昭和51年10月25日発行　(毎月25日発行)
昭和38年3月15日　第3種郵便物認可

ASIAN MEDICAL JOURNAL

Vol. 19, No. 10
October, 1976

CONTENTS

SPECIAL EDITION

FOR

KOREA-JAPAN MEDICAL ECONOMICS SYMPOSIUM

June, 1976, Tokyo, Japan

EDITED BY THE JAPAN MEDICAL ASSOCIATION

Published by
JAPAN MEDICAL PUBLISHERS, INC.

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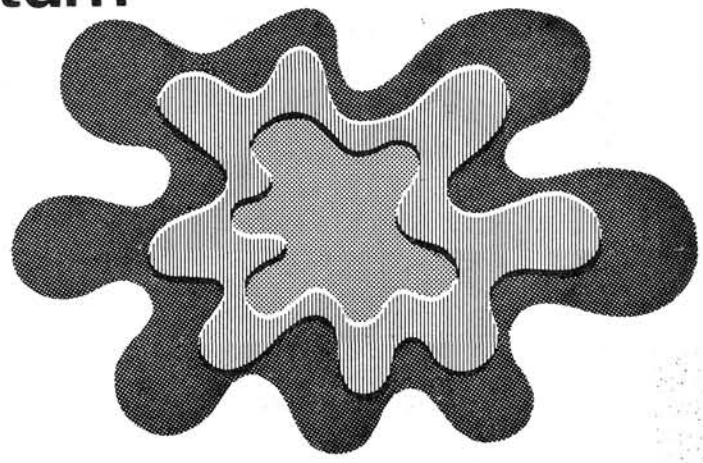

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ASIAN MEDICAL JOURNAL

Published by JAPAN MEDICAL PUBLISHERS, INC.
c/o Willriver International Corporation
Zenkyoren Building
7-9, Hirakawa-cho, 2-Chome, Chiyoda-ku, Tokyo 102
Tel: Tokyo (03) 265-9562
President: OKADA, Takashi
Printed by JAPAN PRINTING CO., LTD.
Subscription Rates: Single Issue, ¥360
12 Issues, ¥4,320 (including postage)

Asian
MEDICAL JOURNAL

A Journal of Medical Sciences of Japan and Asian Countries

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CONTENTS

Korea-Japan Medical Economics Symposium
(June 8 – 10, 1976, JMA Hall, Tokyo, Japan)

KOREA-JAPAN MEDICAL ECONOMICS SYMPOSIUM

(June 8-10, 1976, JMA Hall, Tokyo, Japan)

GREETINGS

Dr. Taro TAKEMI

President, Japan Medical Association

I would like to say a few words about the circumstances leading up to the Korea-Japan Medical Economics Symposium to be held today from now.

When Vice Presidents Kumagai and Matsukawa and myself went to the Republic of Korea and visited the Korean Development Institute and talked with their research staff members, I was surprised to find that the Institute's direction of research had already been determined as part of Korea's national objectives. Although we, The Japan Medical Association, are a small professional organization, we have been making studies on the economic aspects of medical care over the past twenty years by including specialists in this study group, thus playing the pioneer role in this field in Japan. Thus, the talk between the Korean and Japanese sides developed and it was decided to hold this symposium. I think that this Symposium will be the starting point of a historical symposium in the sense that this Symposium will strengthen the academic link between Korea and Japan and the academic and social link between the Korean Medical Association and The Japan Medical Association.

With regard to the direction that this kind of thinking takes when seen globally, also in the World Medical Association the main theme was about the development and allocation of medical care resources and this developed into the establishment of a long-term committee. From these facts, I think that also as economists the activity of the medical economists in the United States lead by Prof. Arrow has taken a new direction.

In view of this worldwide direction, I think that we Asians have the role of developing jointly in an Asian way. With regard to this role, there are also regional characteristics in relation to the natural features of the region,

customs and demand for medical care. Therefore, I think that with regard to the distribution of medical care resources there are certain things which are different from those of other countries. However, my thinking is that the system of development must be from the standpoint of entire mankind.

From the above reasons, although this Symposium will be for only 3 days, I wish to have this Symposium be a significant one. From the Republic of Korea we have here with us today Drs. Park, Choo, Koo and Lee. I wish to close my greetings by thanking these 4 doctors for coming to Japan to play a large international role.

Thank you.

GREETINGS

Dr. Chu-Kul LEE

Korea Medical Association
Research Center, Researcher

President Takemi, distinguished scholars, and fellow medical practitioners.

It is indeed my utmost pleasure to be here, representing the Korea Medical Association, on this special occasion arranged by the Japan Medical Association and to extend the greetings from your counterparts in Korea. It has been about ten years, since the Japan and Korea Medical Associations have corporated in exchanging professionals, in organizing and sponsoring various symposia and seminars and in promoting mutual understanding. I am quite certain that no two organizations in a professional field have such a splendid record that can be matched as we have. This special occasion is another expression of our relationship so special.

Unlike the previous occasions, we have gathered here with leading economist, policy makers and administrators of the two countries concerned with the field of medicine, to share our past experiences, to learn what needs to be done in order to effectively develop medical resources and to meet not only the important health aspect of the quality of life, but also the emerging new right of the people for good health throughout the world.

The task of providing health and medical services to warrant the quality of life and to insure this new right of the general public is a challenge for any society, developed or developing. Any scheme of medical delivery and

resources development system must be culturally acceptable, technically superior, and economically feasible. If I am not mistaken, such an endeavour has begun and continued in Japan since 1953, by the foresight of President Takemi, in collaboration with scholars of related disciplines, especially with economists,

This new thrust in medicine is rather recent in Korea, no more than two years, with the emphasis in equity and social development as one of the guidelines for the preparation of the fourth five-year development plan, 1977–81. I remember that some years ago, when I was seeking for the assistance and services of a health economist in Korea, I found none. We are fortunate, however, to succeed in reversing the braindrain, to establish under the sponsorship of President Chung Hee Park, an R & D complex and think-tank for the government and industries in Seoul, to adapt and to dissenminate modern know-hows and technology, and to utilize them in our development effort in all fields. Being confronted with the social problems of health and medicine beyond the reach of pure medical science, we are seeking for the solutions by adopting an interdisciplinary approaches with the helps of specialists of various fields. The Korea speakers for this symposium are important ingredients of our new endeavours.

This remarkable opportunity envisioned by President Takemi during his recent trip to visit to our country would certainly be a tremendous encouragement for us. I am convinced also that this symposium would serve as the starting point of a new venture in this field of health economics.

Finally, I would like to extend our sincere gratitude in behalf of the Korean participants and the Korea Medical Association to President Takemi and the officers of the Japan Medical Association for this splendid occasion. Thank you.

SPECIAL LECTURE

Human Survival, the Environment and Medical Care

Dr. Taro TAKEMI

President, Japan Medical Association

I am not academically qualified to address this symposium today. As a person responsible in the host country for the holding of this symposium, however, I feel it is my duty to speak frankly about what I have been considering. This is the reason why I accepted this assignment.

The title of my address is "Human Survival, the Environment and Medical Care." But the basis of it is the concept of life science. I base my thinking about medical care problems on this concept. I wish to sum up my thoughts about it, which have both direct and indirect relations with this subject.

The subject of this address may be illustrated in this way. The horizontal line represents the present time. DNA and RNA run through the past, present and future, incorporating evolution and heredity. DNA and RNA are adapted to the natural and social environments, in which there is the process of feedback. There are, likewise, other living things as the other vertical lines show. All these forms of life are connected by a horizontal line, which represents the present time. This diagram represents ecological thinking. I believe that ecology must be the science which moves forward toward the future.

One thing we must consider here is that RNA is known to start functioning before receiving instructions from DNA. I would say that it is RNA which functions by receiving impulses from the future. Only RNA functions in response to the future on this "present" line.

This represents an extremely interesting function of a living body. I want to establish the concept of "functioning in response to the future," as one of the phenomena concerning the gene. The social and natural adaptation of RNA also sums up various phenomena.

There is also ecological survival order, and while this moves forward, the structure of evolution functions.

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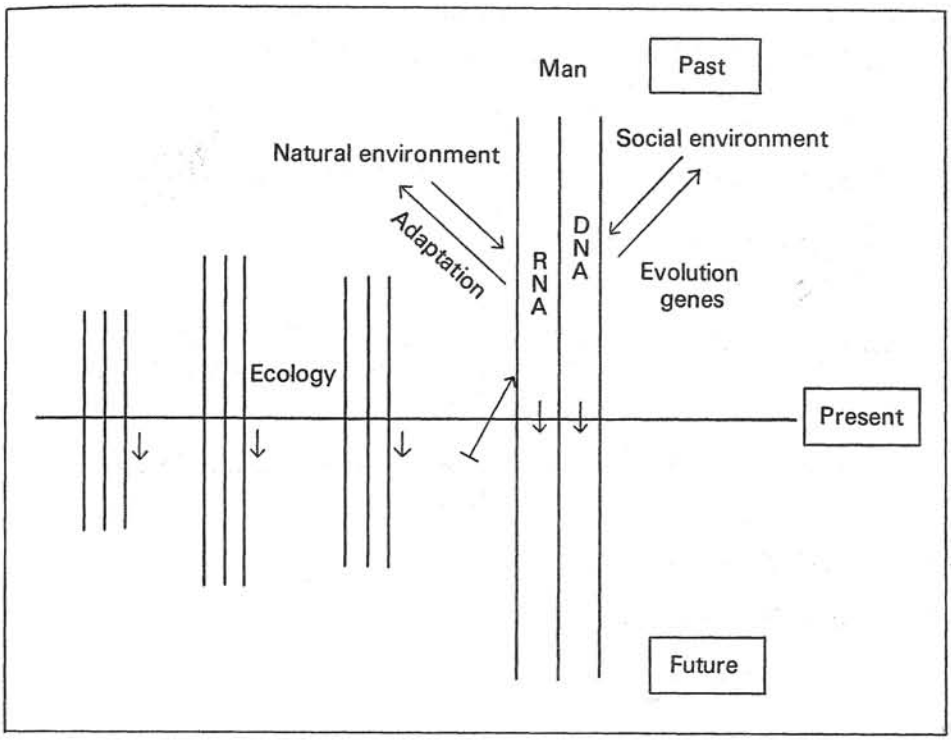
Human Survival and Its Order



Thus far, I have explained rather briefly. But when we consider the survival and survival order of mankind in the form of life science, I believe this is how it may be represented as a diagram.

Now let us consider survival elements. One of the most important of them is the concept of health. Health has already been defined by WHO as social health, both physical and mental. From the standpoint of life science, I would like to think in terms of genetic health, morphological health and functional health, which may be all reduced to the phenomenon of adaptation. This makes medical care an inevitability that is linked to morbidity and disease. In other words, when a human being exceeds the limit of adaptability, he enters the state of morbidity and then that of disease.

One thing we must take into account in this context is that while there are many problems discussed such as those of pollution and environmental disruption today, how these problems affect genetic health is a very important element for medicine. Also of great importance is how the family and social environments might affect the gene would have a great importance to the fate of mankind in the future. I believe it is necessary to firmly grasp the concept of genetic health in forming the concept of health itself.

Morphological health, therefore, is anatomical while functional health is

Survival Elements

1. Concept of "Health" ⟶ Morbidity ⟶ Disease
   - a. Genetic health
   - b. Morphological health — Adaptation, Medical care
   - c. Functional health
2. Concept of "Resource" ⟶ Development, Production, Distribution, Consumption, Recycling
   - a. Survival resources ····· Energy source, Food, Life space, Etc.
   - b. Environmental resource
   - c. Cultural resource
   - d. Thought resource
3. Concept of "Management"
   - a. Management of the earth
   - b. Management of international relations
   - c. Social management, Community management

physiological in form. Therefore, the functional health of the cerebrum would involve mental factors. This may be somewhat dogmatic, but I believe we cannot postulate about health unless we regard it as an element of survival in the form of adaptation.

Here, we have various survival resources, which include energy, food and life space. Environmental resources include healthful environment and cultural resources. In human society, we must also consider thought resource.

Concepts of resource include those of development, production, allocation, consumption and recycling. We have noted that the process of converting natural resources into goods has attained a good deal of development through engineering. But there is much room for development in the area of recycling

the resources. I believe that there ought to be an economics and science of recycling. When we consider the fact that matter is indestructible and that we must utilize the resources of our planet, an economics and science of recycling will have a very important role in the future. This is the reason why I have presented this concept of resources.

Survival order and Adaptation

1. Microscopic order	Atomic and molecular levels, Molecular biology
2. Macroscopic order	Ecological order Social order Economic order
3. Order of adaptation	Micro-macroscopic order

Next comes the concept of management, which should include management of the earth. Here we have the problems of overexcavation and abusing of resources, air and environmental pollution and pollution of the earth itself. Earth management, therefore, must be considered together with survival resources.

There is also the problem of management of international relations. I believe that the concept of management must be given due attention as a resource. Such a concept of management, of course, has not been presented before, but I wish to present it here on the basis of the thinking of life science.

Next come the problems of survival order and adaptation. Survival order is to be divided into microscopic order, macroscopic order and adaptation order. Microscopic order includes molecular biology at the atomic and molecular levels. Macroscopic order should include ecological order, social order and economic order. If we take the standpoint of life science and consider survival order concretely, we come to this kind of subdivision of order. The order of adaptation I referred to a few minutes ago is also highly important. This adaptation order, too, consists of a macroscopic adaptation order and a microscopic adaptation order. I believe that unless we carefully consider this adaptation order, the survival of mankind would be seriously endangered.

Here we must consider the historical change in the concept of medical care. In the old days, medicine and medical care were not separate from each other. These two became completely separated about the time of the advent of Rudolf Virchow's cellular pathology or, even before him, Karl von Rokitansky's humoral pathology. In the age of life science, however, medicine and medical care are again united in some areas. Medical care has expanded because of rising social demand. Here, I believe, there is much that can be explained only with the cooperation of economists.

Historical Changes in the Concept of Medical Care

1. Separation of medicine and medical care
2. Expansion through social demand
3. Changes through the development of medicine
4. Relations among life science, medical care and related sciences

There are also changes due to the progress attained by medicine itself. There is the question of relationship between life science and its related sciences. The concept of medical care has undergone many changes. I have always included in the concept of medical care the social application of medicine. This is the reason why I have thought this way.

Structure of Medical Care

1. Components of the social application of medicine
2. Development structure and composition of medical care
   ——Technological integrated unit, development center
3. Regional distribution of medical care and regional composition
   Social basis for social distribution and development
4. Social insurance, Social security——Economic mechanism of distribution

In formulating the concept of the social application of medicine, I have created the concept of technological integrated unit, rather than those of hospital and clinic. This means the technology of hospitals and clinics is to be presented by this unit. When there is the question of what system to establish for the preservation of health, I believe we should consider it in terms of what technological integrated units should be combined to suit the social purposes of a particular community. Today, we have the system of specialists. But this is a system of the past—of Europe of about 100 years ago.

Unless we make a new start with the concept of technological integrated unit, we shall not be able to meet the social demands of the future. In the area of development, too, we would not be able to make progress if we only have a vertically divided structure.

The technological integrated unit would be the system of the future. Under the specialist system, we may have many specialists, but then they would tend to concentrate in large urban communities while rural communities would suffer miserably from a shortage of physicians. One might argue that the rural communities should have only general practitioners. But a general practitioner must essentially play the vital role of providing primary care. Primary care can be considered only in relations to the structure of technological integrated units. Thinking of primary care merely in terms of how many doctors to be stationed where and how many clinics and hospitals must be established where, I believe, belongs to the past.

We must consider for a farming community how to organize medicine in terms of what units. If it is an industrial zone, different units must be established.

The specialist system belonged to the past. It played a very important role in certain stages of the development of medical science. Today, we must augment medical science at the level of primary care. A doctor who functions at this stage must be able to have a good idea of the future of a particular case he first examines. The term general practitioner does not necessarily mean a physician to play a key role in primary care. In Japan, it is not being contemplated to strengthen medical service at this primary care level because it is not possible under the present laws. But I fear that now that we have as many as 70 medical colleges and each of them works toward the same goal of producing specialists, it would tend to reduce the vital social functions for providing primary care.

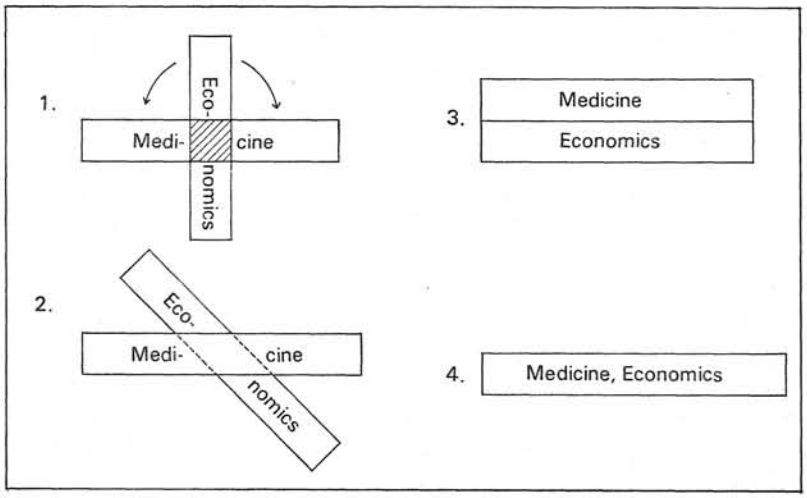
There are the matters of regional distribution and regional structure of medical care. Regional distribution means we must consider simultaneously both social distribution and the social basis of development. Social insurance and social security are concerned with the economics and mechanism of distribution. Only after social insurance and social security were brought into the structure of medical care was economics brought into the order of medical care and became an indispensable element of it. This, I believe, started with the idea of social insurance created by von Bismarck. It is already 100 years ago, but this concept has not changed at all.

Today, we must also consider the next item.

This diagram shows medicine and economics crossing each other. In medicine, there was Harvey's blood circulation, and in economics we have economic cycle. This, I believe, is the first instance of the two sciences crossing each other. The two can cross each other at various angles. When they are at a right angle, what does this mean? The second diagram shows the two crossing each other at an angle. This represents the idea that in the concept of social insurance developed in economics and it has had a certain impact on medicine.

Initially, social insurance was adopted by business enterprises as a means of defense. But in view of the development social insurance has attained today, we must consider the incipience of social insurance as the germination of the idea of welfare and thus it signified the origin of the concept of welfare economics.

Medicine and Related Sciences, Economics in Particular



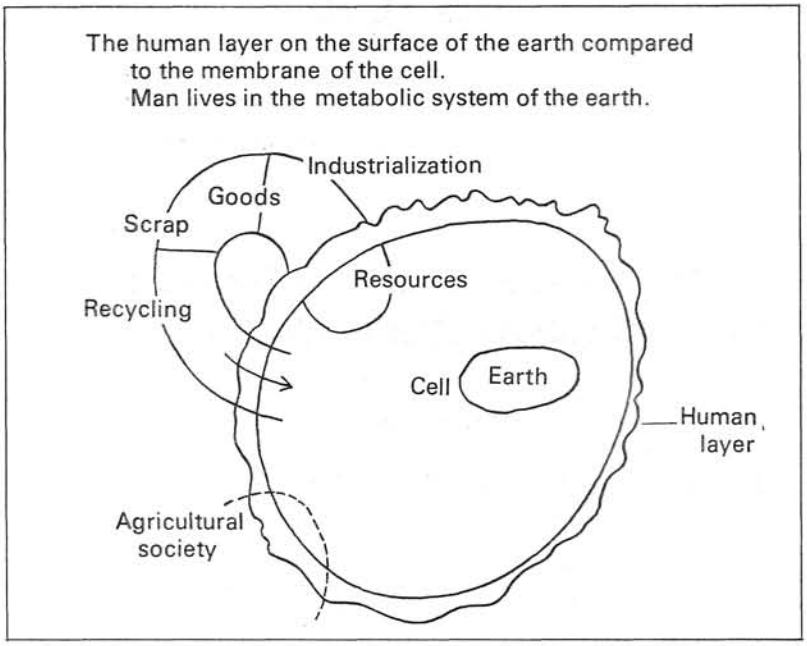
No. 3 indicates the establishment of the social security system through the combination of economics and medicine. In this social security system, economics is the principal agent to which medicine merely provides technology. Social insurance and social security have completely combined with each other to produce a new system for the future.

When welfare becomes a major question in economics, perhaps we should have a new concept of medico-economics which should combine survival and welfare. Medico-economics is the next stage after medical economics. Medical care can be considered in terms of relationship between medical care and economics, rather than interrelationship among various branches of medical science, and these diagrams may be revised on the basis of various imaginable situations.

Still another problem is that mankind covers the surface of the earth as a thin film. When we consider the earth as a cell, humanity corresponds to the membrane forming the cell. In an industrialized society, natural resources

Medical Care and Economics

Economic approach to the development of medical care resources
Economic approach to the allocation of medical care resources
Economic approach to reproduction and recycling of resources in medical care



are extracted from the depths of the earth's crust. In an agricultural society, man utilized resources on the surface of the earth and recycled them. In an agricultural society, therefore, man has affected only a small portion of the surface of the earth, but in an industrial society, it has affected the earth much more deply and over a larger area. Minerals converted into goods must be scrapped and then reused again. Unless we have the technology and economics for reusing and recycling them, it would be impossible to maintain the integrity of the cell—the earth.

Membrane phenomena of the cell are multifarious, and unless human activities are considered in terms of this analgoy, we would have a serious problem about our resources and the problem of recycling them.

There is also the problem of speed. Take the matter of liquefaction of coal, for instance. This is to achieve in a few hours what it took nature hundreds of millions of years to achieve. Therefore, I believe it is possible to speed up this process of recycling of resources. It is from this kind of standpoint that the Japan Medical Association wishes to develop this kind of basic way of thinking with the participation of you gentlemen.

I have only mentioned key points. When we consider the health environment that exists on this thin membrane of the earth, we must have both fairly artificial and natural parts. In such an endeavor, I believe life science plays a role. With this I shall conclude my talk that has shown you the ideas I have formulated.

LECTURE

Chairman: Prof. Emeritus Isamu YAMADA
Hitotsubashi University, Japan

Progress in Medical Care Economics, Especially That within JMA

Prof. Koichi EMI*

Hitotsubashi University, Japan

1. Beginning of Research on Medical Care Economics in the Japan Medical Association

Around 1950, the Japan Medical Association began to realize the necessity of economic analyses for medical care activities for the sound development of medical care for the citizen. They also became aware of the necessity to study methods to apply economic theory to medical care under guidance of top level theoretical economists in order to carry this out. With this turning point, a research and study group on "Various Problems of Expansion and Strengthening of the Investigation Organ, and Social Insurance, Accounting of Medical Establishments and Others" was set up initially by inviting economists from Hitotsubashi University. When the "Research and study Preliminary Meeting" was set up in May, 1956, this direction was more forcefully promoted, and the following study topics were given at the preliminary meeting.

1) Relation to new medical care cost structure

(a) Analysis and investigation of the new medical care cost structure by the Ministry of Health and Welfare, (b) Preparation of materials to be submitted to Central Social Insurance Medical Council and specialized sections, (c) Investigation and preparation of a scheme of medical care costs, giving priority to scientific skills, (d) Analysis and examination of appropriate charts

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for a point system of compensation in social insurance scheme, (e) Collection of materials and analysis and investigation of diagnosis on first and, subsequent visits, (f) Analysis and investigation of medical care in hospital (Seven other items omitted).

2) Relation to medical care expenses

(a) Collection of data from other countries on medical care expenses, (b) Rebuttal and examination of the cost accounting method of medical care presented by the Ministry of Welfare, (c) Plan for investigation of clinics, (d) Examination of "theoretical economic analysis of the problems of physician skill compensation," (e) Analysis and investigation of the ratio of national total medical care expenditures to national income for each year, (f) Analysis of distribution of national income, (g) Collection and analysis of data on appropriate unit price in a point system, (Five other items omitted).

3) Relation to social insurance

(a) Analysis and investigation of interim reports, recommendations, etc. published by the Advisory Council on Social Security, (b) Analysis and investigation of Annual Report on Welfare Administration by Ministry of Health and Welfare, (c) Analysis and investigation of cost estimates accompanying expansion of the medical care security system, (d) Research and study of national health insurance for the self-employed, (e) Analysis and investigation of the effect of revision in standard pharmaceutical prices and that in the point system to social insurance finance, (f) Analysis and investigation of consultation fees paid by social insurance funds in various countries, (Nine other items omitted).

4) Relation to economy of the medical institutions

(a) Drive for totalling results of the Investigation of Actual Economic Conditions of Medical Institutions, and plan for incidental investigations (One other item omitted).

Looking at the research topics listed above, the three pillars of medical care costs, social insurance and economy in medical care, are the central theme of research in medical care economics even from today's perspetive. They were firmly recognized then, and it shows the first steps toward tackling the problem. What we especially direct our attention toward is that in opposition to the intentions of the authorities who tried to apply the cost accounting system is used for computation of a general merchandise to calculate the medical care expenses mechanically, the concept of medical care expenses which respects scientific skills was pushed forward, and moreover, it is developed into "An Economic Theoretical Analysis of the Problems in Study of Compensation for Physicians' Skills," having been combined with economic theories. I think that one of the most important things which the Japan Medical Association has been emphasizing from that time until today, has been "how to appropriately evaluate compensation of intangible skills," and "how to establish an economic theory to do so." Moreover, we can see that systematic thinking was adopted based on the separation of materials and techniques, such as by separating according to various stages of medical care activities. Characteristics

due to types of institutions were taken into consideration, and relationships to pharmaceutical costs were considered.

Three directions can be considered in order for technical fees to possess objective appropriateness, and they are (a) conducting international comparisons, (b) giving correct guidance by investigation of actual economic conditions of the medical institutions, and (c) considering its connection with the macro-perspective of the national economy. As we look at the aforementioned research topics from the preliminary meeting, in regard to (a), are shown in the form of collection of materials on medical care costs from each country, and analysis of consultation fees by social insurance in each country. In regard to (b), a plan for investigation of clinics, and a drive for totalling results of the investigation of the current status of medical care economics is pointed out. Further, in regard to (c), a need to analyze the relationships between national medical care expenses and national income is suggested.

Considering these, the beginning of the study in medical care economics in the Japan Medical Association today were already being concentrated upon in the research topics of the preliminary meeting of May 1956, and we can also say that the research activities for the next twenty years have been the result of developments in the extending line of the problems suggested in a condensed manner at the beginning.

2. History of Investigation and Research Activities

The "Preliminary Meeting for Investigation and Research" of May 1956, was developed into the "Special Investigation Committee" on June 25, 1957, and it was established as a standing committee for investigation and research. This precisely coincides with the time when Dr. Taro Takemi took office as Chairman of the Japan Medical Association. With this, the medical association's investigation and research activities were strengthened and at the same time began to be enforced systematically.

