although Metropolitan is still under representative. In such regions as Hokkaido, Kinki, Shikoku and Kyushu, the share of medical expenditures of the elderly is greater than the share of elderly aged 65 or over. However, medical expenditures of the elderly do not coincide with the legth of life expectancy, and it is such regions as Kanto, Chubu and Chugoku which enjoy the longer life expectancy at birth. Concerning the distributions of medical expenditures of the elderly and number of beds, these are well balanced except Kinki and Kyusyu : the former is greater by more than 2 percentage points than the latter in Kinki, and vice-versa in Kyushu. In terms of population and GDP, Kyusyu is parallel with the Netherlands, Tohoku with Sweden, and Kinki may be comparable to Canada. In terms of land and GDP, Kanto is similar to Italy. Therefore, each regional block has a considerable socio-economic potential, and regional policy by regional initiative is the key factor to improve the quality of life in each regional block.

2. Regional Differences : To What Extent are they Reasonable ?

Using per capita medical expenditures by prefecture, regional differences are discussed in this section. Underlying notion is "to what extent regional differences are reasonable", although we do know the answer yet.

Per capita medical expenditures in 1990 was highest in Kouchi (252 thousand yen) and lowest in Chiba (121 thousand yen). Age is one of the important factors to decide the size of medical expenditures. There remains a significant difference in per capita medical expenditures after age-adjustment. As shown in Fig. 2, there is no relation found between per capita medical expenditures and life expectancy at birth. On the other hand, there is a strong relationship between medical expenditures and capacity for medical services. Therefore, it is not surprising to see more linear relation between per capita medical expenditures and number of hospital beds per 10,000 population as shown in Fig. 2, although there is a considerable dispersion.

In table 3, six prefectures are chosen to discuss regional differences in medical expenditures in detail. Kouchi had the highest per capita medical expenditures, but Hokkaido was the highest for the
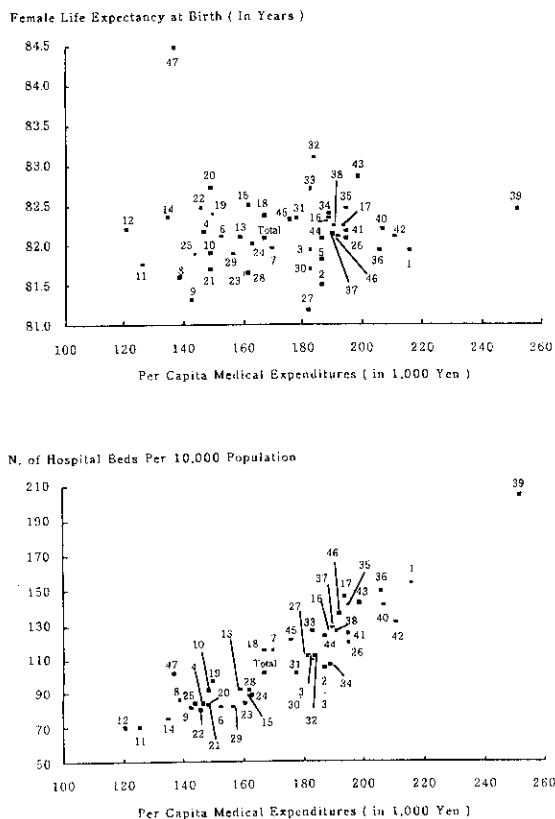
Fig. 2   Medical Expenditures and Life Expectancy or
Hospital Bed by Prefecture : 1990

elderly. If we focus on those elderly who were eligible to the medical program of Health and Welfare Services System for the Elderly throughout one year, per patient medical expenditures were the highest in Hokkaido for both inpatient and out-patient care : 1.4 or 1.5 times as much as that in Fukushima.   As shown in Fig. 3, annual expenditures per patient for year-round eligible elderly were constantly smaller than that for all elderly.
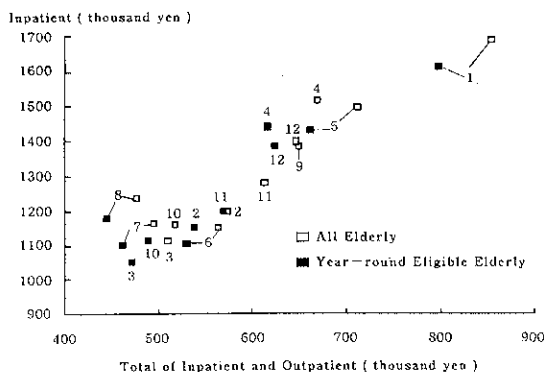
1. Hokkaido	2. Aomori	3. Fukushima	4. Toyama
5. Ishikawa	6. Fukui	7. Shizuoka	8. Shiga
9. Osaka	10. Wakayama	11. Okayama	12. Kouchi

Fig. 3   Annual Expenditures per Patient

Table 3   Regional Differences in Medical Expenditures

	Japan	Hokkaido	Fukushima	Shizuoka	Osaka	Okayama	Kouchi
Per Capita Medical Expenditures (In 1000 yen) : 1990							
Total	169	216	170	146	182	183	252
Elderly	609	897	547	481	785	592	755
Medical Expenditures per Patient among Year round Eligible Elderly aged 70+ (in 1000 yen) : 1992							
Inpatient		1,613	1,049	1,102	....	1,197	1,384
Outpatient		335	243	259	....	278	259
Total		800	473	462	....	569	625
Per 1000 Population							
N. of Beds : 1991	15.8	22.9	19.0	12.0	15.0	20.1	31.1
N. of Physicians : 1990	1.85	1.59	1.47	1.40	1.89	2.04	2.14
Rate of 65+ (%) : 1992	13.1	13.1	15.6	13.2	10.5	15.9	18.6
Life Expectancy (In years) : 1990							
at Birth M	76.04	75.67	75.71	76.58	75.02	76.32	75.44
F	82.07	81.92	81.95	82.47	81.16	82.70	82.44
at Age 70 M	12.76	12.69	12.71	13.05	12.17	13.11	13.06
F	16.06	16.03	15.96	16.35	15.38	16.59	16.71

Source : Health and Welfare Statistics Association . Kokumin Eisei no Doukou . 1993.

Inpatient expenditures per patient were high in Kouchi, where an extremely high bed/population rate was observed. High medical expenditures in Hokkaido and Kouchi did not necessarily result in longer life expectancy (Table 3).

3. Efficiency and Equity of Health Resource Allocation

Because of the shortage of welfare facilities for the elderly, medical facilities supplement non-medical care services for the elderly in Japan. This is a typical example of efficiency issues : Is it efficient to use hospital beds for those elderly who need little medical services ? The existence of uninsured or underinsured is an example of equity issues. Priority setting for emergency services or utilization of scarce and extremely expensive medical technique is another example of equity issues.

Japanese national medical expenditures in FY 1991 was 21.8 trillion yen, and the distribution of medical expenditures among various components of medical services was estimated as follows : Physi-

cians and dentists 4.2 trillion yen, Nursing staff 3.4, Clerical morkers 1.4, Other personnel expenses 2.2, Medical drugs 4.5, Medical materials 1.4, Payment to consigned services 1.4, and other expenses 3.3 trillion yen. Is this distribution efficient and equitable ? What is the most suitable share of medical drugs ? Is there any mismatch between patients and medical facilities, which create inefficiency and dysfunction in providing health services ? These are the questions which require an accumulation of researches.

According to OECD statistics, Japanese health expenditures as percentage of GDP was 6.6 percent in 1991, compared with 8.1 percent in former West Germany and 13.4 percent in USA (Table 4). Taking account of the fact that the definition of Medical Expenditures is limited to personal health care through public system, present Japanese health expenditures level is still low from the international standards. Nevertheless, Japan enjoys the longest life expectancy at birth and the lowest infant mortality rate in the world, although these indicators

Table 4 Health Related Indicators in Selected OECD Countries

	Australia	Canada	France	Germany	Italy	Japan	Netherlands	Sweden	UK	USA
Health expenditure as a percentage of GDP, 1991	8.6	10.0	8.8a	8.1a	8.3	6.6	8.0a	8.6	6.2a	13.4
Practicing physicians per 1000 population, 1988	· · ·	2.2	2.5b	2.8b	1.3	1.6	2.4b	2.8	1.4b	2.3
Acute-care hospital										
beds per 1000 population, 1987	5.5	4.3	5.6b	7.6b	· ·	· · ·	4.8b	4.2	3.2b	3.8
average length of stay, 1989	5.6	10.5	7.2c	12.4c	· · ·	· · ·	11.5c	6.8	7.8c	7.3
Life expectancy at birth, 1990										
male	73.9	73.8	72.8	72.6b	73.5b	75.9	73.8	74.8	72.9	72.0
female	80.0	80.4	81.0	79.0b	80.0b	81.9	80.1	80.4	78.5	78.8
Perinatal mortality, 1989	0.99	0.79	0.89	0.64	1.05	0.57	0.96	0.65	0.90	0.96

a :1990, b :1989, c : 1986

Source : OECD health data

Table 5 Per Capita Medical Expenditures Index according to Age Group

(0-14=1.00)