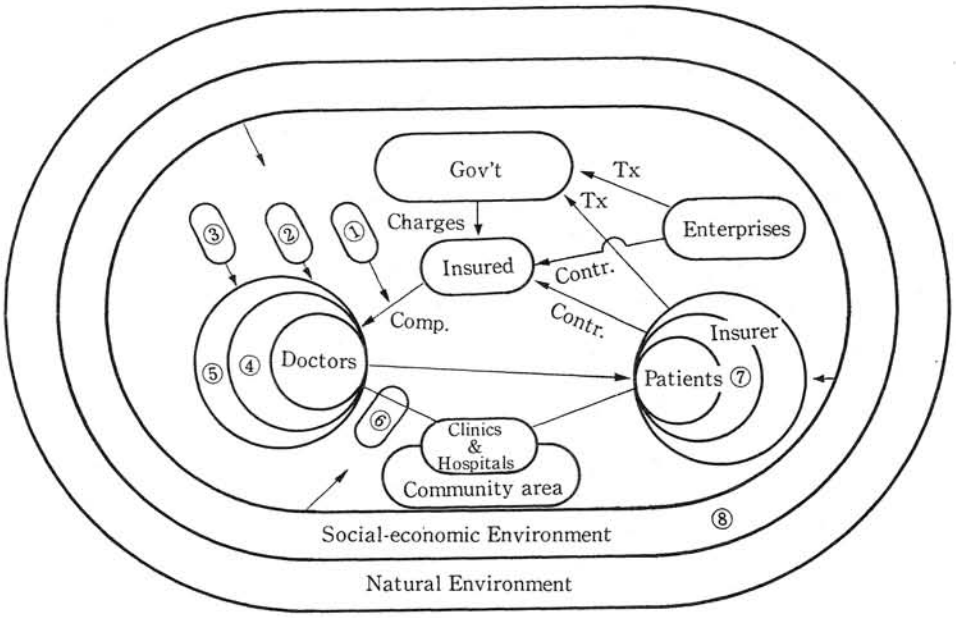
The Special Investigation Committee was developed and then dissolved and reconstituted into the three committees of "socio-economics," "medical law and institutions," and "administrative medicine." Economic analysis was taken over by the "Socio-Economics Committee," which took as central themes the study of public hazards, health standards and community characteristics, and health investment and the theory of location of welfare. This Socio-Economics Committee was developed to the "Committee for the Study of Medical Care Economics" in 1971, and was intended for the integration of macro- and micro-analyses of medical care economics. In this manner, although the name of the committee has been changed, the basic spirit of tackling the research has always been the same, and it can be said that the aspect on which emphasis was placed in analysis moved progressively according to the stages of research. With the "World Medical Assembly, General Meeting in Tokyo," held in Tokyo in October 1975, as a turning point, research in medical care economics pushed forward in the direction of medico-economics from medical economics, and

along with this, the Medical Care Economics Research Committee was divided into two research groups, the "Social Insurance Economic Committee," and the "Medico-Economics Research Committee," and further development of specialized research in medical care economics is expected.

3. Major Research Topics and Their Developmental Phases

Throughout the three stages of the Special Committee on Investigation, the Socio-Economics Committee and the Medical Care Economics Committee, the issues which the Japan Medical Association tackled with the study of medical care economics and the result of its analyses have been summarized in

Various Factors for Determining National Medical care



Tx=Tax, Contr.=Contribution, Comp.=Compensation

① Related councils
② Medical educations
③ Medical manufacturing industry
④ Para-medical staffs and pharmacists
⑤ Medical supplies, medical care tools & equipments
⑥ Medical associations
⑦ Families
⑧ We can recognize the changing phenomena in social-economic enviroment such as more aged population, urbanization of living style and higher degree of heavy-chemical industry.

the *Year Book on National Medical Care* and are analyses of the mutual relationships of various factors shown roughly in this chart.

The following are the major ones, in chart form:

A. National Medical Care
   Economic Growth and National Medical Care, Health Investment and Theory of Location of Welfare, Development and Allocation of Medical Care Resources
B. Supply of Medical Care
   1. Manpower, Medical Education
   2. Pharmaceuticals
   3. Medical Care Equipments
C. Demand for Medical Care
   1. Measurement of Demand
   2. Distribution of Demand
D. Demand and Supply of Medical Care
   1. Characteristics of Medical Care Services
   2. Demand and Supply Structure in the Community
   3. Medical Care Insurance and Its Financing
   4. Welfare Administration and Related Councils
E. Operation of Medical Institutions
   1. Hospitals
      (1) theoretical analysis
      (2) investigation of actual conditions
   2. Clinics
      (1) theoretical analysis
      (2) investigation of actual conditions
F. Medical Care Expenses
   1. Point Unit Price
   2. Compensation for Medical Treatments
   3. Contribution and Benefits
   4. National Medical Care Expenses

4. An Outline of Recent Discussions in the Medical Care Economics Study Group (examples from the years 1974 and 1975)

The Medical Care Economics Research Committee, while focussing on various conditions to provide creative development of national medical care in the relationship between medical care and national economy, has been administered aiming at theoretical and positive research including various social and demographic factors which further restrict the relationships. In this sense, the two major pillars of aforementioned committee are (A) to study development and allocation of medical care resources and medico-economics in the theoretical field putting emphasis on analysis of medical care economics, and in practical analysis to carry out research on the current status of medical care economics

and its analysis; and (B) to discuss its relationships to general socio-economic conditions population, labor, etc. The former point, (A), is further divided into (1) in relation to the project plan of the Japan Medical Association, research which tackles the major issue of the year concerned, and (2) research activities of ordinary investigations traditionally thought of as committee tasks.

The major issue of (1) during 1974 and 1975 was "development and allocation of medical care resources," a major theme of the World Medical Assembly General Meeting in Tokyo. Active discussions and presentation of papers were carried out by the members of the committee, with Chairman Takemi's various pioneering papers as inspiration, and we can say it was rewarded by the fact that committee members participated positively in the discussions of the scientific meetings of the World Medical Assembly. As for the systematization of medico-economics suggested by Chairman Takemi at the World Medical Assembly, progress by the study committee, inaugurated in the fall of 1975 is eagerly awaited. Also, it especially needs to be mentioned that in order for the committee to tackle this important problem, a great deal of benefit was derived from the studies of the Japan Medical Association Special Section on Medicine.

As for the ordinary investigation activities of this committee (2), they are divided into (a) ones related to medical care economics, (b) ones related to social security and social insurance, and (c) investigation of the current status of medical care economics. Among these, in regard to (a), analysis of pharmaceutical economics especially progressed in its research during 1974 and 1975, and this was backed by the results of the research by the "Committee for Long-Term Integration Measures of Pharmaceuticals." Also, in regard to international trends in the research of medical care economics, collection, analysis and discussion was carried out with the cooperation of the Investigation Section As for social security and social insurance, (b) from the viewpoint of "Development and Allocation of Medical Care Resources," re-investigation is being discussed. This is related especially closely to the presentation of research in the study group for medicine and politics by committee members. In regard to the research activities of (c), both investigation of the current status of medical care economics, and the investigation of clinics, carried out in 1973, were formally summed up by the Statistics Section. An investigation of total results has been carried out by this committee, and its summation listed in the 1974 issue (investigation of the clinics), and the 1975 issue (investigation of current status) of the *Year Book on National Medical Care.*

An investigation of the current status of medical care economics, has been carried out ten times since 1955 to provide basic material for major policies of the Japan Medical Association, and basic totalized results have been obtained up to the ninth investigation (carried out in 1973). Although the items of investigation covered by this study have been elaborated in various ways over the past twenty years, it has always addressed medical care in the clinics, and especially the current status of medical care economics. The entire picture of the results from the fourth (1963) to the ninth investigation (1973) was recently

announced officially in the 1975 edition of the *Year Book on National Medical Care*. If we look at the results, the importance of this investigation is evident, and the amount of important information it contains on medical care economics is immeasurable. Therefore, the performance of more detailed analyses is required for the future, based on an accumulation of data for the last twenty years, and developments such as analysis of models which determines the account structures and various metric analyses are eagerly anticipated.

Discussion on Prof. Emi's Lecture (Abstract)

Dr. CHOO: What is the main contribution of the medical care economist in Japan to improving and promoting aspects of health and medical care for the Japanese citizen?

What are the difficulties and problems in carrying out practical political measures by your group?

Looking back on the past from your position today, are there any points which should have been changed in the course of your research activities, and if so, how should they have been altered?

In the system of medicoeconomics which is suggested by President Takemi and which contains very comprehensive life science, the global life cycle is shown extremely comprehensively, and I would like you to instruct me how it should be in order to practically face the urgent problems of today.

Prof. EMI: Dr. B. Kehrer of the United States, who attended both the "Conference on Economics of Health and Medical Care" of 1973 (Tokyo), and the "World Medical Assembly" of 1975 (Tokyo), said that she was surprised to see such a marked improvement in two years. This is one fact showing that the history of medical economics has contributed to Japan.

Another example of contribution is that the investigation of the economic status of medical care which has been continuously carried out by the Japan Medical Association since 1955 has grasped the actual conditions of medical care as a combination of four elements: manpower, materials, money and time. There have been various bottlenecks in the suggestions of the Japan Medical Association, and special problems among them were the lack of understanding and prejudice of various people concerned to the medical insurance management.

Medicoeconomics is a field which has just started, and which will develop from now on. We have to internalize what have been external variables in the past, and in order to do so, we have to develop in a measurable form data which have been unmeasurable in the past. We would

like to have suggestions from Korean economists and an exchange of research information.

Dr. PARK: I think the high cost of medical care is a problem existing in every nation, but what kind of role have Japanese economists played in deciding compensation for medical care in the Japanese health insurance system?

Or, do you think that this is not a problem for economists and that it should be left to the government and physicians?

Prof. EMI: The steep rise in the price of medical care is a world-wide problem, and therefore the development and allocation of medical care resources becomes a problem. The present health insurance system has a weak effect in the re-allocation of income, and it will be important to revise the system.

In deciding costs of medical care, the advice of economists and the securing of the theoretical foundation are important, but I don't think they are easily reflected in politics.

Dr. Shukichi OKUBO (Member of Committee on Medicoeconomists, JMA): There is a classification which says that among human desires, continuation of the species and maintenance of the individual are basic wants, with other desires secondary. But is the saying "It comes back to the two desires of increase of material welfare and maintenance and promotion of life" a classification of economics?

Prof. EMI: It is not especially an economic classification; the maintenance and promotion of life could rather be replaced by the cultural betterment of humanity, and could be changed "from a materialistic desire to overall humanistic welfare."

Pres. TAKEMI: In medicoeconomics, the concept of welfare is renovated. "To give better conditions of human survival" is a general concept of welfare, and I think that to save the weak is part of this. In order for economics and medicine be combined academically, we have to think in this way.

Basic Framework of the Health Sector Plan for Korea's Fourth Five-Year Plan (1977–1981)

Dr. Bon Ho KOO*

Korea Development Institute, Korea

A. General Framework of the FFY Plan (1977-81)

1. Stages of Development of the Korean Economy

	1962–1966 (1st 5-Year plan)
Development Strategy & Investment Policy of the Plan	(Development Strategy) Breakthrough of the major bottleneck sectors: (1) Promotion of the consumer goods import substitution and, (2) Launching of the exported industrialization programs.
Pattern of Trade & Industrialization	Import substitution of consumer goods.
Major Characteristics in the Stage of Economic Development	Beginning of development efforts and organization of development administration.
Major Export Commodities (By Order of Absolute Quantity)	(1) Clothing (2) Plywood (3) Silk fabrics (4) Wigs (5) Raw silk
	1967–1971 (2nd 5-Year plan)
Development Strategy & Investment Policy of the Plan	(Development Strategy) Attainment of balanced growth: (1) Expansion of the size and scale of the economy

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	and modernization of the industrial structure, and (2) Improvement of the export structure.
Pattern of Trade & Industrialization	Export of consumer goods and import substitution of consumer and intermediate goods.
Major Characteristics in the Stage of Economic Development	Realization of rapid growth & modernization of industrial structure.
Major Export Commodities (By Order of Absolute Quantity)	(1) Clothing (2) Plywood (3) Electronic products (4) Wigs (5) Silk
	1972–1976 (3rd 5-Year plan)
Development Strategy & Investment Policy of the Plan	(Development Strategy) Growth, Stabilization and balance: (1) Development of agricultural and fishery sector, (2) Promotion of rapid export growth, and (3) Construction of the heavy & chemical manufacturing industries.
Pattern of Trade & Industrialization	Export of consumer and intermediate goods, and import substitution of intermediate goods.
Major Characteristics in the Stage of Economic Development	Reorganization of economic structure & pursuit of stable growth.
Major Export Commodities (By Order of Absolute Quantity)	(1) Clothing (2) Electronic products (3) Steel plates (4) Foot-wears (5) Plywood
	1977–1981 (4th 5-Year plan)
Development Strategy & Investment Policy of the Plan	(Development Strategy) Growth, efficiency and equity: (1) Advancement toward the industrial structure of an advanced type economy, — particularly developing technology and skill-labor intensive industries, and — promoting domestic production of the machinery products, (2) Enhancement of international competitiveness by increasing efficiency and improving technology. (3) Advancement of social development & equity.
Pattern of Trade & Industrialization	Export of consumer & intermediate goods, and import substitution of intermediate and capital goods.
Major Leading Sector	Iron & steel, industrial machinery, electronic apparatus and parts for industrial uses, and shipbuilding.

Major Characteristics in the Stage of Economic Development	Enhancement of international competitiveness, and firm & steady growth.
Major Export Commodities (By Order of Absolute Quantity)	(1) Textiles & clothing (2) Electronic products (3) Machinery (4) Metals-iron & steel (5) Shipbuilding
	1982–1986 (5th 5-Year plan)
Development Strategy & Investment Policy of the Plan	(Development Strategy) Economic maturity and balanced social development: (1) Maturity of industrialization, — developing the knowledge and technical know-how industries, and — expanding the skill-intensive industries, (2) Advancement of social development — expanding the distributive welfare policies.
Pattern of Trade & Industrialization	Export of intermediate goods, technical know-how and production facilities, and import substitution of intermediate and capital goods.
Major Leading Sector	Predision machinery industries, electronics industries, and knowledge and technical know-how industries.
Major Characteristics in the Stage of Economic Development	Realization of an advanced-type economy and social development
Major Export Commodities (By Order of Absolute Quantity)	(1) Textile & clothing (2) Machinery (3) Electronic products (4) Metals-iron & steel (5) Shipbuilding

2. Major Targets of the Plan

2.1. Growth

(1) Expansion of GNP

	Unit	1975 (A)	1981 (B)	B/A
GNP	Constant (Billion W)	9,052	15,042	1.66
	Constant (Million $)	18,702	31,077	1.66
	Current (〃)	18,702	49,878	
Per Capita GNP	Constant ($)	530	800	1.51
	Current ($)	530	1,284	
Commodity export	Constant (Million $)	4,980	13,000	2.61
	Current (〃)	4,980	17,420	3.50
Per Capita Commodity exports	Constant ($)	141	335	2.38
	Current ($)	141	449	3.18

(2) Looking toward self-sufficient economic growth
— Improving self-sufficiency of the economy
a. Improvement of industrial structure and elevation of inter-industry relationship.

Content	Unit	1975	1981
Share of manufacturing sector in GNP	%	32	36
Share of heavy & chemical sector in manufacturing	%	40	50
Share of heavy & chemical in total exports	%	40	50

b. Complete self-sufficiency of investment resources by 1981.
c. Realization of surplus in the trade account by 1970 and balance in the current account by 1981.

2.2. Efficiency

(1) Attainment of the basis for improving efficiency by price stabilization
(2) Normalization of market mechanism and maintenance of fair competition
(3) Industrial rationalization:
Rationalization of management, inter-industrial relationship and industrial structure.
(4) Promotion of international competitiveness of industries
Promoting import substitution in the industries with the domestic demand condition that meets the size requirement of the economy of scale.
— Strengthening the external competitiveness by promoting the infant industries that require protection for limited time period.
— Protecting domestic industries by means of indirect methods such as tariff measures rather than direct control.
(5) Maximization of investment efficiency by improving efficiency in the existing investment projects and instituting the project appraisal system.
(6) Attainment of skilled manpower and technological development.
— Raising the ratio of investment in the science and technology up to 1% of GNP by 1981 (the ratio for 1975: 0.34).
(7) Achievement of efficiency in the administration of government services through improvement of administrative procedures and systems.

2.3. Equity

(1) Expansion of the employment opportunity by promoting relatively labor and technology intensive-industries.
— Achieving the unemployment rate of 4.1% by 1981.
(2) Smooth adjustment of supply and demand of manpower and improvement of education quality.
(3) Expansion of residential housing.
— Raising the ratio of residential housing ownership to 80% level by 1981 (the ratio for 1975: 75%).

Content			Unit	1981	1975
Primary education: Number of students per class (Metropolitans areas)			persons	51 (60)	57 (77)
Entrance rate of junior high school			%	90	77
Ratio of educational facilities for vocational training high school	Public	rural	%	85	43
		urban	%	85	29
	Private	rural	%	85	44
		urban	%	85	54

(4) Dispersion of the corporate stock ownership, promotion of the social responsibility of business enterprise and establishment of a cooperative labor-management relationship.

(5) Gradual adoption of minimum-wage system and improvement of working conditions.

(6) Improvement of national health and sanitation, and expansion of social welfare.

— improving the management of the city and provincial hospitals and regional health centers by locating medical service personnel.

— instituting the national welfare fund system by 1977.

— initiating the medical insurance program by 1978.

Content	Unit	1975	1981
Infant mortality rate	Per 1,000 persons	38	20
Tuberculosis infecter rate	〃	32	15
Population per medical doctor	〃	2,857	2,041
Number of insurance participants	〃	2,265	9,061

(7) Maintenance and improvement of national living environment

Content	Unit	1975	1981
Piped water supply ratio			
6 metropolitan cities	%	84	100
Agricultural and fishery sector (Simplified waterworks supply)	%	16	100
National level	%	48	60
Capacitiy of sewage facilities	1,000 tons per day	250	1,875
Urban excretion disposal ratio	%	30	100
Rural electrification rate	%	65	100[1)]
Supply ratio of village communification	%	45	100
National highway pavement rate	%	44	90

1) Complete electrification by 1978.

B. Basic Framework of the Health Sector Plan

a. Basic directions

— Establishment and operation of a medical service corporation for effective expansion and utilization of public health facilities

— Expansion of treatment services by health centers and subcenters in rural areas through investment in facilities and equipment

— Functional adjustment and support for private medical institutions to enhance their effectiveness

b. Policy measures

(i) Establishment of a medical service corporation

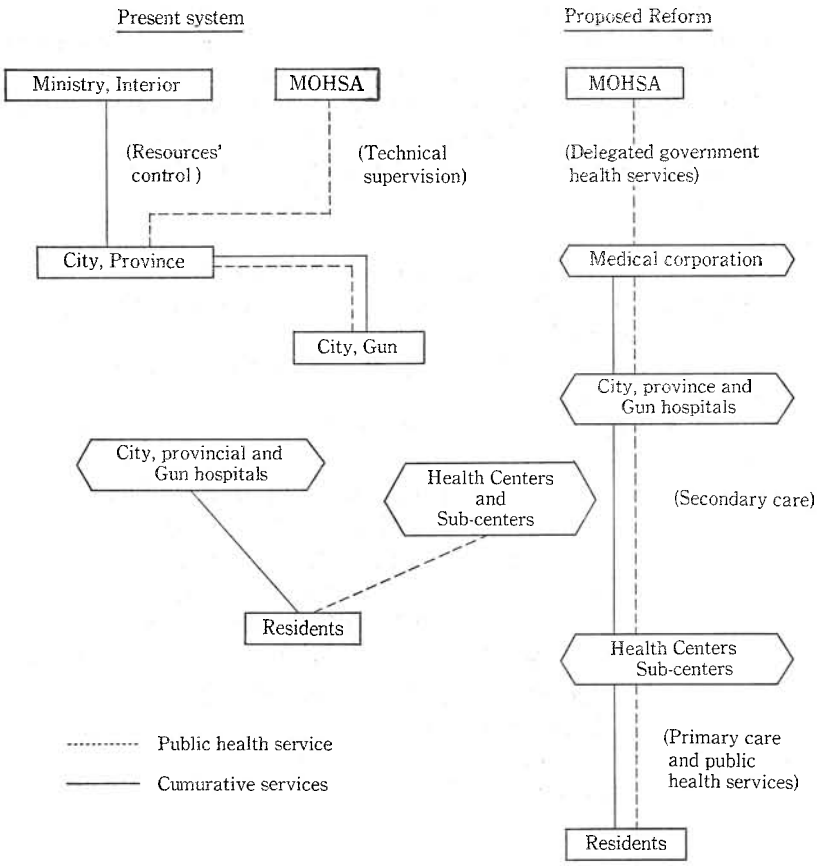
(a) Basic concepts

— Inclusion of health centers, sub-centers and national and public hospitals

— Operational improvement of medical care services through strengthening of social accountability

— Provision of delegated government health services

(b) Comparison of the existing system and the proposed reform



c. Strengthening health centers and sub-centers as primary care centers through investment in equipment and facilities
— Construction and renovation of health centers (60 locations)
— Construction of health sub-centers for the 560 doctorless sub-counties (*myeon*)
— Provision of equipment and expanded facilities to health centers and sub-centers
— Provision of primary care services to the urban poor and residents in rural areas

d. Improvement of city and provincial hospitals
— Renovation of building and provision of equipment to 10 designated hospitals

e. Rational support of private sector medical services

i) Promotion of the re-distribution of private medical institutions to the rural sector
— Establishment of medical resources requirement standards on a regional basis
— Strengthening of requirements for opening new medical facilities in areas of over-concentration
— Tax incentives and financial support to medical practitioners and institutions in areas with inadequate medical resources

ii) Enforcement of functional distinctions between hospitals and clinics and establishment of standards for facilities

iii) Establishment of standardized hospital accounting systems

(2) Improvement of the Supply of Medical Manpower

a. Basic directions
— Rationalization of medical manpower education and training
— Improvement of the composition of health manpower supply

b. Policy measures
— Changing medical school curricula to increase the hours of clinical practice and training.
— Increasing the medical school admission quotas for regional medical schools
— Extension of medical school requirements for internship and rearrangement of the hours and duration of specialist training
— Modifying the 4-year nursing education program to provide for licensing as mid-wives as well as nurses upon graduation
— Conversion of nurse's aide training institutes into nursing high schools and provision of ways to enhance career development for nurses' aides

(3) Improvement of the Quality of Pharmaceutical Products
— Cultivation of the production basis to achieve better quality
— Increase the self-sufficiency rate of basic raw materials
— Expansion of pharmaceutical exports

Demand and Supply Projections for Basic Pharmaceuticals (Unit: US$1,000)

		1976	1977	1978	1979	1980	1981
Demand forecast		71,009	74,408	77,857	81,414	85,012	87,846
Supply	Total	78,554	83,267	88,263	93,559	99,172	104,130
	Domestic production	39,373	42,629	54,728	63,619	73,387	83,304
	Imports	39,181	36,638	33,540	29,939	25,785	20,826
Exports		7,455	8,819	10,416	12,144	14,160	16,284
Self sufficiency rate (%)		50	56	62	68	74	80
Import rate (%)		50	44	38	32	26	20

(4) Public Health Services
   a. Maternal and child health care
      — Gradual upgrading of maternal and child health care personnel to liscensed mid-wives and nurses (currently carried out by nurses' aides)
      — Improvement of salary and wages of MCH personnel
      — Expansion of safe delivery services by the Government
   b. Disease control
      — Enforcement of vaccination and carrier detection programs
      — Primary treatment for 670 thousand detected TB cases and 80 thousand persons requiring secondary care
      — Expanded support of research activities for chronical adult diseases

(5) Protection and Improvement of the Environment
   a. Construction of piped-water facilities in 20,427 technically feasible locations
   b. Construction of human waste treatment facilities in 35 cities
   c. Establishment of the basis for pollution prevention
      — Obtainment of basic environmental pollution monitoring equipment
      — Development of knowhow and technology for pollution monitoring and measurement
      — Provision of financial support and tax incentives for the construction of pollution prevention facilities by industrial firms
      — Establishment and enforcement of environmental standards
      — Creation of an administrative mechanism for pollution control (establishment of regional offices and inter-ministrial coordination)
      — Construction of sulfur removal facilities at refineries
   d. Construction of crematoriums and channel houses

(6) Improvement of Public Health Administration
   a. Improvement of the operation of health centers, sub-centers and city and provincial hospitals through establishment of a medical service corporation
   b. Improvement of health statistics and data collection by expanding the number of basic surveys

Major Investment Programs (In million won of 1975 prices)

Project	Third Five Year Plan Period (1972-1976)			Fourth Five Year Plan Period (1977-1981)		
	Q'ty	Project cost	Ratio	Q'ty	Project cost	Ratio
Expansion of health centers and sub-centers		382	1.0		7,410	4.6
Increase of public hospital beds		1,142	3.0	2,780 beds	23,733	14.8
Health laboratories and quarantine stations		564	1.5		1,774	1.1
Maternal and child health care services		2,862	7.5		8,275	5.2
TB control	Prevention (primary treatment)	9,545	25.1	Prevention (primary & secondary treatment)	20,272	18.8
Construction of piped-water supply facilities		10,520	27.6	20,427 locations	42,897	26.7
Waste treatment facilities in urban areas		4,500	11.8	50 locations	20,000	12.5
Operation of pollution monitoring network		432	1.1	291 ea	9,865	6.1
Others		8,158	21.4		16,501	10.3
Total		38,105	100.0		160,727	100.0

3. Major Target Health Indicators

	Unit	1975	1981
Population per physician	Person	2,078	1,590
Population per hospital bed	Person	1,657	1,590
Tubercalosis prevalence rate	%	3.2	1.5
Round worm infestation rate	%	44	15
Infant mortality rate	Per 1,000 persons	38	20
Maternal mortality rate	〃	5.6	3.0
Piped-water facility diffusion rate in rural areas	%	16.0	100.0
The ratio of human waste treatment in urban areas	%	29.5	100.0

Discussion on Dr. Koo's Lecture (Abstract)

Prof. FUJINO: When economists consider the best allocation of limited resources, they think of most efficient allocation of resources at the lowest possible cost, but for those who offer medical care, there is probably a desire to give the best medical care without any restricting conditions. How would the economists and doctors in Korea take this conflict or trade-off?

What is the insurance system like in the medical care system in Korea? Is it similar to the Japanese insurance system, or the American insurance system?

Dr. KOO: I agree with what Professor Fujino pointed out, and that is why I pointed out the necessity of promoting communication in Korea between economists and physicians of the Korea Medical Association.

Prof. Fujino pointed out the trade-off between increase in quality and quantitative expansion, but besides this, it is possible that not only trade-off relationships but also mutually complimentary relationships may exist. In this sense, I pointed out that it is necessary to offer low cost medical care for the maximization of health among the general citizenry.

The insurance system in Korea is not yet an excellent one. Supply of medical care is more important than the demand aspect of medical care, that is, than the form of insurance.