Age Group	1977	1980	1985	1990	1992
0-14	1.00	1.00	1.00	1.00	1.00
15-44	1.70	1.60	1.46	1.30	1.30
45-64	3.59	3.71	3.77	3.50	3.44
65-74	6.88	7.60	8.43	7.97	7.35
75+	10.08	11.29	13.20	12.31	11.75
Medical Expenditures (trillion yens)	8.6	12.0	16.0	20.6	23.5
Percent of NI	5.5	6.0	6.2	6.0	6.5
Elderly Ratio(65+)(%)	8.4	9.1	10.3	12.0	13.1

Note :In order to estimate per capita expenditures for 65-74 and 75+,
the following per capita expenditures index relative to age 70-74
was assumed : 70-74=1.00, 75-79=1.19, 80-84=1.31, and 85+=1.29.
Source:Ministry of Health and Welfare, National Medical Expenditures,
each year.

are not considered nowadays to measure the outcome of health services.

Japanese Medical Expenditures statistics provide per capita expenditures according to such age groups since 1977 ; 0-14, 15-44, 45-64, 65-69, and 70+. Table 5 shows per capita expenditures indices for selected years. Figures are shown as an index relative to age 0-14 for each year in order to make time series comparison easier. In ordet to estimate per capita expenditures for 65-74 and 75+, the following per capita expenditures index relative to age 70-74 was assumed : 70-74＝1.00, 75-79＝1.19, 80-84＝1.31, and 85+＝1.29. According to Table 5, even relative value of per capita expenditures for 75+ decreased in the latter half of 1980s.

4. Discussion

There are many important issues in reviewing medical expenditures, from the point of view of health economics, and the followings are among them:

—— efficiency of medical expenditures ;

—— measurement of health outcome ;

—— effective and equitable distribution of expenditures among different categories of population ;

—— causes and consequences of regional differences in medical expenditures ;

—— behavioral aspects of patients and medical facilities ;

—— quantitative and qualitative changes of diseases caused by aging process and their influence on medical expenditures.

To take an example of cost effectiveness analysis, we first face with measurement issues. From which perspectives should costs be measured —— hospital, physician, patient, insurer, or society ? To what extent indirect costs should be taken into account ? Which should be used between marginal costs versus average costs ? Which discount rates might be applicable to Japan ? Effectiveness, on the other hand, shall be measured in terms of a) cases discovered/averted, b) cases cured/treated, c) lives saved, d) morbidity averted, e) years of life prolonged, f) quality adjusted years of life saved, and so on.

In this paper, we discussed just a few issues in dealing with regional health policies from the perspective of health economics. There are considerable regional differences in medical expenditures, some of which may be considered reasonable and the other not. Moreover, regional differences themselves change according to regional unit used. Efficiency and equity of health resource allocation are also important issues in regional health policies, especially highlighted from international compari-

son.

Three perspectives have been stressed recently in regional health policy : emphasis on viewpoints of service receivers, becentralization in decision-making, and coordination between health and welfare services. These perspectives are mutually inter-related. In order to improve the satisfaction of service receivers, it is desirable to make various decisions at near end-users, and service provided are required to be coordinated. In fact, it is quite natural from the point of view of consumers to ask coordination between health and welfare services. However, there are several conditions to realize these perspectives. In order to emphasize viewpoints of service receivers, we should have a process and a device which set a framework concerning who's opinion, and to what extent, shall be reflected. People have diversified needs on health and welfare services. Therefore, the role and extent of public programs should be defined and priority setting based on some objective analysis is necessary to utilize the limited resources more efficiently. Who pays the cost is another important question to maintain a fair and stable system. Coordination between health and welfare services is considered to be realized by endowing municipalities with functions and responsibilities. Municipalities are expected not only to construct facilities but also to provide care-coordination functions for their citizens.

US health expenditures are estimated to amount to 14.5 percent of GDP in 1994. There are many reasons why US health expenditures are so high, and the followings are among those which are often referred in this context :

—— high medical technology itself ;

—— existence of non-insured of 35 millions and under-insured ;

—— very expensive terminal care ;

—— defensive practice and mal-practice premium ;

—— high administrative cost including advertise-

ment.

All these factors are controlled in one way or another in Japan, contributing to keep the medical expenditures level as today. However, there are problems in Japanese public medical insurance system, and some issues such as quality analysis of medical services are quite undeveloped. The followings are among the issues to be addressed in future :

—— measurement of the quality of health services ;

——— objective evaluation of medical expenditures ;

—— imbalances in terms of contribution and benefit among participating schemes ;

— ·— institutional obstacles to promote coordination between primary care and hospital care ;

—— coordination among health services and welfare services including long-term care.