Prof. FUJINO: In pre-war Japanese society, with no health insurance system, doctors had a function of re-allocation of private income, and I would like to know how it is in Korea. If it exists, I wonder whether you can call it a monopolistic or oligopolistic market.

Pres. TAKEMI: An increase in medical care expenditures is a world tendency, but there is a problem if we apply the same meaning to the increase of medical care expenditures in the United States and Japan. The problem is how to understand economically the fact that even if the cost is the same, its contents are different.

Dr. Koo puts emphasis on the supply system, and I agree with this point. However, it is important to supply not only clinical treatment but also health education, and without the latter, if the standard of living goes up, demand for medical care will be increased. The higher the quality of medical care, the better, and the so-called principle of economics which states that because better quality medical care, the cost will increase, does not apply to the world of medical care.

Prof. TAMURA: Can we understand that economic planning is a plan in the frame of free economy to develop it further?

When we consider the characteristics of medical care, I wonder if it can be applied to the community in a centralized form with high efficiency.

Dr. KOO: We place emphasis on

the three points of strengthening of economy, search for social fairness and justice, and increase in efficiency in the Five Year Plan. In order to realize the third point, the Korean government is of the especially strong belief that its competitive economy is indispensable.

In the health industry of medical care, what brings about efficiency is competition, but the Korean government is also strongly aware of adjustment and cooperation between public and private sectors.

Prof. KATSUNUMA: I would like to know whether the words, "public health service" in Dr. Koo's paper are used in their American meaning or British meaning.

Dr. KOO: Probably it has the American meaning.

At the end, we hope to have your advice and interchange with you in our effort for the future to revise health care in a form which is fitted to the national conditions of Korea, and this does not mean that we have fixed ideas. The Fourth Five Year Plan is for the stage of preparatory investigation and research, and we are now formulating a practical plan in a large-scale comprehensive form as the Fifth Five Year Plan.

SYMPOSIUM

ROLE OF ECONOMICS IN DEVELOPMENT AND ALLOCATION OF MEDICAL CARE RESOURCES

Chairman: Prof. Koichi Emi
Hitotsubashi University, Japan

Indicative Community Medical Care Planning

Prof. Sadao TAMURA

Waseda University, Japan

1. Development and Allocation of Medical Care Resources and Indicative Community Medical Care Planning

The subject that I am supposed to talk on today is "The Role of Economics in the Development and Allocation of Medical Care Resources." I hope that I will be able to satisfy this requirement by giving a report on the theme of "Indicative Community Medical Care Planning." Before I begin my report, however, I should like to say that I am extremely delighted to have the opportunity to participate in this historically significant 1st Korea-Japan Medical Economics Symposium and submit some of my research on medical care and economics for the critical review of outstanding Korean economists and medical doctor.

First of all, I would like to explain why I have adopted the theme "Indicative Community Medical Care Planning" to discuss the subject of "Development and Allocation of Medical Care Resources." Slide 1, please. I have used the title "In Search of a New Paradigm" because I wanted to stress the fact that the theory of development and allocation of medical care resources provides a new paradigm in its contents for the analytical method of modern economics.

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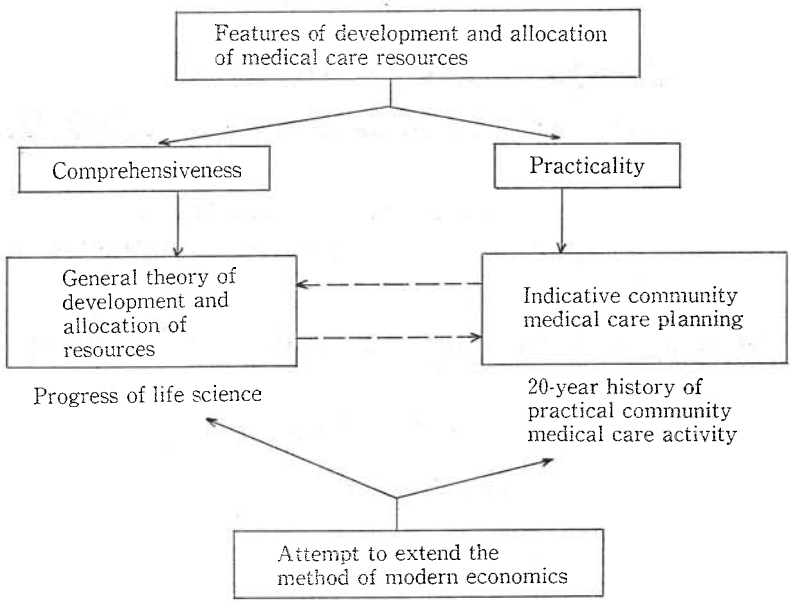
Slide 1 In Search of a New Paradigm



In other words, the theory of development and allocation of medical care resources gives scientific revolutionary direction in the method of modern economics. What I mean by "scientific revolution" is integration of science based on logical positivism with the system of values, which I have indicated in Slide 1 with the terms "comprehensiveness" and "practicality." "Comprehensiveness" means that the theory of development and allocation of medical care resources is being characterized by the general theory of development and allocation of resources. New analytical methods in this field are being studied by the Life Science Society at its annual sessions in December, and the fruits of these sessions are published each year as a book entitled *Progress of Life Science.* I would like to explain the comprehensiveness of the theory of development and allocation of medical care resources in connection with the Dr. Koo's report given yesterday. I mentioned to Dr. Koo yesterday the great importance must be placed on the recognition and assessment of the non-material aspect as a specific character in attempting to analyze medical care by economic methods. I would now like to illustrate this in terms of international economics in which Dr. Koo specializes. One of the important theorems of international economics is the theory of comparative costs, which applies to the theory of optimum allocation of economic resources by international aspect and the logical development of this theory with regard to such activities is refined with considerable rigidity. However, the stability of the international monetary system, another important theme in international economics, does not seem to have made any progress at all. This is attributable to the fact that inadequate

recognition and assessment has been given to the nonmaterial aspect of money. The value of money under a managed monetary system stems from the confidence of society in it. Although gold is tied indirectly with settlement of international transactions, fluctuation of the dollar, the pivotal currency, in fact represents the managed monetary system in place of gold. Thus, the problem of the value of money has recognition and assessment of the nonmaterial aspect as one of its important constituent elements in terms of social confidence and managed standards. Up to now economists have treated recognition of this aspect of the problem as a mere "money illusion," but analysis of this aspect requires such recognition and assessment as "thought resources," if I may borrow the phrase used by Japan Medical Association (JMA) Chairman Takemi in his report yesterday. This is but one of the many examples of the importance of recognition and assessment of the nonmaterial aspect of goods that can be cited in the various fields of modern economics, and each case requires logical positivistic development as "thought resources."

Next, I would like to point out the practivality of the theory of development and allocation of medical care resources, which in Japan has the empirical basis of a history of twenty years of community medical care activity led by JMA. The subject of my report today, "Indicative Community Medical Care Planning," is the name that I have given to this kind of community medical care activity. In the scientific analysis of this practical medical care activity the administrative approach that is taken as a given condition in the method of modern economics locates the place of an important factor. The practicality is a feature inherent in the nature medical care. Ethically, a doctor cannot leave patients when his care is needed by them. Therefore, one can say that medical care is practical by definition. I have had a lot to learn in my research on medical care in connection with the direction of extention of modern economics.

What I have just done is to indicate, as already explained, the characteristics of the theory of development and allocation of medical care resources in terms of both comprehensiveness and practicality. Since these aspects are closely interrelated, the same end can be reached by either approach, but I intend to stress the practical aspect of the development and allocation of medical care resources in continuing by presentation.

2. A Free Economy and Indicative Economic Planning

Slide 2, please. Before getting into my main subject, I would like to explain the reason why I have chosen the phrase "indicative community medical care planning." It is generally said that clinical freedom is an indispensable factor in medical care. This means that there is an inseparable relationship between medical care and the structural basis of a free society, leading to the conclusion that the free economic system is an indispensable socio-economic base for the practice of medicine. Looking at the free economic system in historical terms, however, one sees a succession of crises due to change in individual behavior

Slide 2 France's Indicative Economic Planning

(1)	1st Plant and Equipment Modernization Plan	1946–1953
(2)	2nd Economic Plan	1954–1957
(3)	3rd Economic Plan	1958–1961
(4)	4th Economic Plan	1962–1965
(5)	Stabilization Plan	1963–
(6)	5th Economic Plan	1966–1970

and environmental changes that have occurred and have been solved to the present day. In other words, the free economic system has by no means been a stable socioeconomic basic for human survival. In the face of this historical background, the countries of the world with free economies have contrived a great many artificial methods for making such a system a stable socioeconomic base. In line with J. M. Keyne's fiscal and monetary measures for achievement of full employment, as indicated in Slide 2, the indicative economic planning that has been carried out in France is a good example of such methods.

The use here of the term "indicative" is intended to mean participation by the individual entities that make up the economy and society in the effort to establish future-oriented goals. It seems to me, therefore, that one is justified in saying that indicative economic planning is an approach for ensuring the future survival of the free economy system, and, as such, a strict distinction should be made between this and economic planning in socialist economies. This indicative economic planning which was originated in France and exported to other free economy countries such as Britain, the United States, and Japan in the 1960's. In Britain, it has been adopted for establishing the socioeconomic basis for a welfare state, in the United States it has been used as a basis for implementation of a new economic policy mix, and in Japan it has been taken into account in forming its economic plans. Although the free economy system and the economic planning appear at first glance to be contradicting factors, such method becomes an important factor in the free economy system in terms of future perspective. This indicative economic planning served as a hint to me in selecting the title of this presentation, "Indicative Community Medical Care Planning."

Let us look at France's indicative economic planning in historical perspective. The 1st Modernization Plan and the 2nd Economic Plan had the characteric of long-term plans for the replacement and expansion of production capacity destroyed in the war. The 3rd and 4th Economic Plans then followed on the same basis. We see here a pattern of establishment of a base for attainment of rapid economic growth through expansion of capital equipment in basic industries, the same kind of pattern that has been observed in Japan and, as reported yesterday, in the Republic of Korea. In France supply capacity was expanded during the first three plans while annual economic growth averaged 5 percent, a comparatively high rate among free economy countries. But in

the course of such economic growth, inflation and accompanying economic disorder resulted from the vicious circle of wages and prices, and the demand for greater equality of distribution of income arose from the general public. The first of these two problems, which is proving to be a headache for all free economy countries, is known as the "new inflation," and the second problem, that of "equity," as reported on by Prof. Koo yesterday, is also pressing hard for a solution in these countries. These problems of the "new inflation" and "equity" are areas in which the recognition and assessment of the nonmaterial aspect of the economic behavior of individuals that I explained at the outset are necessary. For instance, recognition and assessment of such factors as a decline in enthusiasm for innovation on the part of business and less will to work on the part of workers are important in understanding the "new inflation," and analysis of such factors as the value judgement of individual decision is necessary in connection with the problem of income distribution equity. As I have already mentioned, this kind of recognition and assessment of the nonmaterial aspect is what modern economics finds most difficult to treat. France's indicative economic planning made it possible to reinforce the economic activity and temporarily overcome disorder through short-term adjustment of demand under their stabilization plan, but it was unable to effect a basic solution. As a result, the roots of the malaise in the economy gradually spread until in May 1968, during the 5th Economic Plan, a social explosion took place. This was the well-known episode in which campus unrest triggered a labor strike that shook the entire country.

Although France's indicative economic planning, which, as I have already explained, was implemented for the purpose of enabling the survival into the future of the free economy system, has been successfully carried out to a certain extent, it has not really been able to accomplish its purpose fully owing to the lack of analytical instruments capable of shedding light on the problems of "new inflation" and "equity."

Slide 3, please.

This slide relates Japan's economic planning to date. In terms of basic thinking, Japan's economic planning is basically modelled after France's indicative economic planning, but it also had to take into account historical differences

Slide 3 Japanese Economic Plans (1955–1980)

Economic Self-support 5-year Plan	1955–1960
New Long-term Economic Plan	1957–1963
Doubling National Income Plan	1960–1970
Medium-term Economic Plan	1965–1969
Economic and Social Development Plan	1967–1970
New Economic and Social Development Plan	1970–1975
Basic Economic and Social Plan	1973–1977
New Economic 5-year Plan	1975–1980

in socioeconomic formation and particularly the fact that, unlike France, Japan joined the family of the free economy countries under the state leadership which manifested itself primarily in the form of "administrative intervention." An essential element of the free economy system is formation of the community by will and effort of individual members. In Japan's case, however, this element is lacking, which means that there is a habit of accepting bureaucratic control without many misgivings, if any. It is therefore important to recognize the fact that Japan has had a atmosphere incompatible with the spirit of indicative economic planning. In spite of this, Japan has implemented eight economic plans since the end of the war. Under the Plan to Double National Income, shown third in Slide 3, the economy grew at an astounding rate, in part, to meet the demand of the general public. But when it came to the Medium-term Economic Plan and the Economic and Social Development Plan, shown fourth and fifth, respectively, in Slide 3, the same problems of "new inflation" and "equity" arose as in France's case. Although the economic plans call for the solution of these problems, they lack, just as French economic plans do, the analytical instruments that would make such a goal feasible. Accordingly, in 1973 Japan experienced a situation triggered by the "oil shock" similar to France's social explosion of 1968.

Slide 4, please.

Slide 4 gives a comparison of the GNP growth rates in real terms projected

Slide 4 GNP Growth Rate in Real Terms Compared to Targets and the Rates Actually Achieved

Fiscal year	Growth rate actually achieved	Targets					
		1	2	3	4	5	6
1955	11.4	**4.5**					
1956	6.8	**4.8**					
1957	8.3	**4.9**					
1958	5.7	**5.2**	**6.5**				
1959	11.7	**5.2**	**6.5**				
1960	13.3	**5.2**	**6.5**				
1961	14.4		6.5	9.0			
1962	5.7		**6.5**	**9.0**			
1963	12.8			**9.0**			
1964	10.4			**7.2**			
1965	5.4			**7.2**	8.1		
1966	14.4			**7.2**	8.1		
1967	13.0			7.2	8.1	−8.2	
1968	13.8			**7.2**	8.1	8.2	
1969	13.2			**7.2**	8.1	8.2	
1970	11.0			7.2		8.2	10.6

Source: *Keizai Seisaku* (Economic Policy), by Watanabe and Tsukui, Iwanami Shoten

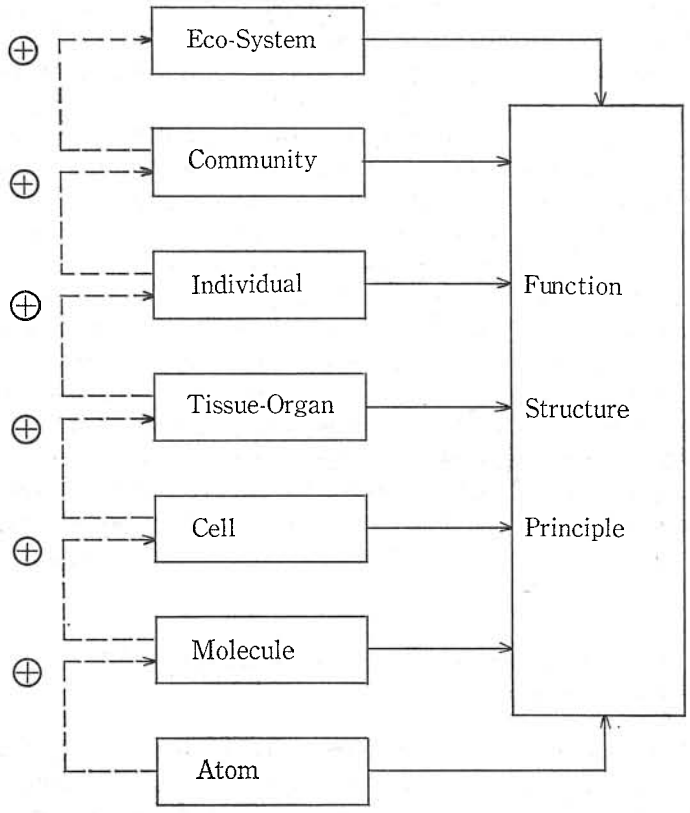
in the first six of the economic plans given in Slide 3 and the rates that were actually achieved. Looking at the rates achieved, one sees a splendid average in excess of 10 percent. This achievement of such a high growth rate over such a long period is an astonishing accomplishment that probably will not be repeated under any economic system and that will no doubt be talked about throughout the world for generations to come. Nevertheless, the distortions caused by such rapid economic growth are clearly observable. Over ten years ago JMA Chairman Takemi pointed out the fact that twice the economic growth rate would cause three times as many mental patients and suggested that steps be taken to ensure a balance between economic growth and the environment in order to avoid pollution problems. If this suggestion had been heeded by the nation's policymakers, the distortions caused by rapid economic growth would have been averted or at least would have taken a different form than they actually have. So much for the growth rates that were actually achieved. Next looking at the rates projected by the plans, we discover an astonishing fact: the projected rates have always been lower than those actually achieved. This fact gives us a glimpse of the arbitrariness of economic planning in Japan. In fact, it has been cited by Osaka University Prof. Tsunehiko Watanabe as evidence of the decorative nature of Japanese economic planning.

3. Indicative Community Medical Care Planning and the Takemi Methodology

In our historical review of indicative economic planning in free economy countries we have taken France and Japan as examples. Furthermore, it is apparent that there is a gap between the end and the means of achieving it, a gap which must be closed by extending the method of modern economics. Last year and the year before last I was fortunate enough to be given the opportunity to speak the annual sessions of the Life Science Society, one of the special medical subcommittees of the Japan Medical Association. I took these opportunities to explore the possibilities of such an extension of modern economic method under the themes "Survival Order and Welfare" and "Welfare Allocation and Multimensional Appraisal." In presenting the above, I looked to the Takemi methodology as the guide line.

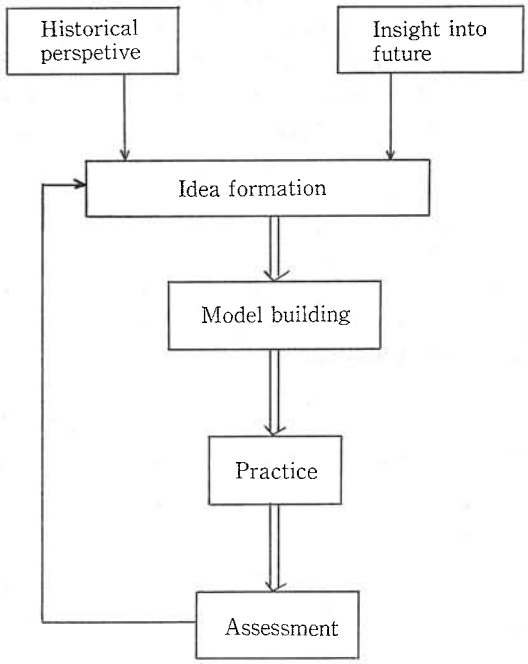
Slide 5 please. As you will note, having heard Chairman Takemi's research report yesterday, this methodology has future insight as one of its essential elements. It therefore can be said to provide an important clue to a more scientific analysis of the implications of the term "indicative" in France's "indicative economic planning." Slide 5 is taken from the one that was used by Chairman Takemi in a session of the Medicoeconomics Preparatory Committee November of last year. On the basis of the microorder of survival organically formed from atoms to molecules to cells to tissues to organs and on to individuals, communities and eco-systems are able to maintain a balance. What is important here is the "value added" that exists in the organic linkage between

Slide 5 Future Insight and the Takemi Methodology



these different levels. It is in the elucidation of the structure, function and principle this "value added" that integration of science and value systems can be achieved. It is extremely important to realize that the phenomenon of life is characterized by an order that extends all the way from atoms to eco-systems, particularly for us who have been trained in the matter-of-fact field of economics. As I understand it, all of the policies formulated by JMA in the last twenty years for the purpose of promoting community medical care activity have been based on recognition of this fact. At last year's Life Science Society session the "function" and "rules" of this structural diagram of the Takemi methodology were studied from many angles, particularly in terms of the techniques of pattern recognition. Although I also participated in that session from the standpoint of extension of the method of modern economics, I am afraid I cannot go into the details here of what was discussed.

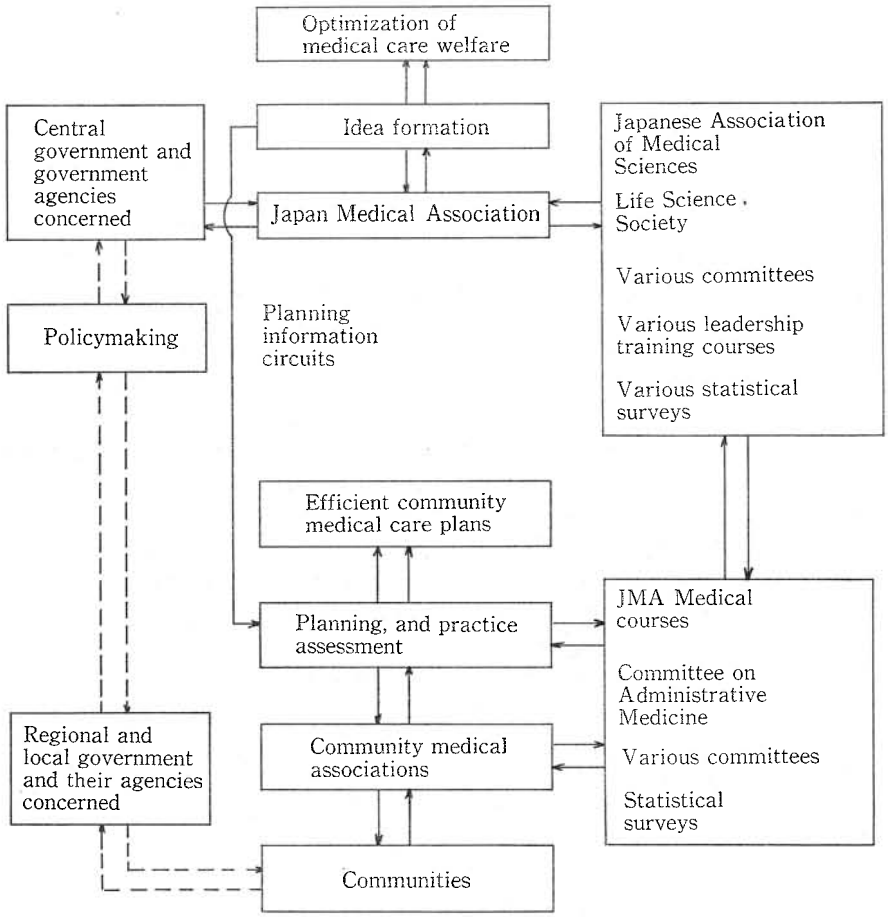
Slide 6 Future Insight and the Takemi Approach



Slide 6, please. On the basis of the structural diagram given in Slide 5, the Takemi methodology is developed in the form of ultra dynamics in Slide 6. This is the main prop of indicative community medical care planning, with idea formation based on historical perspective and future insight followed by model building, practice and finally assessment of the results. Then the assessment is fed back into idea formation for examination of whether there is a condition of balance or imbalance between the projected figures and the actual figures achieved so that this can be reflected in the next round of model building. What interested me most about this methodology is the fact that idea formation procedes on the basis of an integration of historical perspective and future insight. Although modern economics has the term "vision" that is used in the same category as future insight, it does not have historical perspective as an essential element. On the other hand, Marxist economics has historical perspective as a basic element in the form of materialism viewpoint of history but lacks future insight, which means that the future is a simplistic extrapolation of the formula on the basic social change as a result of the gap between productivity and actual production relations. Thus both modern economics and Marxist economics are characterized by lopsidedness in idea formation, whereas the Takemi methodology integrates historical perspective and future insight in idea formation. The second thing that interested me in the Takemi methodology is its organic linkage of science and values as to be contrast with modern economics' dichotomy between positive economics and normative economics. Since

we consider science to be a process in which model building is followed by proof of the conclusions reached on the basis of the model by determining whether or not they fit in with observed facts, there is no organic linkage between model building and practice. Although people like Prof. Koo who participate in policy decisions cannot be said to be separated from practice of science, they cannot escape from the fact that they are faced with the limitation due to the lack of organic linkage of model building, practice and assessment in the methodology of modern economics. In the Takemi methodology, however, there is such organic linkage under the theory of the survival order of human beings. This is exactly what was meant by integration of science and value system in Slide 5. Keeping this character of the Takemi methodology in mind, I would now like to take a look at indicative community medical care planning in terms of actual practice.

Slide 7 Indicative Community Medical Care Planning

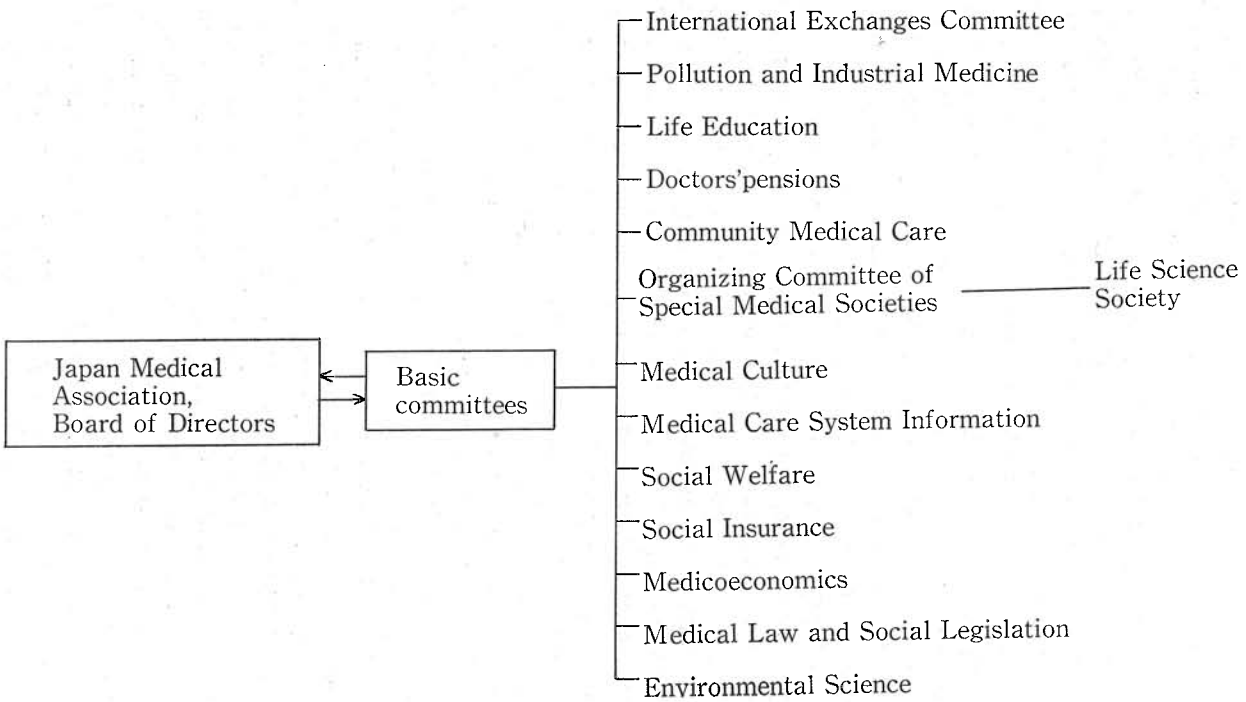


4. Model for Optimization of Medical Care Welfare

Slide 7, please. In indicative community medical care planning, JMA conducts idea formation aimed at optimization of medical care welfare. This idea formation originates in the Japanese Association of Medical Sciences, the Life Science Society, various committees, various leadership training courses and various statistical surveys. This is the research basis for scientific idea formation and thus model building is deviced for optimization of medical care welfare, the general solution derived from the model being sent to community medical association through planning and information circuits, which then derive practicable specific solutions by putting the general solution through the filter of their community environmental features and formulate efficient community medical care plans for realization of these specific solutions. The medical association—guided community medical care planning center, participants of which consist of local residents, local government and business representatives, and other persons with relevant experiences or knowledge, serve as the basis for the smooth practice of such plans. After practice of the plans on this basis, the community medical associations assess the results and report them to JMA, such reports being reflected in its idea formation and used as supportive information in its contacts with the central government and agencies concerned on the administrative level. The results of administrative negotiations between JMA and the central government and government agencies concerned are passed on to community associations by JMA and to regional and local governments and their agencies concerned by the central government and its agencies concerned. However, as I have already explained, Japan is characterized by bureaucratic control and vertical rather than horizontal administrative structures, and this means that there is hardly the close linkage between the national level and regional and local levels on the administrative side as there is between JMA and community medical associations. Herein lies one of the greatest impediments to the actual activities for promotion of community medical care. The central government and its agencies concerned have been connected to regional and local governments and their agencies concerned with broken lines so as to indicate this relationship. Since there is strong pressure working in Japan to put medical care under administrative control, there must an even greater mustering of strength to protect clinical freedom.

Another important factor in the effective management of indicative community medical care planning is efficient distribution of information. The actual flow of planning and information is from JMA to the prefectural medical associations and down to county, city and ward medical associations. It is important to recognize the fact that in this flow of information there is a tendency of diminishing information efficiency. This means a decline in the degree of comprehension of idea formation originated at JMA as you go farther and farther down these information channels. What needs to be done in order to counter this tendency is to place information officers at strategic points along these channels who are capable of preventing such a diminishing of information

Slide 8 Organizational Structure of Idea Formation



Statistical surveys

Clinic survey (annual)
Survey on CMA Hospitals and Centers (annual)
Medioeconomic survey (biennial)
Community medical care information survey (not regular)
Hospital survey (not regular)

Leadership training courses

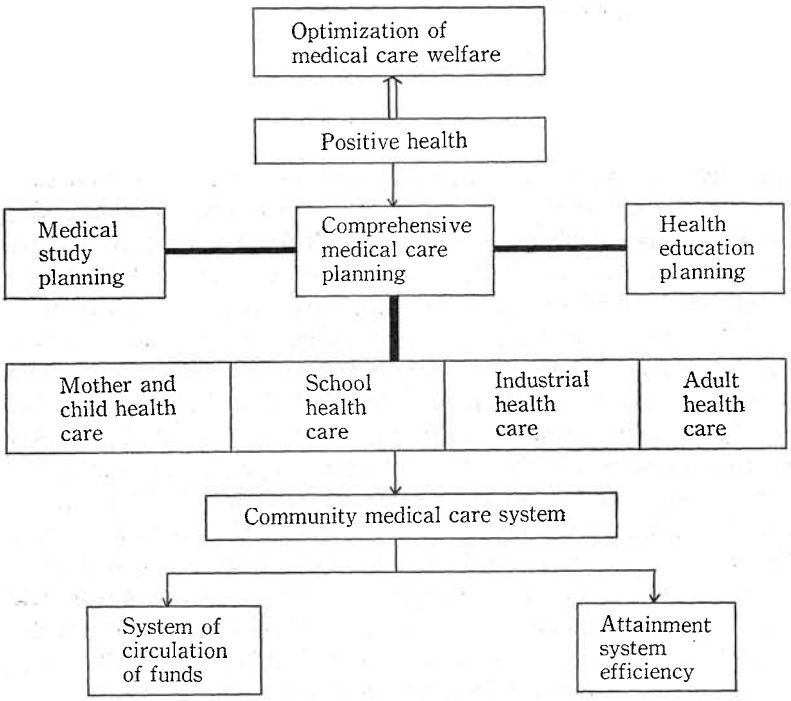
Social insurance leadership training courses
Industrial medicine courses
School health courses

efficiency. Accordingly, in indicative community medical care planning, JMA medical courses, committee on administrative medicine and various other committees have been established for assistance in planning formulation in community medical associations, with linkage between them and the Life Science Society, the various committees and the various leadership training courses that serve as the backbone of idea formation on the national level. Wtih medical care government administrative based on centralized bureaucratic control, it is extremely difficult to form such an efficient information dissemination system.

Slide 8, please. This slide shows the organizational structure of idea formation at the national level centering on the JMA Board of Directors. Because of time limitations, I will not explain it any further.

Slide 9, please. This is a basic diagram of the optimization of medical care welfare and a synopsis of the one that I presented at the Scientific Session of the General Meeting of the World Medical Association last year. The goal of optimization of medical care welfare is the attainment of positive health, and this requires that comprehensive medical care plans geared to medical study plans and health education plans be systematized under the direction of community medical associations. Important elements in the actual systematization process are the system of circulation of funds and the raising of system efficiency. An explanation of what is meant by an efficient community medical care system

Slide 9 Optimization of Medical Care Welfare



Slide 10 Community Medical Care Resources Development and Allocation Inter-Technology Relations Table

	Intermediate needs	Community needs				
Allocation / Development	$1 \cdot 2 \cdot 3 \cdots j \cdots n$	Prevention	Treatment	Rehabilitation	Community health activities	Total
		$y_1^1\ y_1^2\ y_1^3$	$y_2^1\ y_2^2\ y_2^3$	.....	.....	
1	$x_{11}\ x_{12}\ x_{13} \cdots x_{1j} \cdots x_{1n}$	y_1^1	... ...	... ...	... ...	X_1
2	x_{2j}	⋮				
3	x_{3j}	⋮				
⋮	⋮	⋮				
i	x_{ij}	⋮				
⋮	⋮	⋮				
n	x_{nj}	⋮				
Value added	$t_j \cdots$ Technological fee $w_j \cdots$ Wages $r_j \cdots$ Capital costs					
Total	X_j					

in the optimization of medical care welfare will be given in the afternoon session on "Development and Allocation of Medical Care Resources, A Medical Approach."

Slide 10, please. This "Community Medical Care Resources Development and Allocation Inter-Technology Relations Table" is an attempt to diagrammatize the development and allocation of medical care resources on the basis of the concept of the unit of technological integration. It provides an analytical instrument necessary for drawing specific solutions from general solution for medical welfare, the optimization of which is being derived from JMA's idea formation by putting them through the filter of community environmental features. Important here is the categorization of specific patterns of community medical care needs, for the necessary form of technological integration will be determined in each case by such categorization. This represents a progressive application of inter-industry relations analysis techniques to medical care.

My last slide, Slide 11, deals with community medical care activities assessment and the administrative approach. The table shown here classifies some of the administrative results achieved under indicative community medical care planning centering on JMA under three headings: "development," "allocation,"

Slide 11 Community Medical Care Activities Assessment and the Administrative Approach

Development

(1) Establishment of Cancer Center
(2) Establishment of Blood Center
(3) Establishment of Life Science Institute
(4) Establishment of University of Industrial Medicine
(5) Suggestions to revamp medical and nursing education
(6) Establishment of lifelong education program for physicians
(7) Establishment of health education and mental health activities

Allocation

(1) Establishment of medical association hospital and clinical examination centers
(2) Establishment of emergency treatment centers and the system of providing for on-duty physicians at night emergency treatment centers
(3) Establishment of health promotion center
(4) Holding of national school health and school physician congresses
(5) Construction of old people's homes and old people's homes for those requiring special care
(6) Establishment of a system of circuit physicians for areas without physicians
(7) Pollution countermeasures

Social Insurance Economy

(1) System of payment according to amount of work done
(2) Abolishment of treatment restrictions
(3) Legislation of special tax measures
(4) Application of the elasticity clause in collection of insurance premiums
(5) The indirect indexation system and the new system of technological fee
(6) Adoption of different pharmaceutical price standards by category
(7) Automatic adoption device of newly developed technology
(8) Raising of the remunerative weight of point allocation for treatment at night and on Sundays and legal holidays

and "social insurance economy." Under the heading of "development," we have establishment of cancer centers, a blood center, a life science institute, a university of industrial medicine, a lifelong education program for physicians, organization for health education activities, and organization for mental health activities. Under the heading of "allocation," we have the establishment of medical association hospitals, clinical examination centers, night emergency care centers, health promotion centers, health education centers, old people's homes and old people's homes for those requiring special care as well as the holding of national school health and school physicians congresses. And under the third heading of "social insurance economy," we have the system of payment according to amount of work done, abolishment of treatment restrictions, legislation of special tax measures, application of the elasticity clause in collection of

insurance premiums, the indirect indexation system and the new system of technological fee, adoption of different pharmaceutical price standards by category, autmatic adoption device of newly developed technology, and raising of the weight of remunerative point allocation for treatment at night and on Sundays and legal holidays. These administrative results under the heading of "social insurance economy" have been achieved by emphasizing the close interrelationship with the development and allocation aspects of medical care resources, and it therefore seems to me that clues for the systematic development of medicoeconomics can be obtained from empirical research on the administrative results under this heading, and that is why I have chosen to report on the theme of indicative community medical care planning.

Comment on Prof. Tamura's Lecture (Abstract)

Dr. Shosaku NAKAYAMA*

Japan Medical Association, Japan

I will explain the composition of medical associations in Japan. There are three levels of medical associations in Japan: the Japan Medical Association, medical associations on the metropolitan and prefectural levels, and medical associations on the municipal and county levels, and most physicians belong to one of each.

There are various types of committees in the Japan Medical Association, performing various activities. The Japan Medical Association seldom gives orders to the prefectural or municipal medical associations, but it relays information and guides or leads the activities of medical associations.

In regard to community medicine, it has been directed that investigation committees on community medicine be formed in each area, and that they be made the parent bodies of community medical care activities. At present many of these are active in various regions.

Health education activities may be cited as an example of community medical care, and by explaining the organic flow of information and materials among the Japan Medical Association, the metropolitan and prefectural medical associations, and the municipal and county medical associations, I would like to assist in understanding Professor Tamura's lecture.

Next, I would like to investigate the meaning of medical association activities from the viewpoint of the economic activities of community medicine.

The doctor-patient relationship—which arises from such characteristics of medical care as its academic nature, its uncertainty, respect for life, the finiteness of life, the public nature of medical care and its individuality—gave rise to health insurance. And with the advent of health insurance, the physicians gained first-hand experience of economic contradictions, which proved a strong stimulus to their mind. By this incentive, physicians tend to be bureauratized or conversely commercialized, but in order to avoid this and in order for the energy caused by this stimulus to be guided in the right direction, it is necessary to have self-regulation of the "professional mind" by the consciences of the practioners of medicine as a livlihood and by community medical care activities, and this is made possible through the activities of medical associations.

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This is the internationalization and adjustment of a mixed economy in people's minds, and here I think that we might be able to find the possibility of success for a mixed economy structure.

An Approach to Medico-Economics

Prof. Shiro FUJINO*

Chuo University, Japan

I. Characteristics of Economics and Limitations of Economics

The behavior of human beings and of societies composed of groups of human beings is complex and multifarious, and it seems very difficult to discover definite laws in this behavior and to clarify and order the problems. Because the behavior of men and societies is so diverse, and because behavior at the individual level is influenced by so many factors, a unified explanation is a formidable task. Thus, it is unavoidably possible to establish several theories for the analysis of human and societal behavior, based on given hypotheses and given viewpoints according to one's objective. One group attempts to explain human behavior from the standpoint of Homo ludens, another group tries to analyze it from the angle of "sex" (Freudians), and still another approaches the subject from the principle of "struggle" (Marxists). Such methods of constructing theories, with "Man, the Game Player," "Man, the Sexual Being," or "Man, the Struggler" as the starting point, are widely known today.

If we limit our consideration of the problem to economic behavior, *Homo economicus*, who makes pertinent, willed decisions and behaves rationally, may be postulated as the atom of the system. This is the major premise in developing the academic discipline called economics. With regard to medicine and medical care, I want to use as the premise an Atom called *Homo medicus*. Accordingly, this *Homo medicus* is the center of behavior in the medical care system.

We should realize first of all that the ultimate aim of our development of natural science and social science is to maintain and improve the survival order of *Homo sapiens*. As I have said, however, in order to analyze concretely the behavior of *Homo Sapiens* and his social behavior in groups, we are forced to separate the basically inseparable, unified, and organic component factors into "Game-Playing Man," "Sexual Man," "Struggling Man," "Medical Man," "Politi-

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cal Man," etc. Incidentally, I think it is the task of life science to compensate for the demerits of carrying out research through the unavoidable separation of the inseparable components of *Homo sapiens* and to attempt to grasp the original whole.

Now, explaining human behavior by economic phenomena, which are a part of social phenomena, is economics, and we should recognize at the outset that the concept that Man is "Economic Man" plays an important role in perfecting economics as a highly advanced and accurate theoretical system. It is a fact that through this concept many complex economic phenomena have been explained with surprising clarity, and economics has come to have the most advanced theoretical system in the social sciences, offering powerful analytical tools. In economics, *Homo economicus* (household, consumer) who acts to maximize utility under given conditions and *Homo economicus* (enterprise, producer) who acts to maximize profits under given conditions, are posited as the Atom. This "Economic Man" can have no other behavioral standards. Thus, these "consumers" and "enterprises" are totally different from the economic entities normally spoken of as "consumers" and "enterprises." With regard to these holsehold economies and enterprises as "Economic Man," based on given premises, a subjective equilibrium of household economic activities and a subjective equilibrium of enterpreneurial activities are strictly derived theoretically, and further, based on thene subjective equilibria, a theory of market equilibrium in each divisional market is composed, and finally a general theory of equilibrium which includes all the markets is established.

Also in analyzing these market equilibria, theories which will correspond to the structure of the market are formed, and analyses are carried out in markets of perfect competition, monopolistic markets, and oligopolistic markets. One of the ultimate aims of these theories from the standpoint of normative economics is an analysis of market structures which will bring forward the optimum allocation of the resources, and it is made clear that it is a market with perfect competition. In this case the standard of optimum allocation of resources is the so-called paretian optimum standard. In the markets with non-perfect competition, such as a monopolistic market, the optimum allocation of resources by the Paretian optimum standard cannot be attained, and in this point there are problems in economics. (By the way, the economic standpoint has nothing to do with the antagonistic emotional feelings consumers usually have toward monopolistic or oligopolistic enterprises.)

This theory of optimum allocation of resources is of course a very important outcome of theoretical economics, but there are two important problems which it does not solve. One is the problem of fairness of allocation (income). Although the Paretian optimum is the optimizing rule of resource allocation under given conditions of income, it has nothing to say about the fairness of income. The theory of optimum allocation of resources cannot be a theory of optimum income allocation.

The second problem is in the field of so-called market failure. That is, even in a competitive market, public property exists, and when an external

economy (external diseconomy) acts on it, optimum allocation of resources cannot be attained. This speaks for itself if one recalls the hypothesis of Economic Man, which is the foundation of economics, Although the household and enterprises of *Homo economicus* carry appropriate and rational behaviors, the existence of public properties is beyond the realm of Economic Man. When we consider the case where the government offers public properties, the economic entity called government is different from the rational Economic Man who optimizes utility and profits. As for external economy, if an economic theory deals only with transactions which are accompanied by monetary exchange, (although they are not always limited to monetary exchange), one can imagine that the occurrence of benefits and disbenefits which do not entail monetary exchange might change the conclusion of resource allocation. In this kind of economic theory, equilibrium prices which have been attained through the market mechanism are the evaluation barometer of each property and service, and also it is assumed that properties and services can be evaluated in this sort of form.

However, as is already known, among the components of medical care activities there are many parts which cannot be debated within the framework of this kind of already existing economic theory.

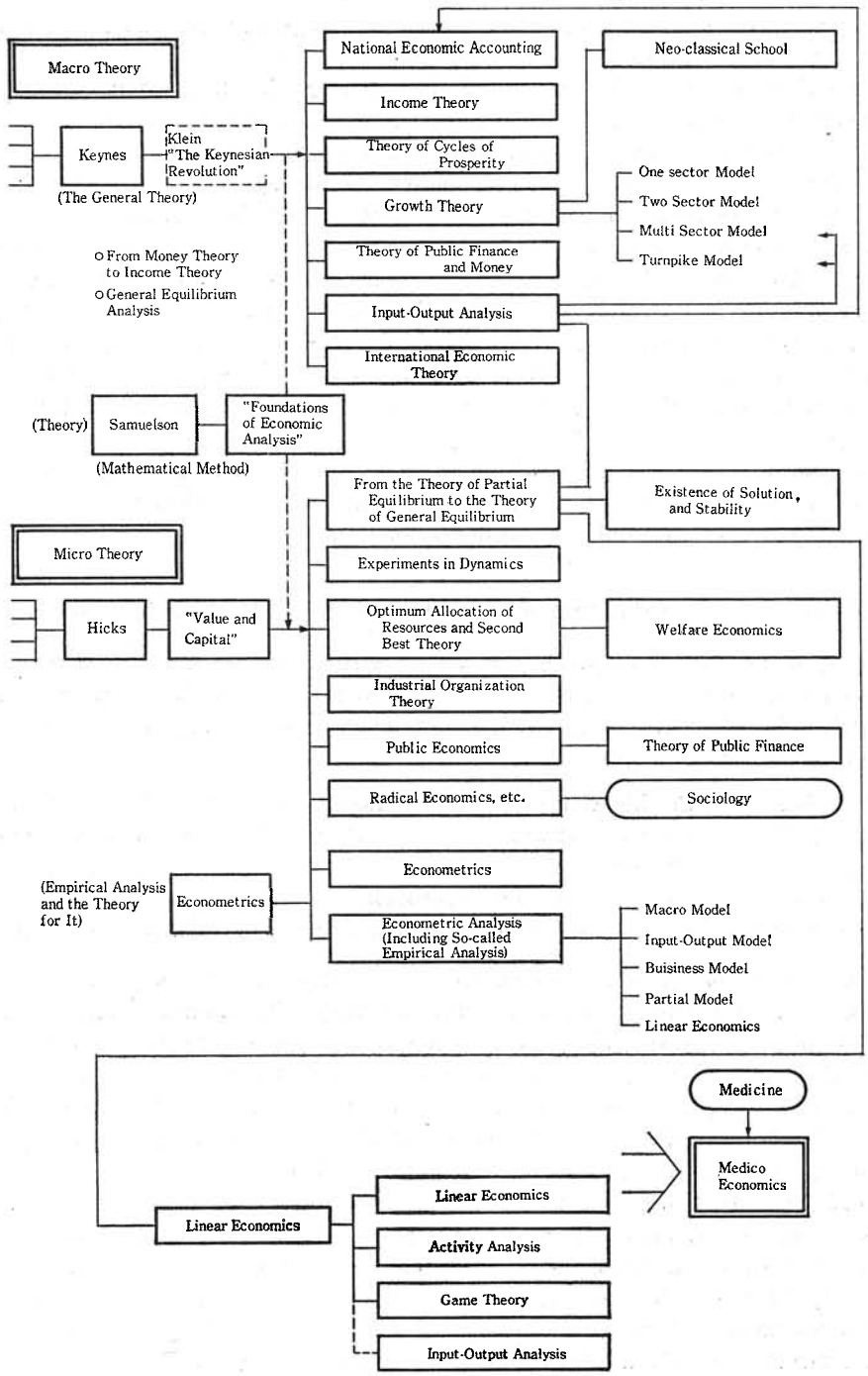
II. Genealogy of Economic Approaches to Medical Care Problems

The method of investigating medical care problems from the standpoint of economics belongs to relatively new experiments, and if we were to order methodologies chronologically, we could probably divide them into the following four periods:

First Period:	Clarification of the Economic Characteristics of Medical Care.
Second Period:	Approach Based on the "Efficiency Criteria" of an Economic Theory.
Third Period:	Public Economics Approach.
Fourth Period:	Beyond the Public Economics Approach to Medico-economics.

The first period is the one in which we tried, without taking into consideration the basic characteristics of medical care, to clarify what kind of characteristics medical care has and to make this the point of entry to the problems of medical care. During the second period, medical care was taken into the framework of economic theory, and we tried, by postulating doctors as *Homo economicus* (enterprises) and patients as *Homo economicus* (household), to develop an argument. During the third period, based on retrospection and recognition that medical care has strong characteristics of public property rather than private property, there was an attempt to make a searching inquiry into medical care problems within the framework of economics proper. Certainly, it is still necessary to give much consideration to this public economics approach, and I think we should carry on the analysis more clearly. What we have to pay most attention to is how to regulate the contents when we say medical care

CHART 1 Modern Economics and Medico Economics



is service with strong characteristics of public property. At least in economics, the fact that life is precious does not make it public property.

The fourth period, to tell the truth, has just begun with the last stage of the World Medical Assembly in October 1975. From now on, even if medical care problems are economic problems, and no matter how important economic problems are in medical care, not only economists but also the doctors themselves realize that the problems cannot be analyzed and taken care of by economists alone, but will require cooperative work of both economists and physicians. I will mention the reasons for this next.

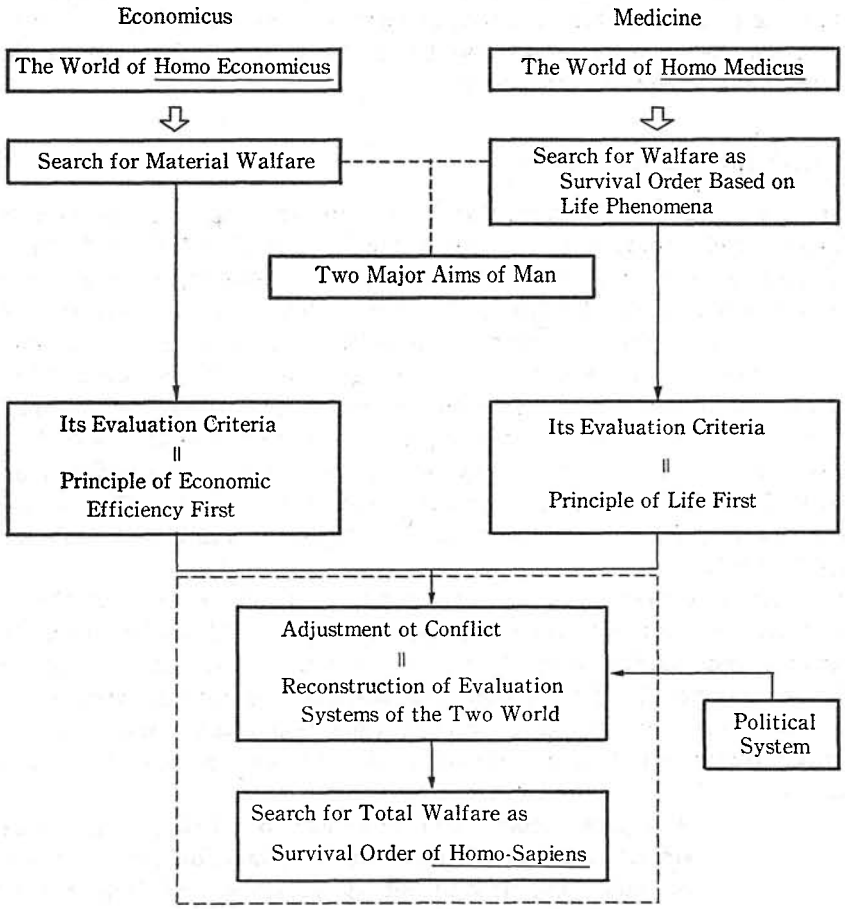
III. Need for Medico Economics

As I mentioned briefly in section I, the ultimate aim of all science is the maintenance and improvement of the survival order of "Man" and "Society," and although each field of science is limited in its content, especially medical care, which is the social adjustment of medicine, the economic medium becomes necessary to settle its problems. Incidentally, economics is in the world of Homo economicus, and medicine is in the world of *Homo medicus*. Although they are unavoidably abstract academic worlds, a true approach to a new problem cannot be attained by a mere collation of existing academic knowledge. As has been the case in the past, merely to bestow economic knowledge upon the problems of medical care will not permit any real analysis. Therefore, it is necessary to integrate the worlds of *Homo economicus* and *Homo medicus* into an organic whole.

Man can have many desires, but the two major basic aims of Man must be the increase of material welware, and the increase of welfare through the maintenance and improvement of life. If we regard these as the basic aims, even if abstract models of economics and medicine are set up, there should be a place where they are unified in practice (See next chart), and at that time, besides economics and medicine, we come to need the function of the political system.

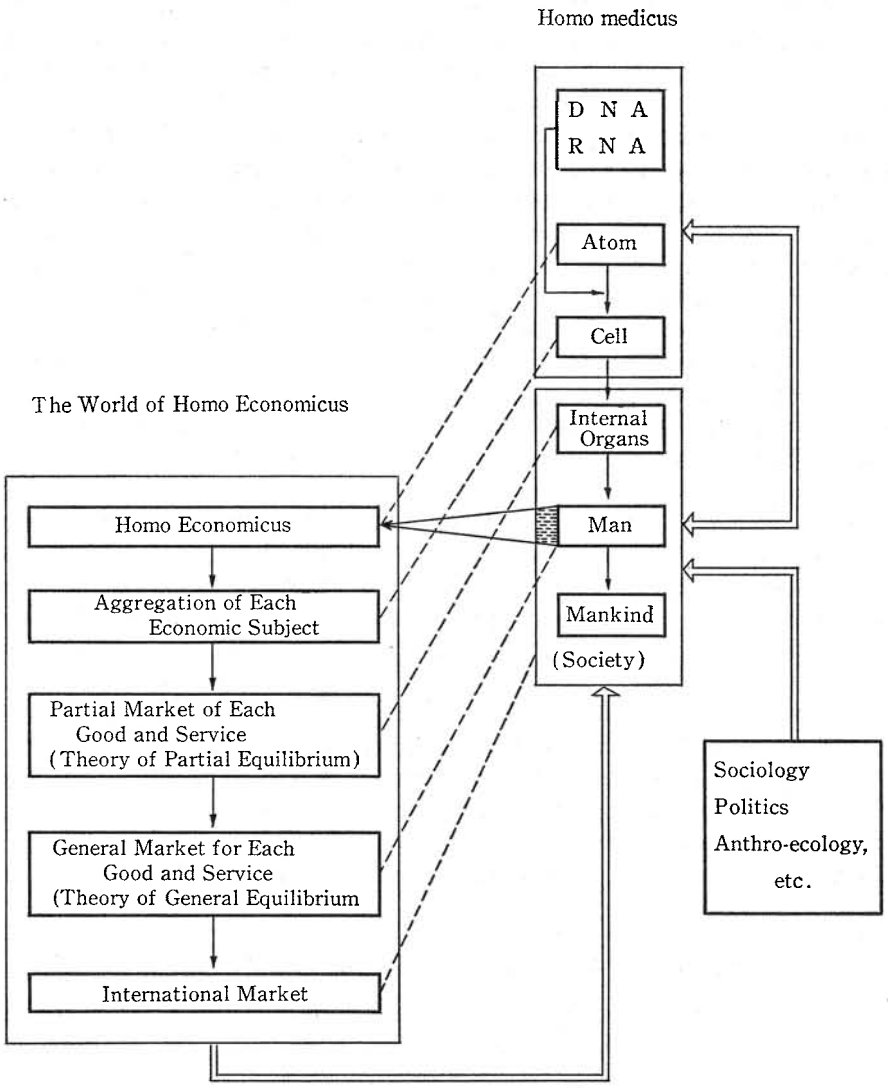
* At the stage of pure theory, it is necessary to investigate and organize such basically important items as whether "demand function" for medical care exists, and if it does not exist, how to set up a theory, and further, whether "supply function" for medical care exists, and if it does not exist, how to set up a theory.