Medical services are basically reimbursed through fee for service basis in Japan, and the price of each service is fixed by the Medical Fee Schedule, which is revised every 2 years in recent years. As a matter of fact, the Medical Fee Schedule plays the central role in Japanese medical insurance system, from economic evaluation of medical technology to delineation of the role of public system. Recently, prospective payment sysem has been partially introduced for the elderly care. It is said that there are incentives built in the Schedule which contradict medical ethics. The Medical Fee Schedule is a limited tool to deal with quality issue, because it can only take into consideration of quantitative aspects of medical services.

How fairly and effectively medical expenditures are used in Japan ? If the growth rate of total health expenditures is controlled to be equal or lower than the growth rate of National Income in such countries as Japan where population is aging quite rapidly, age-adjusted per capita health expenditures will inevitably decrease relative to per capita National Income. One-third of Medical Expendi-

tures is now consumed by the elderly in Japan, and the proportion is expected to increase rapidly. Therefore, it is another main theme of medical insurance system in Japan to address issues related to the elderly: to coordinate medical services with welfare services for the elderly, and to maintain fair distribution of burden of medical expenditures for the elderly among different categories of population.

It is one of the major concerns of the people and policy makers in 1990s to improve the quality of medical services, although there is no objective index to measure it. Life expectancy at 80, for example, is considered to be a better indicator to show the level of medical services than life expectancy at birth. It is also considered by some researchers that the ultimate indicator of the quality of medical services would be patient's satisfaction. There are many illusions and misunderstandings, however, in the field of medical services in Japan, multiplied by the unique character of medical services directly relating to life. Many issues such as disclosure of information and life ethics need to be cleared before quality of medical services will be discussed effectively.

Poullier (1994) raised four objectives of health system in a country, and the following is a tentative evaluation of Japanese health system according to those objectives:

    effectiveness: seemingly very good
    equity   : very good
    efficiency   : apparently very good
    empowerment of the user: poor

Since the universal coverage of the nation through public medical insurance in 1961, the accessibility of Japanese people to medical services has been improved remarkably. Therefore, equity of Japanese health system could be considered quite good compared to other developed countries. In view of the low level of health expenditures as percentage of GDP, Japanese health system might be regarded

as quite efficient. However, it is not yet proved if there is any trade-off between low per capita expenditures and quality of care provided, especially for the elderly (Kobayashi and Reich, 1993). Empowerment of the user is a key notion for the proper development of regional health policy and for the improvement of the quality of medical services especially from the users point of view.

Poullier (1994) drew the following tentative conclusions from the comparison of health care systems in France and USA.

—— The French health system might be presumed to have greater effectiveness than US health system.

—— Health expenditures of USA is 1.5 times (as percentage of GDP) or 1.8 times (per capita) as much as that of France. The consumption of medical services in USA, however, is probably slightly less than that in France. Therefore, the higher health expenditure in USA necessarily imply higher relative prices.

—— Physician's relative income may have been maintained, possibly increased, in USA, but erased in France. Practice differences found in a Canada/US comparison may prevail in a stronger fashion between France and USA.

——— USA leads the world in developing innovative management techniques such as Prospective Payment System and Resource-based Relative Value Scale, which are credited or expected to showdown expenditure growth and to reduce average length of stay. France lags in the adaptation of many innovative managerial techniques, operates at still an excessive level of capacity, but recorded a sharp drop in average length of stay, from 9.9 to 7 days, at acute-care hospitals.

All these points are quite interesting and contain important implications. Concerning the second point, Fukuda and Fahs (1994) found the followings based on the Japan-US comparison on the medical

expenditures of the elderly :

1) If we include all the beds in various facilities for the elderly (including hospitals, of course), the average bed-days per capita for the elderly 65 and over are nearly equivalent in both countries : 18.5 in the US and 19.9 in Japan.

2) The average US expenditures per bed-day is about 40 percent higher than that in Japan. This finding supports the idea that the difference in medical expenditures between the two countries is mainly due to the difference in prices, not volume.

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医 療 経 済 の 政 策 的 動 向
府 川 哲 夫

（要 旨）

　地域保健を考える上で，「地域の単位」をどうとるかは1つの重要な要素である．平均寿命を例にとると，同一県内の市町村格差には，県間格差と同程度あるいはそれ以上の格差がみられる．県をいくつかまとめて地方ブロック単位でみると，新たな見方も可能になる．

　県単位のデータでみると，医療費と平均寿命の間には特に相関はみられないが，医療費と病床数の間にはやや直線的な関係がみられる．地域差のうちどこまでが合理的なものかという問も重要である．

　マクロでみて，日本の医療費は他の先進諸国にくらべて相対的に小さい．しかしながら，最近地域保健で重視されている観点，つまり，消費者の視点，意思決定の地方分権，保健サービスと福祉サービスの連携，のいずれからみても，保健サービスの質の測定，医療費の公平な分配をはじめ，日本にもまだ多くの課題が残されているのが現状である．