CHART 2



Territory of Medico-Economics

CHART 3


Homo medicus
D N A
R N A
Atom
Cell
Internal Organs
Man
Mankind
(Society)
The World of Homo Economicus
Homo Economicus
Aggregation of Each Economic Subject
Partial Market of Each Good and Service (Theory of Partial Equilibrium)
General Market for Each Good and Service (Theory of General Equilibrium
International Market
Sociology
Politics
Anthro-ecology,
etc.

IV. Development and Allocation of Medical Care Resources —with particular emphasis on the importance of the concept of medical case resources—

We have to first understand that this concept of "medical care resources" aims at new concept formation in order to analyze the economic problems of medical care, as I mentioned in Section III. That is, "medical care resources" is a concept which becomes a starting point for a new field of medico-economics, which allows a combination of medicine and economics. This will be made clear by the following explanations.

There are human resources and meterial resources within medical care resources, and the recuperating power of human beings including potential and actual patients, should be numbered among them. Human resources in medical care are composed of many factors which cannot be evaluated in the market, which I have mentioned in Section I. Within human resources, there are already important problems of evaluations in the economic system and the medical system. Also, if we choose pharmaceuticals from material resources as an example, there are great problems of evaluation by the economic system during the production of pharmaceuticals, but their administering depends on the medical evaluation system. In this manner, the concept of medical care resources can surely suffice as a new concept when we point beyond public economics.

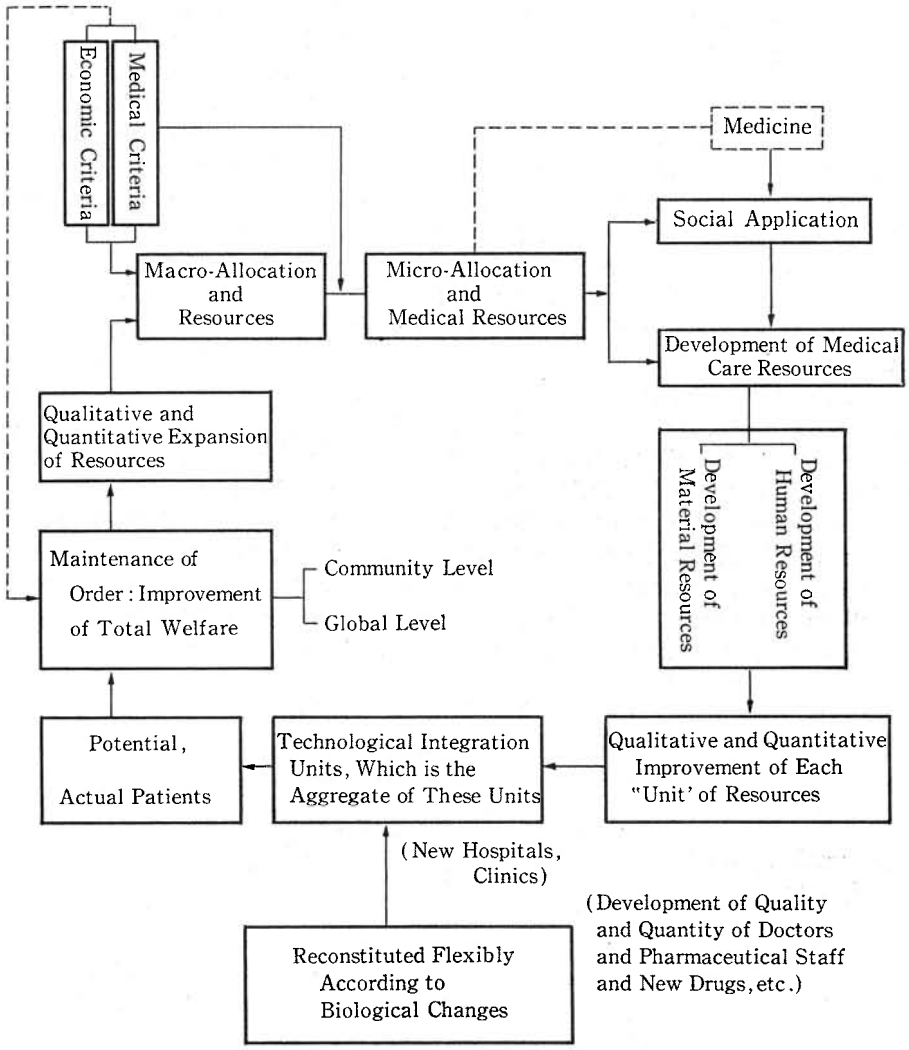
Again, if potential and actual patients did not possess recuperative power, medicine and medical care could not have come into existence, and also if these recuperative power could be increased, that would have to be considered a resource. With an economic approach alone, this kind of way of thinking cannot be established. Further, the reason why this should be considered to be a resource is the external effect which the patient and medical care have, and also in view of the so-called economics, there is only a want for medical care from the standpoint of the consumer, and not a need from the standpoint of biological needs problem of this adjustment can be a clue to a new concept and to a new analysis. Now, the next problem is how to understand "development and allocation" of this medical care resource, and here the positioning of technological integration units becomes a key point.

V. Positioning of Technological Integration Units

To consider the relationship between the development and allocation of medical care resources and the technological integration unit, please look at Chart 4. These concepts can relate the worlds of medicine and economics for the first time, and it is necessary to understand that these are basic concepts in medico economics.

The technologacal integration units should be positioned as main points in the dynamic feedback system of development and allocation of medical care resources, and through them total welfare from medical care can be directed.

CHART 4


Economic Criteria
Medical Criteria
Medicine
Social Application
Macro-Allocation and Resources
Micro-Allocation and Medical Resources
Development of Medical Care Resources
Qualitative and Quantitative Expansion of Resources
Development of Material Resources
Development of Human Resources
Maintenance of Order : Improvement of Total Welfare
Community Level
Global Level
Potential, Actual Patients
Technological Integration Units, Which is the Aggregate of These Units
Qualitative and Quantitative Improvement of Each "Unit' of Resources
(New Hospitals, Clinics)
(Development of Quality and Quantity of Doctors and Pharmaceutical Staff and New Drugs, etc.)
Reconstituted Flexibly According to Biological Changes

VI. Importance of the Political System

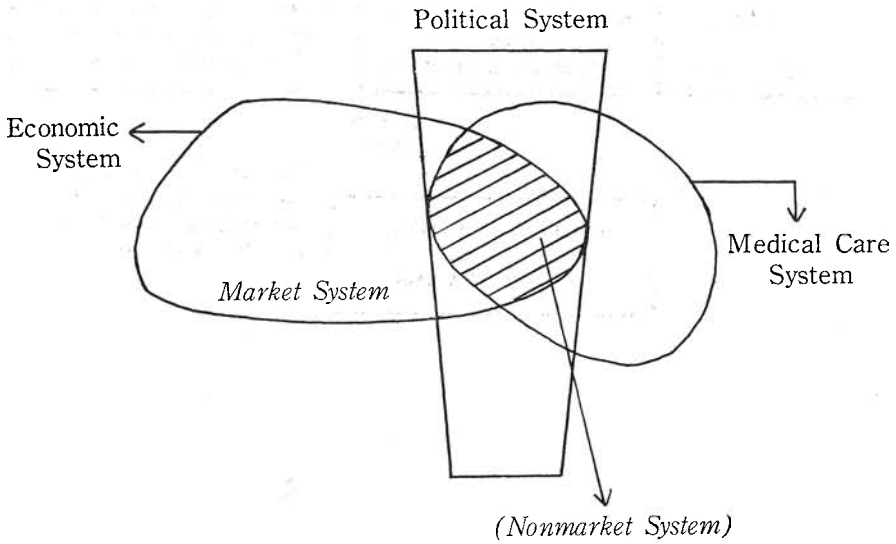
For the macro-allocation of medical care resources in Chart 4 in Section V, both economic criteria and medical criteria can be applied. According to the economic criteria, these resources will take a form competitive with various other aims, and through this competition economic efficiency will be pursued. On the other hand, in the medical criteria, allocation which will respond to social and medical needs will be required. This shows that the evaluation of benefit per yen cost in the world of economics is different from the evaluation of social benefit per yen cost in medicine and medical care, and the way of evaluation also differs. What is still important is that these two evaluations seldom match, but are more likely to be different, and not only do they differ, but there are even confrontations between the two. We can say that the economic and medical criteria are in a trade-off relationship.

However, since for the macro-allocation of medical care resources both economic and medical criteria are needed at the same time, a need to adjust the evaluation systems occurs. The differences in evaluations of marginal benefit should be adjusted.

This is the same thing as the fact that even if the problem of optimum allocation of resources and problems of fairness of allocation are considered to be problems of a different level, as mentioned in Section I, a theoretical and actual effort is made for their simultaneous accomplishment.

In my opinion, in order to adjust the differences in evaluation of marginal benefits and facilitate the feedback system between development and allocation of medical care resources shown in Chart 4, I think we need a political system as well as systems of medical care and economics. Here I think the political system, in a broad sense, includes politics, administration and laws.

CHART 5 Political System

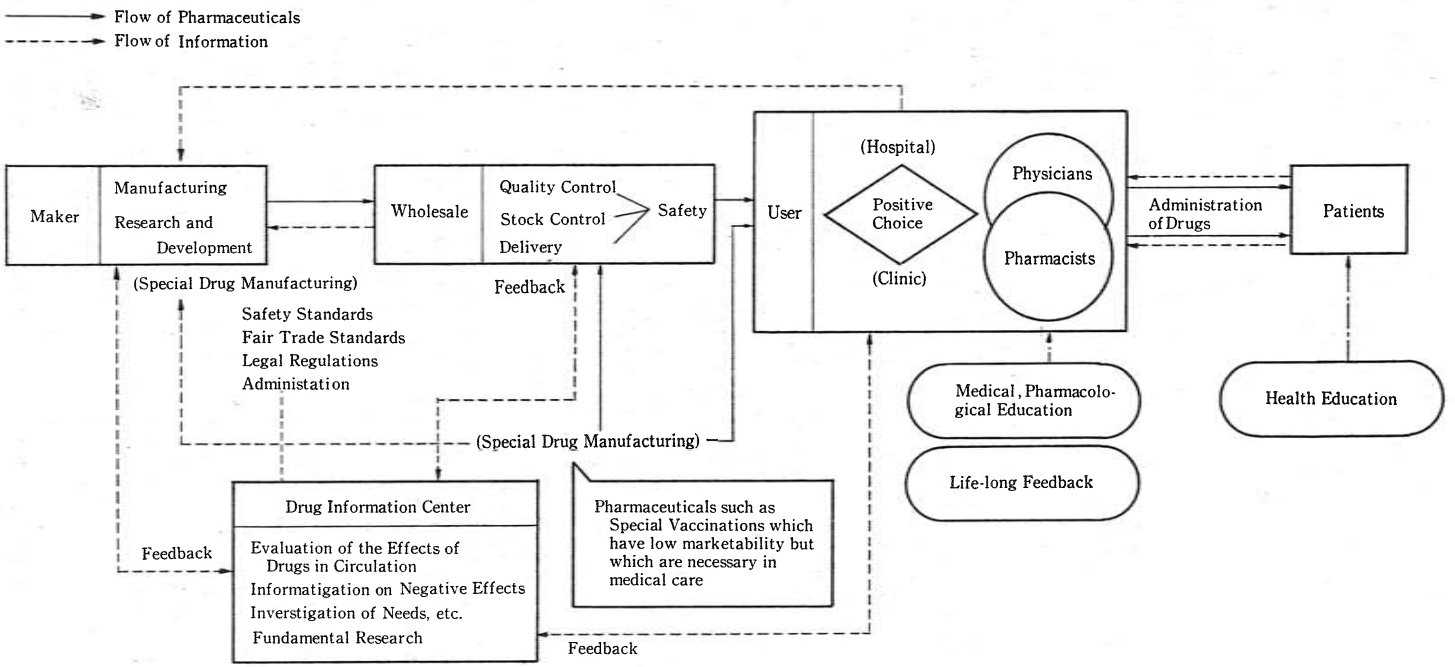


Now regarding the importance of this kind of evaluation adjusting system, let's take an example of medical care resources in pharmaceuticals. Pharmaceuticals, as a rule, are produced on a entrepreneurial basis by pharmaceutical companies, and as for wholesale trade, entrepreneurial activities are each carried out on commercial basis. I hardly need to point out here that there are some cases in which many regulations are required and enforced in both production and sales. This kind of regulation is not limited to pharmaceuticals, but the reason that voluntary and external regulations are strongly urged especially for pharmaceuticals is in order to utilize the special products called pharmaceuticals safely and at the same time effectively without damaging their merits on an entrepreneurial basis.

This is an inevitable result of thinking about satisfying the characteristics required for pharmaceuticals while also satisfying economic efficiency. Therefore we can say that there is a need for an evaluation-adjusting system which will satisfy both evaluation criteria, especially in the case of pharmaceuticals among the material resources. Adjustment between the two criteria is strongly required and the direction of that adjustment is being groped for. These two criteria are, in a sense, in a trade-off relationship, and when medical and pharmacological criteria are strongly demanded beyond the technical standards of today, there is a danger that economic criteria may not be satisfied, and there could be a case where it might not be possible for the pharmaceutical manufacturing techniques to satisfy the medical and pharmacological criteria. There is also a strong fear that if we depend on economic criteria alone, medical and pharmacological criteria might not be satisfied. If unlimited resources cannot be thrown into the pharmaceutical industry in order to satisfy the medical and pharmacological criteria, it is difficult to say to what degree both of the criteria should be satisfied under the present technological standards. This kind of difficulty with pharmaceuticals is not doubt reflected on the side of pharmaceutical manufacturing the background of which is research and development; and on the side of physicians who choose the pharmaceuticals and actually administer them to their patients, and naturally it is reflected on the side of distribution which is supposed to connect these two smoothly.

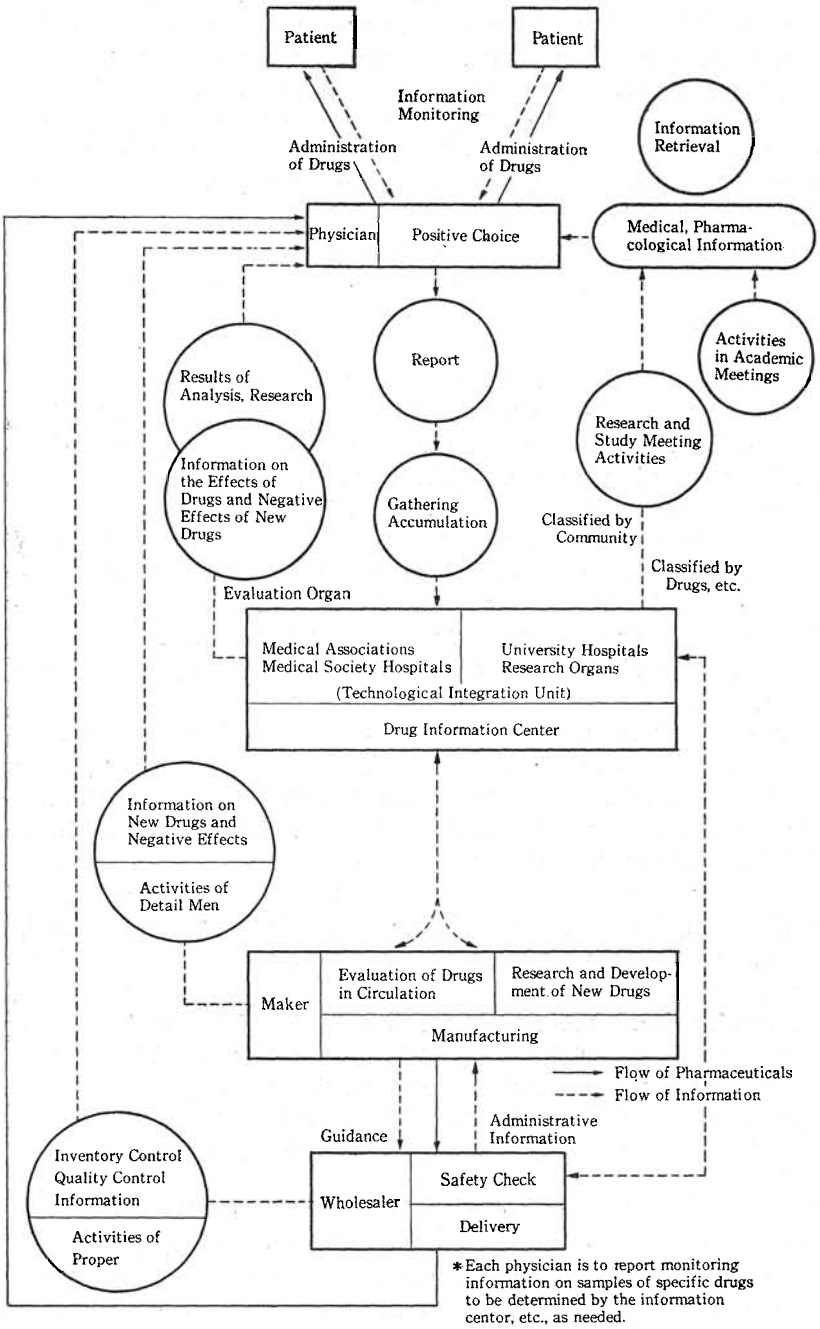
At present the flow of pharmaceutical goods is from the market through a wholesaler to the user, who administers them to patients. Even if the flow is accompanied by a little bit of information on the products, the flow of goods can generally be called a one-way street situation in which the users have no positive choice. On the contrary, there is even unfair trade in pharmaceuticals among wholesalers and users. They ignore the characteristics of the pharmaceuticals, fail to reflect on the loss of safety, and treat the pharmaceuticals merely as "goods." This is not only a problem with wholesalers; it is inseparable from the way the pharmaceutical industry in Japan is set up, and is reflected in the wholesale industry. This causes many problems in encounters with physicians. It can be said that far from allowing a positive choice to physicians, a situation has arisen which does not even guarantee the health of the citizen. In this regard, if we were to set up an ideal system of pharmaceuti-

CHART 6 Physician's Positive Choice and Information Feedback



From the Supplementary Report by the Committee for Long-Term Integrated Measures on Pharmaceuticals
—"Various Problems of the Flow of Pharmaceuticals"—

CHART 7 Participation in Positive Choice



From the Supplementary Report by Long-term Measures Committee on Drugs--"Various Problems of the Distribution of Pharmaceuticals"—

cals and illustrate it, it would look like Chart 6, which implies not only the aforementioned one-way flow of goods, but also positive choice on the part of physicians (Chart 7). Also, naturally, information on the pharmaceuticals does not only flow unilaterally from maker to user, but there should always be a feedback of information from user to maker. Then as an evaluation organ to facilitate the feedback, the idea of an information center for pharmaceuticals will come to be needed. Additionally, legal regulations, such as safety standards and fair trade standards which will make use of the center's evaluations in administration and which will regulate both the makers and the wholesalers, will be needed in addition to industry self-regulation.

VII. Conclusion

Two Major Characteristics of Medical Care Before the War

It was not so long ago that the problem of medical care came to be regarded as important from the economic viewpoint. Probably several reasons why it has become an important topic could be listed, but it seems that universal insurance and insurance financing were the original causes. Before universal insurance, or, it should be reiterated, before World War II, medical care could be said to consist mainly of so-called voluntary consultations, in which compensation for medical care was left to the unrestricted discretion of the doctors who offered medical care. This can be considered to mean that (1) generally speaking, evaluation of medical care against social benefit was done by the physician, and his evaluation was accepted as a social evaluation. It can be thought that either there was no social conflict in general against the evaluation of thebenefit of medical care, or that even if there was some conflict, there must have been an adjustment. It can be said further that (2) the physicians had a reallocation function of private income. For example, a case which is often quoted is that patients paid the doctors twice a year, and the doctor asked larger payments from wealthy patients and smaller payments from poor patients.

These two major characteristics of the prewar voluntary consultation system in Japan—namely that there existed no conflict in the social evaluation of medical care and that doctors possessed the function of re-allocation of private income—could be established on the foundation of full knowledge on the side of physicians and on patients' confidence in the physicians. Of course, various social factors and the technological standards in the medical care-related industries, such as the standards of medical care equipment and pharmaceuticals, were no doubt related to the establishment of such characteristics.

Rapid Postwar Changes in the Medical Care Environment

Now it seems that through the period of high economic growth after the war this kind of stable system has disappeared and the systems which surround medical care are in confusion. This can be thought of as a compensation in the process of transfer to a new system, but (1) as is well known, the industrial society in Japan has changed rapidly, and with it various social structures have

changed in haste, and people's standard of living, life styles and attitudes toward life have changed surprisingly quickly and have been diversified. (2) On the other hand, keeping step with the accelerated introduction of multifarious quantitative technological improvements in our country as a whole, we have experienced improvements in the material resource as medical care techniques, medical care equipment, and pharmaceuticals which could hardly have been expected right after the war.

In this kind of rapidly changing environment of medical care the universal insurance system was adopted and high-level medical care was rapidly extended to the citizenry. Naturally, along with this, the problems of insurance financing aroused people's interest. At this stage the pre-war social equilibrium with regard to the benefits of medical care and the physicians' function of re-allocation of private income had already simply collapsed, and social conflicts began to arise in regard to the evaluation of the social benefits of medicine. Also, intertwined with the problems of insurance financing, the analysis of medical care problems from the economic standpoint came to be regarded as important.

However, if we think it over carefully, there is no reason why the importance of economic aspects of medical care problems should be considered from the viewpoint of insurance financing alone. With the advancement of medical care techniques and medical care industries to their present high level, the securing and development of resources to respond to the needs of the citizenry has become an important economic problem in itself. When we consider medical care on a national basis in the future, we must say that the latter problem is truly an important subject.

This subject has importance in an economic approach to medical care, but the economic approach to the problems of medical care may be divided into four periods, genealogically speaking. The first period was the period in which efforts were taken to clarify the economic characteristics of medical care. During the second period, based on the first, analysis based on the "efficiency criteria" of economic theory was made, and this can said to have been a problem of efficient allocation of resources. Then, the third period was an experiment in the public economics approach, aiming at the characteristics of medical care as public goods (services). Further, the fourth period is based on the results of the scientific meeting of the World Medical Assembly held in Tokyo last year, and is very recent. This is the period of an economic approach beyond the public economics approach, and is a science-oriented period called medico economic.

The Aims of Medico Economics

I would like to present here my thoughts as to why the establishment of an academic system called medico-economics is required.

Economics is basically the world of *Homo economicus,* who behaves only pertinently and rationally. In that world material welfare is pursued, and therefore economic efficiency comes first as an evaluation criterion. On the other hand, the world of medicine and medical care is the world of *Homo medicus,*

who thinks of life first. In his world, welfare in terms of the survival of Man in a balanced environment is pursued, and life is given first priority among the evaluation criteria. Naturally conflict arises between the evaluation criteria of the economic world and of the world of medicine. Further, in the world of Homo medicus, economic problems are inextricably intertwined with the accomplishment of aims. That is, for the allocation and development of medical care resources, economic factors and medical factors have an important relationship independent from the aspect of insurance financing. Therefore, reconstitution of the evaluation system to adjust the conflicts of evaluations in the two worlds becomes an important task. When this aim is attained, the path for the pursuit of total welfare in terms of the survival order of *Homo sapiens* will be open for the first time.

The ultimate target of all the sciences is the maintenance and improvement of the survival order of Man and his society, and each sciences can only possess its own limited contents. This will inevitably make us hypothesize an abstract world in order to develop our learning. However, a true approach to a new problem is impossible by mere gathering of already available academic knowledge.

Man may have many desires, but the two major basic aims of Man must be the increase of material welfare and the increase of welfare by the maintenance and improvement of life. If these are considered to be basic targets, economics and medicine will establish abstract models, and even if the characters of these models differ, they should be unified in practice. At that time, the political system, which includes laws, administration and politics in a broad sense, will take an important role in the world of economics and medicine.

Following this line of reasoning, there is a need for a fundamental reconstitution of our present-day medical care, insurance system, and social welfare. By settling these questions we should be able to set a course for a stable system of medical care which can truly contribute to the health of the people.

Comment on Prof. Fujino's Lecture (Abstract)

(Community Medical Care Planning and Problems in Oita City —From the Standpoint of Medicoeconomics)

Dr. Akira KIKKAWA*

Oita Municipal Medical Association, Japan

As we can find important reflections upon the direction of development of medicine and the direction of development of physics up to today, I think we are now in a period of great retrospection also in the field of economics. We should go back to the starting point and consider how each of the fields should stand based on human-centered welfare. In this sense the word "medico-economics" is meaningful.

Economics, which is appropriate for the existence of human beings who have been living dynamically, with the foundation on ecology in which human beings have lived keeping company with nature, should find a new viewpoint in the existence of human beings and welfare.

Our community medical care planning in Oita, from the accumulation of theories and practices, carried out the construction of Almaida Memorial Hospital, the inauguration of a community health committee, and the establishment of a health promotion center, and is attempting self-reform of doctors and to approach comprehensive medical care, and we would like to have by all means, a theory of welfare economics with academic, logical, and objective background, for example by setting up things such as community medical care need function according to the multidimentional evaluation, so that development and allocation of medical care resources for the community can be carried out practically. There is a limitation on the circulation of goods related to medical care at our stage of effort.

I think we should reform our duties in providing medical care with experimental facts as indicators during the process in which we practice logic, and it, in turn, is feedback to logic.

I think that an armchair theory will be useless as long as it is only a theory, and that it is desirable that the theory will be constructed in company with practice.

There are important problems with regard to indefinite factors (for example, democracy and speciality), but I think we can approach correct public participation if we develop in the community the resource of human confidence backed

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by objective logic and actual proof.

I think that the linking of the development of welfare to the development of the economy is the ideal form of human-centered economics.

Discussion on Lectures by Prof. Tamura and Prof. Fujino
(Abstract)

Dr. KOO: The scope of economics is very much limited, and the word "interdisciplinary" or "integration" is always used. However, in many cases, if integration is actually carried out, the results tend to be sloppy and weak. Throwing various items into one in a blending manner is useless. Concrete actions are required, and I think strong measures are necessary.

Dr. Tatsuro TAJIMA (Member of Committee on Medicoeconomics, JMA) : I am wondering how to interpret part of Chart 5 of Professor Fujino's resume ....

Prof. FUJINO: There is a misprint in it, and this leaves the problem that an adjustment system cannot cover the whole entity.

Dr. Koo has given me a very good suggestion. I would like to mention that from our viewpoint a concrete direction has been given to the problem of pharmaceuticals, one of the more important medical care resources.

Dr. Hirokata IWAI (Member of the Social Insurance Study Committee, JMA) : It is easy for us to understand medicoeconomics on a national or global basis, but as a practical problems isn't it difficult to understand on an international basis due to problems such as natural environments, natural features, demographic structures, and the quality of medical care?

Isn't is necessary to establish a special system for medical care resources internationally?

Prof. FUJINO: Thinking of something like a non-market system, I would like to somehow set up a system with this as a first step.

At present there is no such adjusting system or integrating system on a world level.

I think that problems such as discrimination or gaps can be analyzed in a system such as a non-market system, but there is no integrating or adjusting system on a world level. The United Nations or WHO should accomplish such an adjusting function, but in actuality this is not working very well. If the way of thinking of the World Medical Assembly penetrates the world, perhaps this can be an adjusting system in this sense.

The Economics of Health Care Financing with Particular Reference to Korea

Dr. Chong Kee PARK*

Korea Development Institute, Korea

I. Introduction

Man has always been troubled by the threat of disease and sickness. While the achievements of modern medicine have been remarkable in virtually eliminating many diseases that were once considered killers, there is still a wide gap between the potentials of the health care system and the health care actually available to needy people. Access to quality health care is limited in many countries. Conventional medical care systems benefit only a small group of privileged individuals in most developing countries. Health improvement is thus a universal goal, and is emerging as a major national issue in many countries throughout the world.

Health is a strategic element of socio-economic development policy in Korea. For the first time, Korea is now actively engaged in the major health sector planning aimed at improving the organization, delivery, and financing of health care. The government has already indicated that the forthcoming Fourth Five-Year Plan (1977–1981) will give increasing priority to development in the health sector. A new national health planning strategy is incorporated in the creation of National Health Council, National Health Secretariat and Korea Health Development Institute. The ultimate objective of sector planning efforts is to provide access to adequate health care to the entire population, regardless of income, age, or place of residence. Related objectives include the provision of good quality medical care, and supplying health services with reasonable efficiency.

Improvement of health is not solely the responsibility of public health officials but is brought about by all elements that contribute to socio-economic development. Public concern for the health of the young, the adult and the

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elderly is, of course, nothing new. What is new is the extent of the awareness that public health is one of the important dimensions of national development and that its improvement requires a concurrent raising of living standards through concerted action in all areas of development. One of the aspects of the economics of health services thus deals with the role such services play in the process of national socio-economic development.

Another aspect of health economics deals with the question of resource allocation. There is a growing disparity in the distribution of health resources not only between countries but also within countries. In a world of scarce resources and competing claims on resources, choices have to be made with regard to the amount and distribution of health services. The economist is particularly interested in this matter because the business of economics is to help rationalize the decision-making process so that a society may best satisfy its objectives given available resources. And today's health care in most countries presents mounting problems of resource allocation. In countries where money, manpower, and skills are lacking, it is particularly important that health resources be used to maximum social and economic advantage. Simply providing more resources for health care development does not necessarily ensure the desired results. Interest has usually been focused on the effects of rising health expenditures on governments, consumers, and society as a whole. The cost of health care has been soaring and the dramatic increase in costs has placed such care beyond the reach of many individuals in many countries.

There is also world-wide concern with the problem of broadening access to health care, especially for rural residents and disadvantaged groups in urban areas. In order to make health care more readily available to needy persons, financial barriers must be reduced. The financial burden of health care is both unforeseeable and potentially disastrous to individuals, and should therefore be eased by spreading it over the population as a whole. Social Insurance through pooling resources and spreading the risks would provide the covered persons with the necessary purchasing power to avail themselves of adequate health care. A typical health insurance system provides medical and maternity care either through personnel and facilities directly managed by the system, or through purchase of services under contract from already existing personnel and facilities.

This paper examines the organization of health care within the framework of the social security system. While there are many aspects of health care programs under social security, such as the organization of health services and the methods by which health care is supplied, the present paper is primarily concerned with the question of sources and methods of financing. The discussion will be focused on Korea, but frequent references will be made to the different financing mechanisms in other countries and to the ways these countries allocate resources in meeting the health needs of the population. This paper is divided into four sections. Following this introductory remarks, Section II describes the magnitude of national health expenditures of Korea in comparison with those of Japan and the United States. In Section III the

general background on the organization of health care system is presented, with a review of the different types of health services available in Korea. Section IV discusses the role of social security system in financing health care in Korea. The advantages and disadvantages of the conventional fee-for-service system as against prepaid group plans are also examined.

II. Health Expenditures

Korea's modernization program has achieved a remarkable progress in improving the nation's economy during the course of implementing three successive five-year plans. Real GNP grew at an annual rate of over 9 percent during this period. As in many other developing countries, however, the development of social programs has lagged behind economic development. The remarkable success in economic development achieved during the past decade now permits greater attention to be given to the development of social programs. There has recently emerged a strong conviction that economic development cannot be regarded as satisfactory if the rising output and income which it generates is not widely shared by all segments of the population. A more equitable distribution of opportunities and income has thus become a more prominent objective of socio-economic policy in Korea. The government has already indicated that the Fourth Five-Year Plan (1977–81) will give increasing priority to development in the social sector, especially health services.

Korea spent an estimated W 191.6 billion (or $395 million) for health services in 1974. This amount represented an annual increase of W 60.8 billion or 46 percent over 1973. The growing national commitment to health is evidenced

Table 1 International Comparison of National Health Expenditures: Korea, Japan and U.S.

	Korea (1974)	Japan (1973)	U.S. (1974)
National Health Expenditures (in billions)	W 191.6	¥ 3,949.6	$104.2
Health Expenditures/GNP Ratio	2.83%	3.56%	7.46%
Per Capita Health Expenditures	W 5,726 ($14)	¥36,544 ($130)	$492
GNP (in billions)	W 6,779	¥111,034	$1,397
Population (in thousands)	33,459	108,079	211,909

Sources: Nancy L. Worthington, "National Health Expenditures, 1929-74," *Social Security Bulletin*, February 1975; Secretariat of the Social Security Advisory Council, Prime Minister's Office, *Statistical Yearbook of Social Security*, 1975, Tokyo; and Chong Kee Park and In Chul Noh, *Estimated National Health Expenditures of Korea, 1970-1974*, Seoul: Korea Development Institute, 1976. (In Korean.)

by the fact that health expenditures increased faster than the gross national product even in a period of rapid economic growth. The amount spent for health purposes in 1974 equaled 2.8 percent of the nation's output of goods and services, compared with 2.5 percent in 1970[1]. National health expenditures, as defined here, include payments to hospitals, physicians and other health professionals, costs of drugs, medical research, health facilities and other appliances. Given that part of the above-mentioned national health expenditure of W 191.6 billion was made for public health and family planning, the amount left for provision of medical care was much less.

Table 1 compares the national health expenditures of Korea, Japan and the United States. The expenditure is related to both population and gross national product. The average per capita health expenditure in Korea is only $14, compared with $130 in Japan and $490 in the United States. The percentage of GNP devoted to health services varies from 2.8 percent in Korea and 3.6 percent in Japan to 7.5 percent in the United States. Though not shown in the table, Canada also spends 7 percent of her GNP on health and Great Britain about 5 percent. Thus, broadly, it can be said that the proportion of national income devoted to health services varies somewhat positively with per capita income.

It must also be noted that the proportion of national income devoted to health services varies negatively with the indicators of health. An earlier study showed that the "healthiest" countries (judged in terms of mortality) spent most on health services rather than those that seemed in greatest need of high expenditure[2]. In other words, health needs do not determine health expenditure. The health expenditure of a country is largely influenced by its history, the level of education, the standard of medical practices, and the system of financing. It is also influenced by the political, economic, and social structure of the country and by cultural factors such as the value placed on human life and the fear of death.

Of all the money Korea spent on health (W 191.6 billion) in 1974, over 87 percent or W 168 billion consisted of consumer expenditures. The remainder is accounted for by central and local governments as well as philanthropic and international organizations. To put the consumer expenditures on health into proper perspective with other consumer activities we might note that in 1974:[3]

for every W 100 spent on food, only W 6 was spent on health care;
for every W 100 spent for clothing, W 31 was spent on health care;
for every W 100 spent on personal care, W 67 was spent on health care;
for every W 100 spent for cigarettes, W 76 was spent on health care.

Thus, Korea's consumers allocate relatively greater proportions of their

1) Chong Kee Park and In Chul Noh, *Estimated National Health Expenditures of Korea, 1970-1974,* Seoul: Korea Development Institute, 1976. (In Korean.)
2) Brian Abel-Smith, *An International Study of Health Expenditure,* Public Health Papers No. 32, Geneva: World Health Organization, 1967.
3) Economic Planning Board, *Annual Report on The Family Income and Expenditure Survey, 1974,* Seoul: September 1975.

consumption expenditures for clothing, personal care, and cigarettes, and smaller proportions of income on health care. In other words, consumers assign much higher priorities to such consumer activities as smoking, personal care and clothing than to health care. The above data relating to patterns of consumer behavior in Korea appear to refute the proposition that health is a goal to be desired above all else. In terms of consumer satisfaction, good health is set aside in favor of the pleasure to be derived from other objects of expenditure.

It is interesting to consider what health care items Korean consumers purchased in 1974. As shown in Table 2 below, drugs and drug sundries made up the largest part of the consumers' health bill. Over 62 percent of all health expenditures were for drugs. Nearly 30 percent of expenditures were for physicians' services. Consumers allocated only 8 percent of total health care expenditures for hospital care. These findings reflect the current Korean health care delivery system. In Korea a significant amount of treatment for acute illness in provided by nonphysicians such as pharmacists, herbalists, acupuncturists, and even shamans. It is estimated that in 1974 68 percent of all acute illness visits were to pharmacists or herbalists.[1)]

Table 2 Distribution of Urban Household Health Care Expenditures, by Type of Expenditure, 1974

Type of Expenditure	Percent Distribution
Drugs	62.5%
Physicians' Services	29.2
Hospital Care	7.8
X-ray	0.5
Total	100.0%

Source: Economic Planning Board, *Annual Report on the Family Income and Expenditure Survey, 1974,* Seoul: September 1975. p. 116.

III. Organization of Health Care System

The pattern of health care delivery in any country is a result of complex historical developments in which socio-economic forces at different times generate new programs to meet specific needs. These needs arise in relation to particular population groups, particular diseases, particular services, or particular regions of the country. The development of the health care organization in Korea also reflects the complex social, economic, and political environment of the country. The current health care system in Korea is more a collection of bits and pieces (with overlaps, neglected areas, and wasted effort), rather than an integrated system in which needs and the allocation of resources are closely coordinated.

1) Economic Planning Board, *Preliminary Outline of the Fourth Five-Year Economic Development Plan,* Seoul: April 26, 1976, p. 206.

Table 3 Hospitals and Hospital Beds in Korea, 1973

Hospitals and Beds	Number	Percent Distribution
Hospitals, Total	6,171	100.0%
Public	62	0.1
Private	6,109	99.9
(Clinics only)	(5,994)	(97.1)
Hospital Beds, Total	40,719	100.0%
Public	11,005	27.0
Private	29,714	73.0
(Clinics only)	(18,280)	(44.9)
Hospital Beds Per 10,000 Population		
Korea	12.2	
Japan*	103.5	
United States**	74.4	

Sources: Bureau of Medical Affairs, Ministry of Health and Social Affairs.
* Ministry of Health and Welfare, *Kosei Hakusho* (White Paper on Welfare), Tokyo: November 1974, p. 220.
** U.S. Bureau of the Census, *Statistical Abstract of the United States: 1974,* Washington, D.C., 1974, p. 77. The figure refers to 1972.

The organization of health care delivery is noticeably underdeveloped in Korea. A study based on a 1972 survey estimates that the prevalence rate of all diseases in the population was 26 percent and that only a quarter of the cases were treated by doctors or clinics[1] The predominant pattern of primary care by physicians is a sole, fee-for-service practice in urban areas. Group practice is almost non-existent. Medical school education in Korea tends to emphasize a higher degree of specialization, thus limiting the number of physicians available for primary care. The bulk of health services are supplied through the mechanism of the free market. The expansion of the health care delivery capacity in the past has relied almost entirely on increasing hospital beds in the private sector. The private sector absorbs a substantial portion of Korea's health resources—hospital facilities and health manpower.

As shown in Table 3, private hospital beds represented 73 percent of all hospital beds available in the nation in 1973. Private sector health services are operated within a competitive market system with an eye for profit and are largely confined to the major urban centers, where medical services are sold almost exclusively to the middle- and upper-income class who can afford to pay for them. It is estimated that almost 83 percent of physicians and 87 percent of the medical facilities are concentrated in urban areas. In comparison, only 48 percent of the nation's population reside in urban areas. (Table 4) The poor segment of the population has little in the way of health care available

1) Jung Huh, *et al. A Study on Medical Care Expenditures,* Seoul: The Ministry of Health and Social Affairs, 1972.

Table 4 Urban/Rural Distribution of Hospital Beds and Physicians in Korea, 1975

Beds and Physicians	Number	Percent of Total
Hospital Beds, Total	47,582	100.0%
Urban	41,260	86.7
Rural	6,322	13.3
Physicians, Total	11,519	100.0
Urban	9,537	82.8
Rural	1,982	17.2
Population, Total (,000)	34,708	100.0
Urban	16,794	48.4
Rural	17,914	51.6

Source: Economic Planning Board, *Preliminary Outline of the Fourth Five-Year Economic Development Plan,* Seoul: April 26, 1976, p. 207.

to them, except on a public assistance basis in general hospitals run by the city governments. Even there, the opportunities for free treatment are extremely limited. Such hospitals are often inadequate because of insufficient financing, and the quality of medical services provided is far from satisfactory.

Public hospitals (city or provincial) are supposed to care mainly for persons who cannot afford to pay for their hospitalization. However, only small proportion of their beds are estimated to be occupied by non-paying patients. This is due to the fact that because of insufficient financial support from the government most public hospitals have to cover a large part of the cost of their operation by admitting paying patients. The tendency in recent years is for the proportion of paying patients to increase. In spite of their scarcity, hospital beds are underutilized for the nation as a whole. In 1974 the bed occupancy in hospitals was only 58 percent. There are several factors contriouting to the underutilization of hospital facilities. Major ones are the inadequate appropriation of money by the government and the lack of purchasing power on the part of the population. In other words, the needs of medical care of the population cannot be translated into effective demand.

Public sector health services in Korea include health care schemes at a number of levels. The Ministry of Health and Social Affairs, which is responsible for broad health policy coordination, is engaged in a wide range of activities including supervision and extension of services for the prevention and treatment of diseases and the control of environmental sanitation. It also has responsibilities for licensing of all health practitioners, supervising the manufacture and distribution of drugs, and approval of hospitals and clinics. The Ministry of Home Affairs, on the other hand, is responsible for financing and operating through local governments a network of provincial and municipal hospitals and health centers throughout the nation. Hence, while the Ministry of Health and Social Affairs is responsible for broad technical supervision, the Ministry

of Home Affairs has responsibility for budgeting and operating a geographic network of health facilities through provincial and other local governments. Fragmentation of responsibilities and authority among ministries has resulted in inefficiency and waste in the management of health services in Korea.

The problem of health care in Korea is far more complicated than simply providing more hospitals and physicians. It is true that increased numbers of hospitals and health manpower will be needed over time. However, substantial changes will also have to take place in the organization, delivery and financing of health care. The present organization structure of the health care delivery system in Korea is considered inefficient and inequitable. The organization of health care has not kept pace with advances in medical technology or with the changing needs of the society. Our goal in health is thus to narrow the gap between the potentialities of modern medical science and the availability of health services by facilitating access to adequate medical care for all Koreans, regardless of their economic and social status.

To attain these objectives with maximum efficiency, Korea has recently introduced an innovative approach which represents an excellent strategy. The establishment of National Health Council with leadership from Economic Planning Board and other relevant ministries should afford an effective forum for policy coordination, planning, resource allocation decisions, and implementation for the health sector. The National Health Secretariat will provide inputs and resources to the Council for sound planning and operation. This group with the participation of economists, planners and other social scientists is the key to effective sector-wide planning and evaluation. The Korea Health Development Institute should afford a means of developing and testing alternative models of health care delivery system.

IV. Sources and Methods of Financing Health Care

Health services are paid for in a variety of ways. The funds are derived from various sources, and they are paid to providers of services by different mechanisms. Personal health services are usually financed in a number of ways, each of which has different policy implications. These methods are: 1) direct purchase by consumers, 2) the donation of money or goods by charitable organizations, 3) commercial insurance, 4) industrial support, 5) social insurance, and 6) general revenue support from government taxes.

The distribution of health service expenditures among the various sources has important policy implications for national health planning. If the funds are derived from among many sources, there also tends to be a wide dispersion of responsibilities and authority, hence unified planning of health services for the total population is difficult. If there is a heavy concentration of expenditures in one or two sources, it is much easier to achieve comprehensive national health planning.

In many countries most of these methods of financing are used, but in

different combinations and proportions. There is, however, a worldwide trend toward the first three methods (consumer purchase, charity, and commercial insurance) to assume less importance, and for the last three methods (industrial support, social insurance, and general revenues) to assume greater importance.[1] This trend underscores the rising recognition of social responsibility for improving health services. Social insurance and private insurance tend to play a much more important role in the advanced than in the developing countries. In West Germany, for instance, over 90 percent of the population are registered in local sickness insurance funds which are regulated by both national and provincial laws.[2] In Japan almost all nationals are covered by separate public health insurance programs.[3] Private health insurance, however, plays the largest role in the United States where persons covered for hospital benefits amount to 77 percent of the population and up to 80 percent of those under 65 years of age.[4] General government revenues are the major source of supporting public health activities in most countries. In Korea the role of social insurance in financing health care is very limited, and there are no private health insurance carriers. Private consumer spending is still the major source for financing health services in Korea, but it comes from, and is channelled for the benefit of, a relatively small group of population in the major urban centers. The prevailing cost of both physician and hospital services severely limits access to them on the part of a great majority of the population.

The scope of social security in Korea is thus limited. The social insurance program was first introduced in Korea in the early 1960's and is still in its infancy. At present, Korea has in industrial accident insurance program and social security systems covering civil servants and military personnel. Private school teachers are covered by a separate benefit program which began in 1975. A government supervised voluntary medical insurance scheme is in effect for a limited group of workers as a pilot project. The National Welfare Pension Law enacted in 1973 is scheduled to become effective in 1977. In Korea health care tends to play a smaller role in the overall social security system than in other countries in Asia and Latin America. In 1973 the expenditure for health care amounted to 26 percent of total social security expenditures. (See Table 5.) Relatively large expenditures are made for various cash and in-kind benefits, such as pensions and public assistance.

The original Civil Servants Pension Act of 1962 covered only longterm contingencies such as old age, disability, and death. Subsequent revisions, however, gradually expanded the scope of the program by providing medical benefits for such short-term contingencies as sickness and maternity. The amount of

1) World Health Organization, *Personal Health Care and Social Security,* Report of a Joint ILO/WHO Committee, Geneva: 1971, p. 35.

2) Derick Fulcher, *Medical Care Systems,* Geneva: International Labour Office, 1974, p. 2.

3) *Ibid.*

4) Estimates based on household interview survey conducted by Public Health Service. See U.S. Bureau of the Census, *Statistical Abstract of the United States: 1974,* Washington, D.C.: July 1974, p. 71.

Table 5 Health Care and Social Security Expenditures in Korea, 1973
(Amount in millions of won)

Program Category	Social Security, Total	Health Care Component	Health Care as % of Total
Social Insurance	W 29,802	W 2,525	8.5%
Civil Servants Pension	16,652	404	2.4
Military Personnel Pension	8,714	*	—
Medical Insurance	68	68	100.0
Industrial Accident Insurance	4,368	2,053	47.4
Public Health	10,874	10,874	100.0
Public Assistance and Welfare	4,731	**	—
Veterans Relief	9,855	179	1.8
Total Expenditures	52,262	13,578	26.0%

Sources: Chong Kee Park, *Social Security in Korea: An Approach to Socio-Economic Development,* Seoul: Korea Development Institute, 1975 and Chong Kee Park and In Chul Noh, *Estimated National Health Expenditures of Korea, 1970-1974,* Seoul: Korea Development Institute, 1976. (In Korean.)

* Included in veterans relief.
** Included in public health.

medical benefit payments is, however, still small, accounting for only 2.4 percent of all benefits paid under the program.[1] The industrial accident insurance program, enacted into law on November 5, 1963, has a twelve-year history in Korea and is generally considered the most successfully operated social security branch in the nation. Over the last twelve years the program has expanded considerably in coverage and in the benefits provided to insured workers. The benefits provided under this program are classified broadly into cash benefits and medical benefits. The program provides full medical and hospital care until complete recovery. The payment for medical and hospital benefits amounted to W 2,053 million in 1973, representing 47 percent of the total compensation under the industrial accident insurance program. Table 6 presents the amount and type of work-injury benefits paid out in 1964 and 1973. As is evident from the table, medical care is by far the largest component of the program.

The Medical Insurance Law of 1963 is the basis for the operation of eleven pilot insurance programs, four of which are operated by employer-sponsored insurance societies and seven by nonprofit community insurance cooperatives (mainly for self-employed workers).[2] As of 1975, 15,600 workers and 51,900

1) Chong Kee Park, *Social Security in Korea: An Approach to Socio-Economic Development,* Seoul: Korea Development Institute, 1975, p. 120.

2) These eleven programs are all approved by the government. In addition there are 16 health insurance societies being operated independently without government approval and subsidies.

Table 6 Industrial Accident Compensation by Benefit Categories 1964 and 1973
(Amount in millions of won)

Benefit Category	1964		1973	
	Amount	Percent of Total	Amount	Percent of Total
Medical Care Benefits	10.3	40.9%	2,052.5	47.0%
Sick Leave Benefits	5.2	20.6	659.7	15.1
Disability Benefits	0.4	1.6	774.2	17.7
Survivor Benefits	8.5	33.7	806.8	18 5
Funeral Grant	0.8	3.2	71.9	1.6
Special Survivor Benefits	—	—	3.0	0.1
Total	25.2	100.0	4,368.1	100.0

Source: Office of Labor Affairs, *The Industry and Labor,* June 1974, pp. 104-5.

dependents in eleven groups were covered by these pilot schemes. In case of employee's insurance societies, both the employer and the employees individually have to agree to such insurance. The scheme provides for medical care to the workers and their dependents. Medical care includes outpatient care, hospitalization and drugs. The Ministry of Health and Social Affairs is charged with the supervision and partial subsidization of these programs. Each society or cooperative, however, manages its own fund and makes its own arrangements for the provision of medical care. The rate of contribution is set at 3 percent of the wages and salaries being equally shared by the employer and the employee. For self-employed workers, the monthly contribution is based on a fixed amount. The government pays an amount equal to about 10 percent of the amount of contribution for covering the cost of management. These insurance schemes reimburse exclusively on a fee-for-service basis.

The health insurance programs currently evolving in Korea demonstrate a pattern in some respects quite similar to Japan from the viewpoints of risk distinction and of developing a system of multiple schemes. Most community health insurance programs are directed toward a self-employed low-income or high-risk population in the rural areas. Participation in the program is on an individual basis, not group. They are not economically viable as they now operate, and they are in need of subsidization from the government and other external sources. Only one of the employer-sponsored health insurance societies appears to operate on a financially sound basis, and the rest of the societies are faced with increased costs and operational deficits. They are not establishing reserves for capital investments in health systems. The employer-sponsored societies generally offer the employee and his dependents better and more services than the community-based insurance cooperatives. The initial development of separate health insurance schemes in Korea has thus resulted in inequalities and financial problems. The idea of having a health insurance system of multiple schemes in a country may be justified on the basis of competition. But the advantages and the disadvantages of such a system must be carefully

weighted against each other. The experience of Japan[1] as well as that of Korea's demonstration projects might have taught us some lessons.

Korea's health insurance schemes are still in an experimental stage. They will eventually have to be developed into a system best suited to the needs and conditions of Korea. Whatever system Korea introduces eventually, it should be in line with the current effort aimed at providing an improvement of health care services. Korea is currently in a process of developing a new national health strategy by improving the organization, delivery, and financing of health care. The objective is to provide access to adequate health care to the entire population, regardless of income, age, or place of residence. Related objectives include the provision of good quality medical care, and supplying health services with reasonable efficiency. To a considerable degree, these objectives are inconsistent with one another. A heavy emphasis on the access objective would make it more difficult to simultaneously achieve the quality and efficiency objectives. The anticipated changes and innovations in the health care delivery system will seek to reconcile the three elements by encouraging modifications in the organization of health services. The recent emphasis on preventive medicine and prepaid group practice is an illustration.

The traditional third-party payment system—private and public medical insurance—usually opens up medical care to many for whom it would otherwise have been unavailable or available at a great financial sacrifice. However, the assistance provided is sometimes arbitrary when viewed from the perspective of the relationship between benefits and needs. The system often encourages inefficiency in the use of health resources, and it subsidizes the treatment of illness rather than its prevention.

It is reported that the recent expansion of the third-party fee-for-service payment system in the United States has resulted in substantial increases in the number of hospital admissions and in the average length of stay in hospitals.[2] Since the Medicare program began in 1966, these increase have contributed to the mounting pressures on health resources. Aside from these consequencies, by reducing the financial burden of patients without providing alternative incentives to minimize costs, the third-party payment system has also reduced incentives of hospitals, physicians, and patients to economize in incurring medical care costs. A large increase in demand, unaccompanied by an increase in the supply or improvement in the efficiency of health services will push up costs. The impact of Medicare and Medicaid is reflected in the U.S. price index. Physician fees over the first three years of these programs, June 1966 to June 1969, increased 22 percent and hospital daily service charges rose 55 percent. The medical care price index after rising at an annual rate

1) See, for instance, T. Higuchi, "Medical Care Through Social Insurance in the Japanese Rural Sector," *International Labour Review*, March 1974 and Paul Fisher. "Major Social Security Issues: Japan, 1972," *Social Security Bulletin*, March 1973.

2) U.S. Office of Management and Budget, *Special Analysis: Budget of the United States Government, Fiscal Year 1973*, Washington, D.C.: Government Printing Office, 1973.

of 2.5 percent from 1960 to 1965, jumped 6.6 percent in 1966, 6.4 percent in 1967, 6.2 percent in 1968 and 6.0 percent in 1969.[1)]

Prepaid group practice (e.g., HMOs and Kaiser plans in the United States) is now receiving wide support as an approach to health care with built-in safeguards for discouraging overutilization of health resources, for increasing efficiency, and for strengthening the emphasis on preventive medicine. The major innovative features of the prepaid practice plan are prepayment, group practice, preventive care, and comprehensive coverage. Prepayment of a fixed fee is made to doctors and hospitals for the care of a given number of patients for a period of time. It is believed that a fixed fee provides incentives to keep costs down and to make use of preventive measures such as health education and early detection of diseases before they develop into serious illnesses requiring elaborate and extensive treatment. Under a traditional fee-for-service system, the financial risks of excessive illness are borne by the consumer. Prepaid group practice substitutes a capitation payment for fee-for-service and thus assumes the financial risks of excessive illness. The group's income increases not with the number of days a subscribing member is ill, but with the number of days he is well. Thus a prepaid plan provides incentives to control costs, efficiently utilize resources, and prevent overtreatment.[2)]

The belief that prepaid group practice is more efficient than standard fee-for-service practice receives support in several recent studies. Reports of prepaid group plans in California, for instance, indicate that some of these groups utilize fewer physicians in relation to the number of persons served than in medical practice generally. The California Kaiser organization, for instance, reported 90 physicians per 100,000 population served by the group plan. The average for California was 161 per 100,000 population.[3)] The Kaiser plan held its hospital utilization rate 30 percent below the California average. During the 1950–1965 period, increases in hospital charges in Kaiser hospitals were only 15 percent as compared to a 50 percent increase for the nation as a whole.[4)]

While there is considerable support for the role of prepaid group practice in the United States, the extent to which this system can constitute an alternative to the present fee-for-service system in Korea is, as yet, unclear. The experience of the current health maintenance organizations in the United States may not be replicable in Korea where a system has to serve an entirely different population in age, socio-economic, and health status. There are also fears that

1) Rita Ricardo Campbell, *Economics of Health and Public Policy,* Washington, D.C.: American Enterprise Institute, 1973, p. 35.

2) Howard R. Bowen and James R. Jeffers, "The Economics of Health Services," New York: General Learning Corporation, 1971. For a detailed description of the prepaid group practice, see also William A. MacColl, *Group Practice and Prepayment of Medical Care,* Washington, D.C.: Public Affairs Press, 1966.

3) Greer Williams, "Kaiser: What is It? How Does it Work? Why Does it Work?" *Modern Hospital,* February 1971.

4) Bowen and Jeffer, "The Economics of Health Services," *op. cit.,* p. 20.

the pressures to minimize costs can lead to less than adequate care and encourage referral to expensive specialists and hospitals. Fourthermore, the institutionalized checks such as peer review committees made up of physicians or consumer representation in policy making may prove inadequate for this purpose both in Korea and the United States.

The choices involved in introducing an efficient health insurance scheme are many and complex. The choice of a system, however, does not mean the selection of some kind of total package. It is worth paying attention to good features of various schemes. There is much to be learned from experiences of other countries. It is, therefore, essential to carefully evaluate the comparative advantages of various health insurance financing mechanisms in terms of risks and persons covered, incentives toward over-utilization or under-utilization of health resources, costs relative to benefits conferred on society, administrative feasibility, etc. We will have to make an assessment of alternative ways to finance a health insurance system in Korea including cooperatives, private insurance, and HMOs or other forms of prepayment in terms of existing and future public and private resources. It was the recognition of this fact which led the Korea Development Institute to undertake a research project to carefully examine the feasibility of implementing a health insurance system based on the analysis of the experience of the Korean demonstration projects and those of other countries. This study will provide a substantial base of information for formulating efficient health and social security policy in Korea.

Comment on Dr. Park's Lecture (Abstract)

Mr. Tetsuo NAKANO*

Ministry of Health and Welfare, Japan

Stages like those mentioned in Dr. Park's talk also existed in Japan before the war, and the delivery system of health insurance was completed as a system before the war, but from the viewpoint of social security, the medical care service system was newly expanded after the war. At that time, a tremendous amount of human and material resources were required. The adoption of this kind of delivery system is a problem of sophisticated political judgement or determination.

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From our experience after the war, when economic growth is maintained at a certain speed and a sound taxation system is functioning, revenue for social expenditures increases at an accelerating rate. In the condition where the source of revenue for general accounting increased at a more accelerated rate than the graduated taxation system, resources were allocated to social services in a skewed fashion.

If economic growth lasts continuously in Korea, and a sound taxation system functions also in the future, the revenues which can be appropriated to health service should increase at a rapid rate, and whether or not to appropriate it is a problem of political decisions. Whether the social conditions exist to support the political judgement is the focal point of the problem.

It is difficult to expect perfection with regard to social problems such as the vices of an insurance system, and I think it is a problem of choosing the second best. In this case, I am skeptical about making decisions by putting too much emphasis on efficiency in the field of medical care. Also, with regard to the Kaiser Plan, I am personally doubtful as to whether it will work well over a long period of time.

Discussion on Dr. Park's Lecture (Abstract)

Dr. PARK (Questions to Mr. Nakano's Comment) : What do you think of the possibility of merging various governmental systems and social systems and private systems into comprehensive system?

Mr. NAKANO : The insurance system in Japan is a pile of separate systems which grew up hapharzardly, and the financial gaps among individual insurance careers are very apparent. It is widely recognized that this is the biggest deficiency of the health service delivery system in Japan. There are several suggestions with regard to this, and the suggestion from the Japan Medical Association is a typical example, but no concrete administrative action has materialized. Up to today, the method used to make up the financial gaps is a subsidy from the national general accounts.

Prof. YAMADA : With regard to research problems, Dr. Park mentioned on page 9 of his paper that 68% of the people visit herbalists and shamans, and I would like to know how he arrived at this estimate. Was it obtained by an investigation of actual conditions?

Dr. PARK : It is from the research findings of specialists announced by a professor in the School of Public Health, Seoul University.

Prof. YAMADA : Since it is very interesting, I would appreciate it very much if you would give a copy of the material.

SYMPOSIUM

MEDICAL APPROACH IN DEVELOPMENT AND ALLOCATION OF MEDICAL CARE RESOURCES

Chairman: Dr. Bon Ho Koo
Korea Development Institute, Korea

Medical Approach in Development and Allocation of Medical Care Resources

Prof. Masakazu KURATA*

Keio University, Japan

I have been assigned to examine the subject of the development and allocation of medical care resources from a medical viewpoint. However, since this is a broad subject, and since there will be a talk by Dr. Choo on manpower later, I would like to select the subject of medical care from among the medical care resources and discuss that.

Nevertheless, it is apparent that medical care facilities are closely related to various other resources. For example, trends in medical education and medical therapeutic techniques will influence the quality of manpower, and the facilities will be influenced accordingly. Also, medical care facilities and manpower are intimately related to various resources in the society. For example, when we consider institutionalization of aged patients, not only medical care facilities but also social welfare related institutions and families are involved, and accompanying them, problems such as transportation, food and safety come into the picture. Also, it will be influenced in various ways by the various characteristics of the residents, for example, the degree of health of the resi-

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dents, their level of awareness and education in health, and how they accept medical care. Therefore, even though we talk about the problem of medical care facilities, we should always bear in mind its relationship to these various resources.

Now, there are many problems which should be discussed regarding the development and allocation of medical care facilities, but I would like here to touch upon a few fundamental points.

1. Problem of Systematization

In the history of the world, medical care facilities have been established freely for a long time, and it can be said that they have developed without any mutual functional cooperation. The omnipresence of medical care facilities is one indication of this. However, looking at the life cycle of the individual, in order to carry out effectively a comprehensive medical care which proceeds from promotion of health to prevention of diseases, diagnosis and treatment and further to medical rehabilitation, it goes without saying that systematization of medical care facilities is necessary, and this is extremely important among the various difficult conditions which surround medical care today.

Now, medical care which is designed for the individual may be divided generally into three functional levels: the primary, secondary and tertiary levels. If we are to seek systematization, we must seek the functional relationships within each of these three levels and also among these levels. The methods will differ from country to country. I think each country should develop its unique method with its various social, economic and medical therapeutic characteristics. For example, on the primary level the method of group diagnostic activities and ways of cooperation among diagnosis, treatment and public health and social welfare for the individual will become to be important points. A method which has been successful in one country will not necessarily succeed in another, and it will change from period to period. It was in the 1940's when Great Britain, France and the United States introduced the idea of regionalization in medical care, but there are many countries which have not applied this system.

In our country, community medical associations established clinical laboratory centers on their own, and their number now totals 140 nation-wide. This is an example of a grouping of the examination functions which each clinic should have. Also, community medical associations have established more than forty medical association hospitals across the nation on their own, and continue to offer complete diagnosis and treatment from out-patient treatment at clinics to full hospitalization, and primary level group activities centering upon these hospitals. This is attracting public attention as one method of linking the primary and secondary levels of medical care.

Lately, cooperative movements among the hospitals have gradually appeared in Japan. That is, these are movements for joint purchase of pharmaceuticals or collaboration in providing meals. If this kind of movement progresses, we

might see a situation where several of these hospitals will come under one organization, as seen in mergers in the United States. However, the cooperative movements are centered on certain affiliated hospitals nation-wide rather than community-wide. What we have to pay attention to here is that if we are to provide planned, comprehensive medical care for the community, this cooperative movement may not necessarily move in the same direction. If this is the case, it will in fact hinder systematization, and we should pay attention to the future movement in this respect.

Thus, the method of personal health care will differ from country to country, and in considering the problem of systematization today, when the method of providing medical care is specialized and where many related factors are tangled, simply starting with the current situation or looking at the situation abroad will not get us even one step outside the shell of the cenospecies of medical care. To do so, it is necessary to consider Man fundamentally from the standpoint of the ecosystem. It is similar to the relationship among fish in a pond or a lake. In a pond, other organisms and many non-living things make up the environment for the fish, and fish exist in relation to them. In short, what is needed here is an ecology of fish. Needless to say, since the so-called psychological and social behavioral environments are additionally included in the case of the human being, we have to tackle the ecosystem of medical care with sufficient analysis of these factors at the starting point. This is especially important in primary medical care, and it is the starting point in considering development and allocation of medical care resources. I mentioned previously that the methods of carrying out medical care differ from country to country. Surely the environment in which the people of each country are placed differs, but I would like to emphasize that even so what we should consider in common is the method of approach from this kind of starting point.

Now I would next like to mention several necessary basic conditions in considering systematization. The first condition is to decide the target and geographical scope of the provision of comprehensive medical care. If medical care is to be part of the daily life of the residents, it goes without saying that this geographical scope must match the behavioral space of the daily life of the residents. Life has been changed greatly by the changes of society lately, and has been diversified, and therefore the life space of residents has been expanding in increasing circles from its original small scope. When we look at the commuting situation of the residents to school and to work now, we see that several cities, towns and villages are connected by commuting, and some sort of geographical scope appears. Now, experimentally, when we checked what hospitalization facilities in which city, town or village the residents of these areas utilized, that is, when we drew a utilization sphere of hospital facilities, they nearly matched the commuting sphere. We will call this scope the medical care sphere. The populations and geographical sizes of medical care spheres are diverse, and they will differ depending on the country. They will also differ between industrial and developing nations. However, at least the primary and the secondary level medical care should be completed within

this medical care sphere regardless of the system. However, medical care at the tertiary level can be considered in wider areas according to the situation, that is, in a geographical scope which is composed of several medical care spheres.

What becomes problematic here is the relationship to administration and administrative areas concerned with other social and economic activities. A geographical area which has been defined for the purpose of medical care—a medical care sphere—does not necessarily match the administrative area. In fact, medical care spheres are set up separately from the administrative area in several countries. Fortunately, in Japan, in accordance with the expansion of behavioral space of the daily life of community residents in recent years, the need to carry out integrated administration of the city, town and village has been heightened, and the administrative areas have been expanded. For example, there are areas of integrated municipalities under the Ministry of Home Affairs and local life spheres under the Ministry of Construction. We should pay atttntion to the relationship of medical care spheres to these administrative areas, and consider how to cooperate with the various social and economic sectors.

The second necessary condition is to have an effective organ to promote medical care planning. Regardless of how the primary or tertiary medical care system is constituted, planning is required. This planning must be based on the independence of physicians with regard to medical care, and the various controls and evaluations which accompany the planning should be done by the physicians themselves. If this is the case, an effective organ for planning becomes necessary for them. Needless to say, there should be such organ in each medical care sphere. However, in Japan the size of the medical care sphere falls between the size of the prefecture and the size of the municipality, and it is safe to say that there has been no corresponding planning body, and only voluntary bodies led by the community medical associations in a few areas have carried on activities.

A problem which may be raised here is what kind of relationship the local municipality and the national government will come to have with this organ. In some countries, the national governments are carrying out medical care planning with powerful authority, and others are making efforts towards systematization by smaller communities. Now, should we choose centralization or decentralization? Considering the various characteristics of medical care, it is probably doubtful that either of the two extremes of centralization or decentralization will be successful. Even if a small number of people cooperate in a small community, they can do nothing if they are not connected to institutions and authorities with higher functions, and there could often be confrontations. Conversely, with only the high authority of the government success is doubtful. Generally speaking, according to the political, economical and social situation of the country, an appropriate balancing point in the middle will be set. We should at least fully respect the independence of planning of organ corresponding to the medical care sphere, and we should emphasize participa-

tion by the physicians of the community who are directly responsible for medical care.

Especially in recent years, the role of the nation in medical care has been increasing. In the past it was a generally accepted idea that public health activities, such as epidemiology or preventive activities are carried out on the national level, but gradually the national role has been extended to the field of diagnosis and treatment, as can be seen in examples such as medical care for the aged and emergency cases. Therefore the organ for medical care planning should be truly an effective one.

2. Emphasizing Community Characteristics

The communities which are the targets of medical care planning never have identical social conditions. Each community has diverse characteristics socially, economically and also in the aspect of medical care. This is apparent in demographic, ecological and traditional aspects, and also in the degree of health among the residents and their medical care resources. Therefore, strictly speaking, the community characteristics differ from community to community, and the system for providing medical care should adapt to the characteristics of each. Naturally, there can be no universal system.

For example, in medical care planning we have to estimate the number of beds necessary in the medical care sphere, and here we cannot simply depend on index such as the number of beds per population. Now let's look at the various relationships regarding the number of beds as follows: There are four weights on the scales. On the left dish there are weights for the number of hospital beds and their utilization rate, and on the right dish there are weights for the number of newly admitted patients and their average length of stay. Now if the weights for the number of patients on the right becomes heavier, as long as the number of the average length of stay does not change, a balance will not be obtained unless the weights for the number of hospital beds or their utilization rate is made heavier. Then what makes these four weights change? Many of the factors are found on the demand side of medical care and also on the side which offers medical care, and the degree of effect, which each of the factors has, differs from community to community. The index of the number of hospital beds per population will ignore these relationships. After all, it is important to recognize that the index of the number of hospital beds per population is merely a general guide and to examine the community characteristics well.

I would like to touch upon another problem, that of regionalization of hospitals. As I mentioned previously, this idea has already been adopted in several countries. That is, hospitals do not exist at random, but exist as members of a hospital system which has been planned after a long deliberation over community characteristics. However, WHO cites the following as a concrete method for the realization of regionalization. First, the region which is to be the target of the planning will be decided, and all the hospitals in the

region will be graded into three categories of large, medium and small. These hospitals will be divided according to the content of medical care they offer, and each type will be distributed among the center of the community, smaller communities and still smaller communities. It is expected that patients, people who are in charge of medical care, and medical care technicians will always be moving from the higher to the lower stages, and vice versa.

However, what we have to pay attention to here is the relationship between this kind of method and the community characteristics which are included in the idea which is the basis of regionalization. For example, in Japan due to industrialization, there has already been a concentration of population in the cities, and depopulation of agricultural areas, and on the other hand, through the development of transportation means, most of the agricultural lands are directly connected to cities. Under this kind of circumstance, it is not rare that the patients who live in mountain villages are hospitalized directly in the hospitals in the cities, by bassing the hospitals in towns and villages of the lowlands.

Moreover in Japan the ownership of the hospital is divided into twenty-four, doctors work exclusively for the hospital, and it is safe to say that there is almost no flow of patients among hospitals. Under this kind of circumstance, the hospital planning suggested by WHO should be reconsidered fundamentally, and planning should be carried out from different new viewpoints according to the diverse regional characteristics.

3. Clarifying the Function of Medical Care Institutions

As far back as 1957, the committee report of WHO said, "the function of a general hospital should not be limited to diagnosis and treatment, but should include prevention, education and research as circumstances permit." In fact, I think general hospitals in all countries possess these functions to a greater or lesser degree. However, for a general hospital in the community to include all of these functions is almost impossible, considering the various circumstances in which medical care is placed. This being the case, a group of hospitals in a given medical care sphere will share these functions, and together they will fulfill the necessary functions of the medical care sphere. Now what is needed is to find out first of all which hospital has which function to what degree. Otherwise, all the general hospitals in the community might have duplications or deficiencies of needed functions.

However, to find them out is not easy. This is because the classification of functions which medical care facilities should possess is inadequate. Certainly, we can find out the ownership or number of hospital beds of the hospital, and we can also find out what kinds of clinics it possesses. However, if a certain operation becomes necessary now, and we have to find out which hospitals can perform this specific operation and which hospital in the medical care sphere can carry it out, we cannot judge only by the classification of clinics called surgery departments. Neither can we find out whether diagnosis

by electroencephalography can be done, whether diagnosis by radio-isotope scanning can be done, or whether diagnosis by fibroscopy of the bronchi could be carried out. In these cases, even if we check what kind of facilities and equipment the hospitals possess, we cannot judge by it. Also, even if a certain hospital possesses a preventive function, we do not know what it is all about and what kind of role it has in the community.

In short, hospital classification of today does not tell anything about the degree to which the hospital can provide advanced medicine or medical techniques. Therefore, it is necessary to turn our attention to a functional classification which emphasizes medical care techniques from viewpoints which are totally different from the past hospital classifications. If this kind of reclassification is carried out, by finding out what and how many functions each of the facilities has, we can clarify what kind of functions are missing and what is duplicated in the medical care sphere as a whole. Under such circumstances, we can say that a hospital is a place where various medical care techniques are accumulated to various degrees. I think that the concept of systems suggested by Dr. Takemi, Chairman of the Japan Medical Association, including technique integration units and the research and development center of medical care techniques, bring out this point plainly and clearly. Moreover, this is not simply a problem of hospitals, but can be extended to various medical care facilities such as clinics, and various public health or social welfare related institutions which are closely related to these. In these cases, problems of channels of information and information processing techniques become important, and it becomes necessary to compose a most effective information system on the premise that the information processing technique is to be introduced to the areas which truly need it in the medical care system, and in the fashion which is best fitted to the community characteristics.

I think in this manner we might be able to open the way to greater effectiveness of the facilities and to a new systematization from a viewpoint different from the regionalization indicated by WHO. In either case, how to clarify the function of medical care facilities and how to allocate the medical care facilities effectively are problems common to all countries, and may be seen as topic for research on medical care resources, which will become more expensive in the future.

Basic Concept of the Systematization in Medical Field

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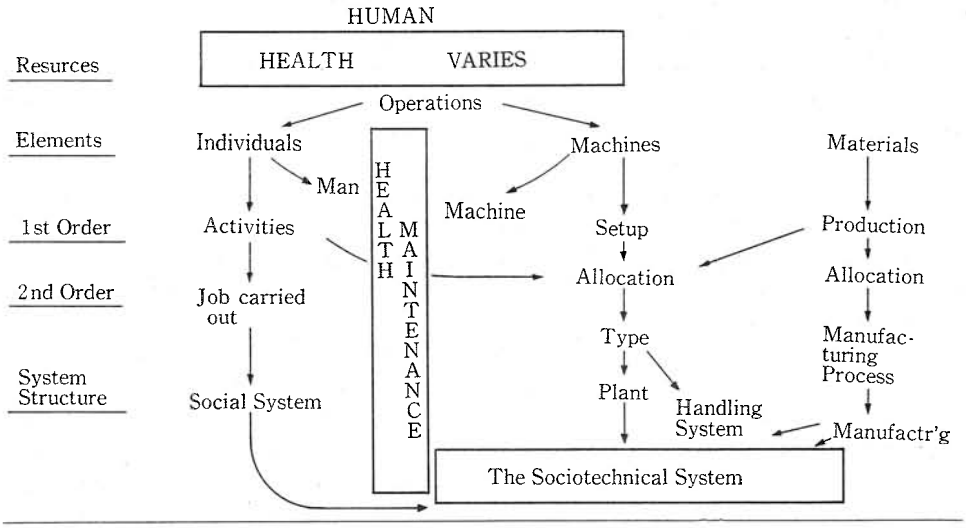
Contradiction of Theory in Systematization

It is a well known fact that the theory of system concept has developed to the present day level by taking up engineering approach along with the theory of physical structure of human body and the mechanical engineering design. We also note that the concept of system is often misinterpreted and known as a mode of human behavior, a mode of establishment, act of putting everything under rules, or simply, a methodology, mechanization.

A definition of the system reached is very simple; that the system concept lies in relation between purpose and result aiming to obtain the best performance

Fig. 1 Industrial Model—Sociotechnical System Framework



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in line with the targeted purpose. In other words, the system lives in a software technology with a purpose which evolves dynamically toward a result in the time-wise and spacewise continuity.

Looking at existing various social systems today, obviously everything is affected by the quality and capability of human ware. And yet in so many social development and industrial development the human being is left out of the consideration.

This is the industrial model made by Cooper and Coaster in 1971. The key to this was how to keep balance between production and productivity. It is noticed that the human factor was completely left out in this model. It is quite doubtful if the industrial model can be connected to the sociotechnical system without involving human factors evaluation. The following figure is modefied to cover human factors.

At this level of the resources, the manufacturing or production includes the man, machines, and materials. As it comes to 1st Order level, 2nd Order level and then to Action level, the individuals will come to the stage of the system structure. Likewise, the machine comes to the plant, material to the manufacturing, thus keeping extend balance between social system and sociotechnical system. Important thing here is to recognize that when any individual meets with the machine and material there is always this human barrier coming inbetween.

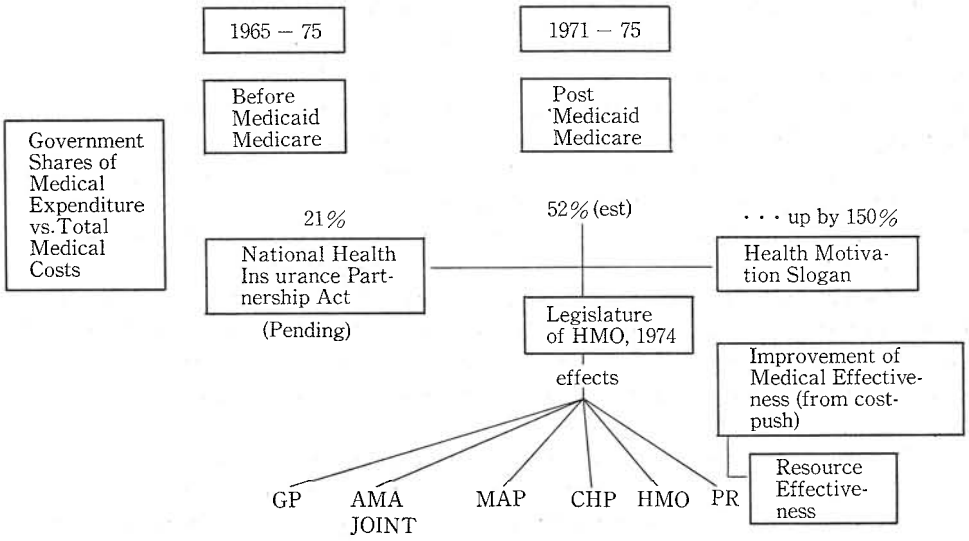
In other social system models illustrated by other references also often lack the consideration of human barrier. At least there were no considerations as how to adjust human barrier to maintain health standard of man before scheduling to include the social system model.

Under this theory development, if an attempt is made to adopt a technology to the society without clearly evaluating human barrier, the system will not work at all. General public will not participate in the system thus displaying only an absurd social phenomenon.

In case of the medical system, human factors will delicately affect to the system and its pattern will become man-man-technology (medicine) instead of man-machine-materials. Under estimation of professional characteristics in medicine one reason caused delay of development of true medical system concept but more likely that these cases are seen where administrative policy is forced need and integration of medical technology compulsory which appeared clearly in today's Government medical care, education, and environmental control policies without deep involvement of human factors. If economic and engineering approaches perfected the systems for the wars, or developing the space programs previously, it does not justify that the same will succeed in the medical care. There was error concept on the part of administration in forcing these mechanical systems of the era of rapid economic growth to be connected with human factors. Different approaches must have been made for medical projects.

Application of Systematization in Medical Field

Fig. 2 Recent Medical Policies in U.S.A.



This phenomenon can be seen in medical policies of developed countries and poses to be a problem of common interest. The figure shows an example of recent medical policies in the United States of America. Between 1965 and 1971 which was before Medicaid and Medicare programs became more active, Government shares of the medical expenditure comprised 21 per cent of the total medical costs. This trend was prevailing since the early part of 1960s. Finance Committee of the U.S. Senate was pointing this to U.S. Dept. of Health, Education and Welfare and was urging them for measures to curve the growing percentages. Medicaid and Medicare programs were the tools of these measures.

The Government shares of medical costs, however, continued to grow. In 1974, a legislature was passed to establish HMO in an attempt to contain medical cost at the stage of preventive medicine. The aim was to soften the impact of cost-push within the quantitative assessment of medical care effectiveness and also to achieve cost reduction by having various organization of the state, community medicine taking part too. At any rate as far as the health care in the U.S. is concerned, Blue Cross or any other private insurance associations dominate over most everything. True there came Kaiser Plan, Prepaid Plan and others but they were nothing but financial substitutions and could never become the medical care allocatable to people's wide needs of medical care.

On the other hand, at the side of the administration, dilemma of not knowing the methodology best suited drove them to come up with policies that would govern so-called systematization, and to make the whole picture more complicated than ever.

It is a belief that the time is ripe for us to re-evaluate the rightness of allocating incomes to the medical care, which is still so dependent on the GNP and non-medical price indices, the practice of which has partial appropriateness in those days of high economic growth rate.

Modification of existing systems into the system required for the medicine in future need to take a lot of considerations. As the medical care resources are different from industrial resources, agriculture resources, or energy resources, they are closely related to educational resources, in terms of human factors. Another aspect is that it is positively necessary for the medical systems to adapt biological elements while keeping harmony with the environment as well. In the area of medical service, dissolving of administrative dilemma or combination of bureaucracy will not create better systematization, nor will intimidation of methods used in other countries contribute positively. The reason is that population, environment, resources, space availability, culture and life style are all different. Mere intimidation will only cause unfair allocation of resources, that is, less opportunity to medical care services and yet excessive burden of tax for inhabitants.

In reviewing these background of existing medical systems, it will indicate importance of establishing new administrative plans, whereby a clear distinction is made between the national health management functions with heavier share of human factors and the ones with share of non-human factors to measure weight of policy issues. Systems approaches that are required before systematization of medical care, needlessly, differ from those used in industrial society or with industrial technology.

The relationship of man-machine-material in the case of industrial model will change to man-man-technology relation in the medical care system as stated previously. This automatically shuts out the opportunity of using system engineering concept of the past. As the human being possesses two different quality factors—self-creative nature and self-reactive nature, it is the time to review again capability of adaptation in human factors.

Past Trend of Systematization in Medical Field

The systematization that was in existence before was more or less concerned with reduction of manpower, process and procedure aspect along with financial advantages. On top of this management concept within the medical care service was centering around cash base and was quite far from function-

Fig. 3 Basic Technical Elements for Systematization of Medical System

Origin of Human Engineering ..... Characteristics of Human Functions

Origin of Mechanical Engineering ..... Hardware

Origin of Software ..... Humanware

Design of System ..... Human Character

oriented management concept and this created lack of forecasting ability. All of these must have added up to incorrect entry into the era of systematization.

The World War II triggered off a different approach. Man-machine system which has its origin in system concept was transformed to machine-man system. As the machines were becoming more sophisticated mechanically, men had to be trained to be compatible with machines. There are exceptions but unfortunately machine-man system concept was there to stay in economic development. Certain amount of influence subject to modification from the future period was unavoidable to the realm of the medical care system. During this period engineering approsch was brought into medicine by non-mecical professionals which caused inadequacy of management concept, and quality of characteristics in medical organization as a new thinking.

If today is the day of man-machine system, we should not be contended with that. Without integration of thoughts and technologies peculiar to men, the system will gradually go back to machine-man system.

Studying the historical literature concerning systematization of the medical care, in 1966, Felter and Thompson studied the medical care system at an evaluation level of quantitative economics and technology only. When it is the matter of the medical system which deals directly with human life, consideration for survival order was certainly in desire but was not identified. It was reminded at a later date by Dr. Takemi, the President of the Japan Medical Association, in his theory of "Survival Order", and "The Development and Allocation of Medical Care Resources." It was given opportunities to look back on our history along with the new theory structure.

Now, concerning the systematization from today, all the background factors behind human survival must be fully recognized. It is also essential that we incorporate biological factors, human factors, and other factors of similar nature in ecology into the system.

The human being all have a fundamental right to live a healthy life. This mere survival is at times threatened by ecological adversities today. Therefore, it is only natural for men to seek new survival order. To realize the new order for survival systematization is required in all facets of the medical service. It is becoming very important that old system concept must be developed into a concept of unifying various ecological elements to meet new medical system.

As the system concept becomes largely modified, a necessity arises that the argument be three dimensional rather than two dimensional. Evaluation must be added to see how the system can live in the eco-system.

At the macro level of the systematization, it will be only proper to add more evaluation from the side ways of human ecology and medico-economics into the dynamic system theory of Forrester and Tavistock. On the micro level, studies must be conducted to determine how organization and regional characteristics can keep in harmony with human elements.

Future Medical System Base

Fig. 4 Medical System Base

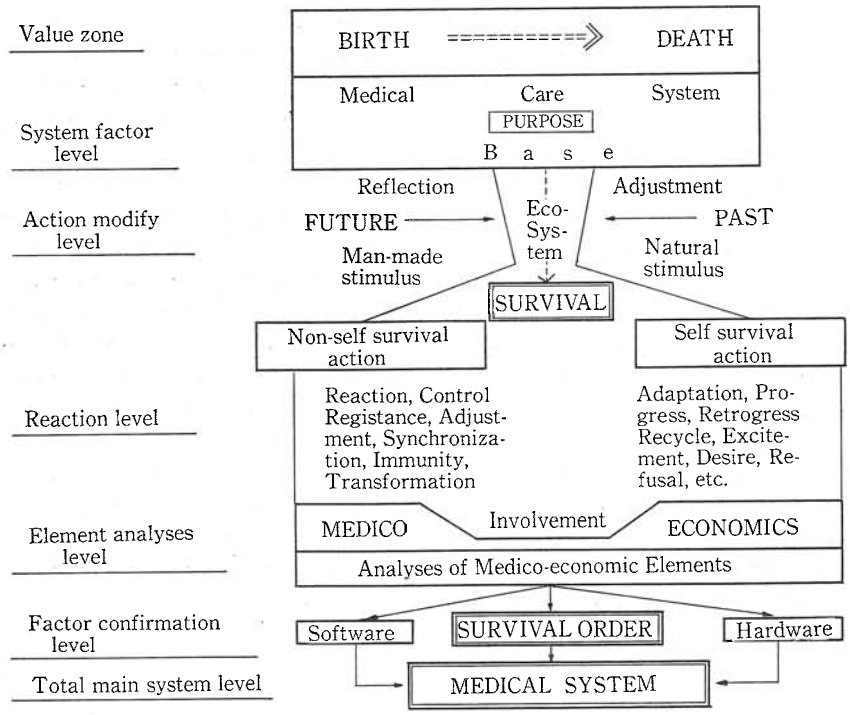
1.	Purpose	Healthy order of survival
2.	Unify	Medical care, Humanbeings, Society, Ecology, Culture
3.	Elements	Survival resources (Medicine, Medical care) Developing structure, AAllocation structure, Human-material resources, Environmental structure (Manmade and Natural), Social characteristics (Community life)

What precisely is the main system for the medical service? Purpose of it is to establish healthy order for the human survival. What comprise the elements of medical system? Medical sciences, medical service, allocation mechanism including the administration, environmental structure both man-made and natural, social characteristics are some of the elements.

How all of these are jointed together to keep in harmony with medical service, human beings, society, ecology, culture and others should be the basis for the main medical service system to create healthy order for survival.

Development of Medical System

Fig. 5 Development of Medical System

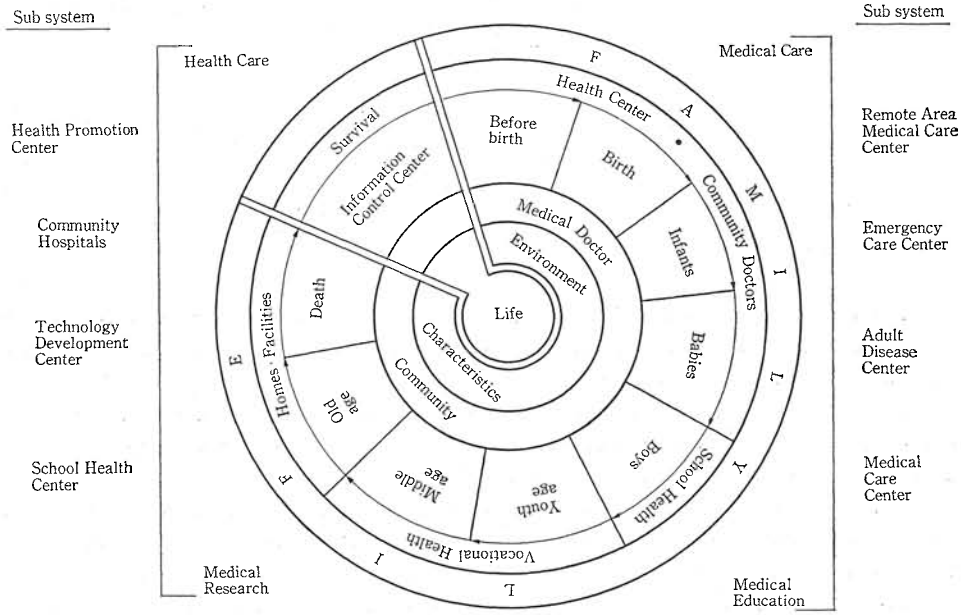


The above figure illustrates through what kind of growth process these factors of the main system base will arrive at the medical main system. Ultimate purpose of the system being the healthy order of survival, only the very selected system factors will be taken into the main system. In this process, those factors will pass through eco-system, arrive at survival area, become subjected for element analyses by medico-economists, thus selected for adequateness as the system factors for either hardware and software.

In this growth stage, the system factors will also be screened from standpoint of human or non-human appropriateness. These are some unhealthy factors which must be condemned natural selection removes more factors, and even some factors degenerate or retrogress.

Medical Information in System

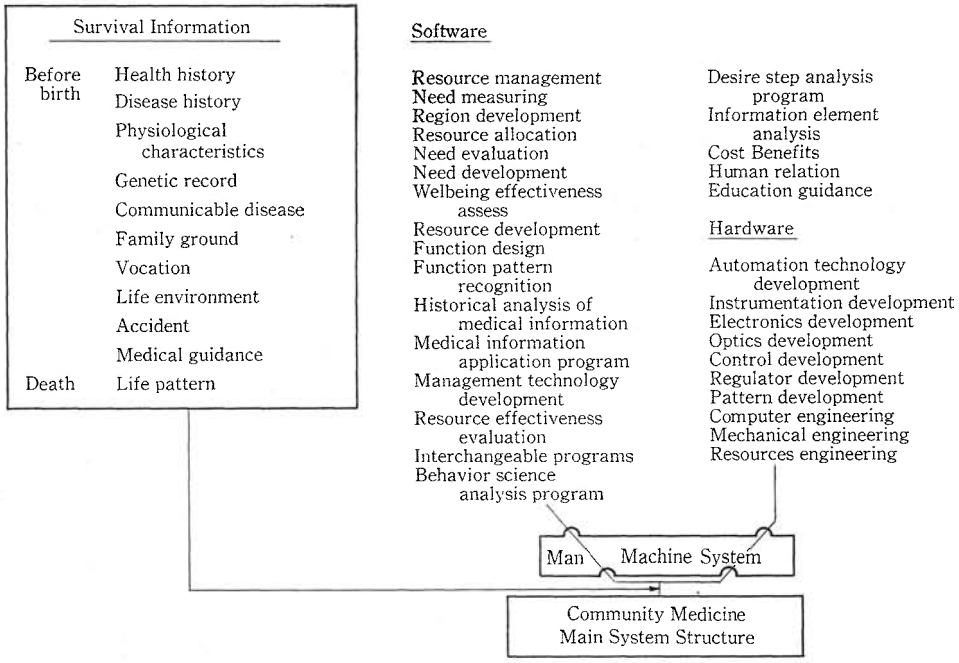
Fig. 6 Basic Information Cycle of Medical Care System



The medical information produced from medical system should cover total life span for the period from before birth and to till death. Thus information would include not only physical and diagnostic information but genetic and life pattern information on continuous basis. Obviously responsibility for information maintenance should be clearly established on both community and national base by each medical administration segment for total life period without breaking information continuity.

Program Structure in Medical System

Fig. 7 Main System Structure of Medical System



As the figure 7 indicates, software program covers a large role in the framework of Main System. Hardware, on the other hand, can be developed only after software is designed.

Human behavior science analysis program, Need measuring program, Resource development program, and Desire step program are some of the programs that never existed in software of yesterday.

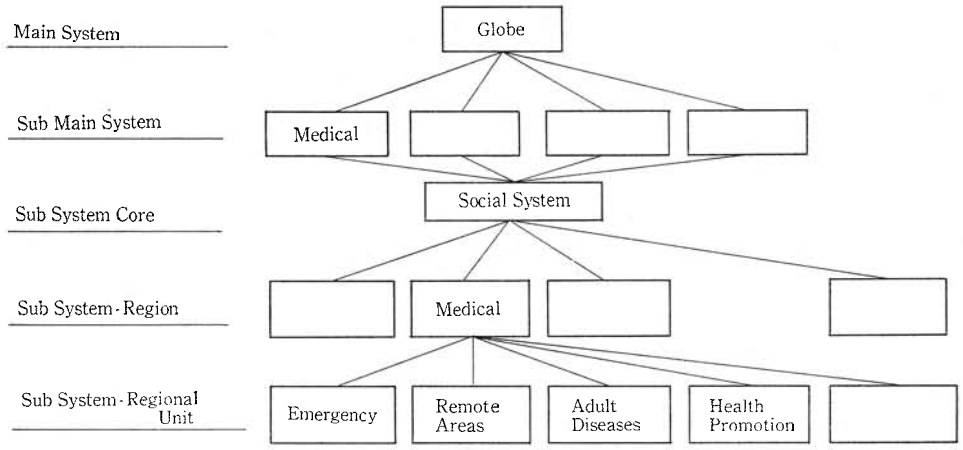
It has become very important that within the medical system how emotional factors, behavior, adaptation, and desire should be related to other software, or to identify speciality and functions each is designed for the goal.

Medical system of yesterday was more or less quantitative or statistical type. Business aspect only went into the system leaving other various key qualitative medical aspects untouched.

Today programs for quality of the medical service could not be developed fast enough. More specifically, as it advances more, the programs must be developed to have capability of simultaneousness, multiphasic character, interchanging capacity, compatibility and continuity.

Positioning of Medical System in Social System

Fig. 8 Positioning of Medical System in Social System

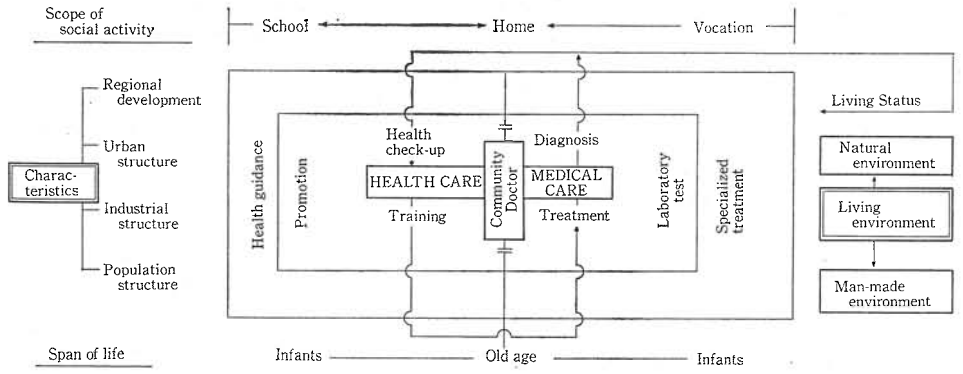


Since current medical care concept is extending more rapidly to achieve better contact with people, the new medical system is required to provide wide services as community resource center for a primary care. The medical system is located at the first level of system from the exposure of global as Sub Main System then it will reach to community subsystem at the 2nd level after taking of balance among the other social systems.

The new systematization of medical care should be developed from the global level by taking the need of medical service to feed back to the level of ecology if the feed back procedure is omitted it will stay as a hardware oriented system with one sided bureaucracy.

After the medical system installed as programmed in the group of social system, the next subject is to find practicability of system to be installed in putting the theory to practice. As shown in the Figure 9, health care and

Fig. 9 Functions of Health Care and Medical Care System from Social System

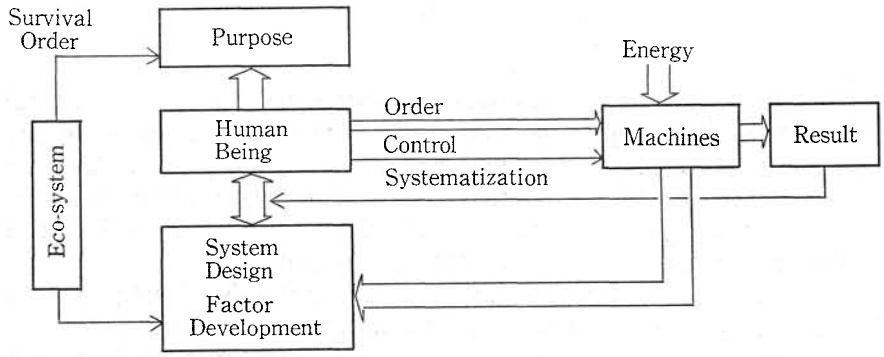


medical care must be situated in form of a continuous cycle. In previous cases like the Kaiser Plan, health care program and medical care program were quite independent of each other. This would jeopardize the balance within a community. The correct way should be a circle on which both medical care and health care are situated. On the outer peripheral, regional characteristics, and living environment should maintain balance to assess.

Recent policies of medical care in the U.S.A. were discussed. Attempt to hold down the medical costs by means of health cost means imbalance. To maintain true balance, the medical care and health care must be considered on the same dimension based on the needs forecasting in advance.

If the system balance is failed, various social costs will certainly increase later due to various factors caused by imbalance.

Fig. 10 Administrative Basic Flow of System



Administrative Aspect of System Flow

As the next step observation must be made on the systematization of medical service from the management viewpoint. Basic flow of the medical system, as previously pointed out, must be man-machine system. The human orders, controls, and completes the system form for the machines, based on the system factors that have been screened for the purpose of survival order.

The machines are nothing but hardware. They must receive control and energy from the human ability. Performance that is generated from the machines must be fed back to the human side. The feed back must be tailored so as to meet ever-changing social needs, social transitions and other factors. Upon feed back, the men will cycle, re-cycle and re-design and try to prolong the added value. This process, it should be noted, is very important in that the adequate administration of the systems must be maintained for the continuity of solid added value of system capability.

Reviewing this process from the side of the administration, it is absolutely

necessary to identify organizational responsibility on system management to evaluate, develop, allocate and utilize medical care resources, capitalization of resources, custody of resources, decision maker for utilization of resources, assessment of resources, desposition of resources, evaluation of systematization, and evaluation of the final results are all very important controlling elements.

Utilization of the modern medical system resources must be carefully executed. As the needs for the medical system are moving from individual to mass population requiring new approaches to contact general public, weight of organization must be recognized before systematization is attempted. By weighing also required assets to balance with the weight of the organization, loss of assets or excessive allocation of the resource can be avoided. Therefore, nationalization of medical assets by bureaucracy, or monopolization of such by a special group can easily cause unfair allocation, which will also initiate people's refusal to medical system. The medical care resources, therefore, should be considered as community assets.

Since the medical administration is changing toward modern medicine—changing its course from supply-oriented welfare to allocation-oriented well-being, the allocation of the medical care resources will move from supply to allocation.

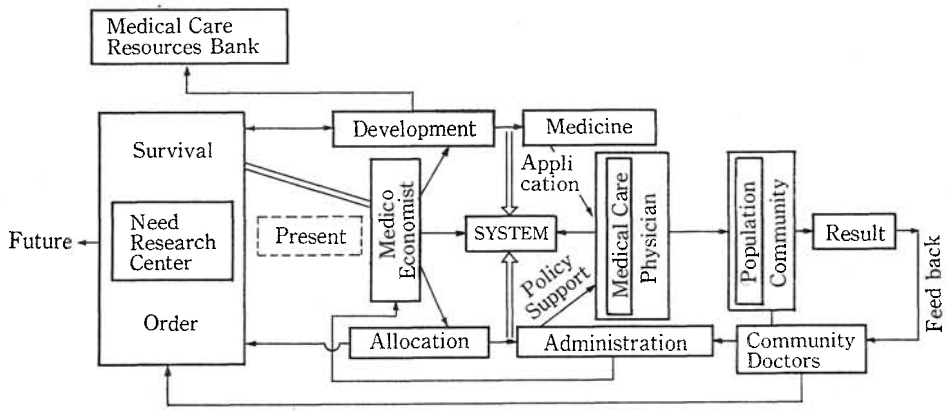
There will be communities and organizations emerging to receive such allocation. The allocation must be based on quality of life and wellbeing of survival that are compatible to the needs of individuals. Otherwise the medical service cannot be the benefits for the whole population—people may not have proper respect to the medical service.

The systematization, it should be emphasized, is required in the medical service to prevent future problem at minimum rate. If the systematization in the administrative services can compile similar programs as those for the medical care, better coordination will result for the survival order, and further, more effective utilization of the medical care resources can be promoted. Hasty attempts to establish cheap medical system will increase the risk in a long run, causing very inefficient effects of the public expenditure. Scientific systematization, therefore, is the answer for the optimal wellbeing and true medical care services.

Today the design for the future medical care must be re-designed quickly. As for the development, medical scientist group should take an initiative, whereas the administration side should take the initiative for allocation. More specifically, the administration side must establish a feedback structure and must act as an administrative coordinator having close contacts with the government's long range plans, financial plans, and social systems. On this progress, it can support systematization of the community medical service in the scope of development and allocation of medical care resources tackled by the physicians, citizens, medico-economists and other specialists.

Systems Approach in Medical Care Resources

Fig. 11 Pattern for Sub-System in the Development and Allocation of Medical Care Resources



Observing the pattern of subsystems in the development and allocation of the medical care resources, there exist a group of medico-economists as the center for research of needs for survival order, and for development and allocation. This group performs assessment of system factors, resources, and needs. They give advices to the development specialists and allocation group. Based on the factors given by development/allocation groups, the system group will organize optimal use of resources by cycling effort of chain of the medicine, the medical care, the administration, the general public, the results, the feed back need research, and output.

Results will be evaluated by the community physician group who has most frequent contacts with the general public, and will be sent to the Need Center. The Need Center is consisted of specialist groups in the community.

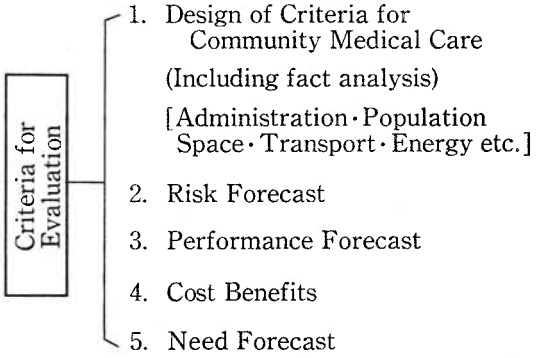
On the other hand, all those that have been developed will be registered at the medical care resources bank. The bank, which is controlled by medical doctors, is capable of integrating, and releasing as required, various medical care resources at the level required by the community and national level. Qualitative, as well as quantitative control of accumulated resources will be continuously made by this facility.

At present time, when it comes to the question of evaluation of medical systematization, only quantitative studies are made. In future, the evaluation will be far more rigid as the medico-economists will come into this.

Criteria for Needs of Systematization

The criteria of judging needs for systematization is as follows:

Fig. 12 Criteria for Medical System Design



Evaluation of Medical System

Regardless of characteristics and size of system, it is firmly required to establish evaluation formula to measure effectiveness of systematization. The Figure 13 is designed based on Milley and Pocinki, H.E.W. taking into consideration of management, operation, human behavior, organization, social characteristics in quality and quantity.

To justify effectiveness it is also recommended that study of resource accounting should be pursuit under theory guidance of Medico-economics concepts.

In conclusion, it is also clear that success of the systematization is in the hands of goal, resources, software, organization and human ware. And organization which can successfully induce systematization is always function-oriented instead of section-oriented. Good systems are for the organizations respecting their functions. If they are more bureaucratic, the chances are that their systems will become a hardware mess with less allocation to people. In order that this is prevented, it is proposed that the necessary factors for system be clearly analyzed in quality measures for human survival order instead of bureaucratic measures.

Fig. 13 Factors for Evaluation of the Total Medical System Effectiveness

1. Adequacy of system
2. Percentages for the Sick and Death
3. Quality of the care
4. Satisfaction of the patients
5. Degree of coordination within the community
6. Satisfaction of those who provide the care
7. Volume of information and method of its control
8. Rate of exchange and use of information
9. Capability of the system
10. Degree of contact to the population
11. Ability to invest and control
12. Manpower resource and professionality
13. Organizational capability
14. Degree of technology intigration
15. Solid earning power
16. Community health promotional activities
17. Trend of drugs utilization
18. Frequency of medical accident and preventive measures
19. Diagnosis and decision making
20. Treatment and its content
21. Environmental correction measures
22. Method of technology assessment
23. Degree of post-graduate education
24. Control of assets
25. Outward relocation of patients
26. Inward relocation of patients
27. Ability for long range plans and financial plans
28. Ability to develop software
29. Total medical treatment volume rate
30. Total medical treatment completion rate

Comment on Lectures by Prof. Kurata and Mr. Tsubo
(Abstract)

Prof. Haruo KATSUNUMA*

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Both Prof. Kurata and Mr. Tsubo talked about systems theory and the systematization of medical care and pointed out that in the theory of systematization of medical care, there are a great many factors which are not included in existing systems engineering. In systems engineering, it is usual to deal with the three units of man, machine, and technology, but in the case of medical care the components are man, man, and technology, and it is said that 90% of medical care is what systems engineering calls software.

As Prof. Kurata pointed out, there is no place other than the community in which to carry it out, improvements are required, including new quality in doctors and other medical care personnel, as well as the reclassification of medical care institutions such as hospitals. Also, extreme centralization or extreme openness is matter of degrees, and depending on conditions, this should be considered flexibly and should be decided in the community by community health investigation committees or the like.

This kind of investigation and investigations of the system of medical care economics which will enable rapid progress in the future are important, and this is one of the important problems of medico-economics.

Prof. Fujino set this up as a fourth category beyond public economics.

Prof. Kurata amassed original research on the idea of community, and we can affirm the importance of community characteristics which he has pointed out.

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Discussion on Lectures by Prof. Kurata and Mr. Tsubo
(Abstract)

Dr. LEE: I think that in order to combine medico-economics and medical care, it is necessary to combine horizontal thinking and vertical thinking.

I would like to talk about the community characteristics mentioned in Prof. Kurata's talk, taking an example from our experience in Korea.

One constant problem is that there are villages without any doctors. The fact that everywhere in the world there are villages without physicians is an important problem from the standpoint of preventive medicine and social medicine, and this is also a highly difficult problem from the standpoint of the physician who is actually dealing with the patients.

In Korea, the specialized medical system came in from the United States 20 years ago, and at present 78 to 80% of the physicians are specialists. Because of this there has arisen the problem that physicians do not go into agricultural villages, but instead gather in urban areas. Therefore, during the four-year training period for specialists, they are required to work in doctorless villages for six months, but this causes various difficult problems. For example, there are such problems as facilities and the fact that patients may not come to the specialists who have been placed in their villages.

The next problem is that although clinics were compulsorily established in various areas, they were faced with problems of not being able to provide equipment and of not considering community characteristics; in addition, there also arose a gap between the administrative sphere and the consultation sphere. In the long run, there were many problems of inefficiency, and nearly half of the clinics have been closed. Medical care institutions in agricultural areas involve this kind of complicated problems.

Also, as a problem of institutions in urban areas, since a free-choice consultation system is in use, big general hospitals have been set up in large urban areas but only 60 to 70% of their beds are filled. A considerable number of institutions are idle, and there are excess amounts of manpower. Institutions also compete with each other. Since such problems exist, medical associations are discussing such matters as the location of large equipment by considering planned placement among the hospitals.

In the area of manpower, excess manpower is being sent out to foreign countries as a means of controlling its supply and demand. After all, in the development of medical care resources, there should not be any loss, and we are glad to hear various ideas from President Takemi and medical care economists on how to control this loss.

Also, we would like to hear from Dr. Kurata on the matter of regional characteristics.

Prof. KURATA : We have the same kind of problems in some respects. In Japan we also have an administrative provision for doctorless regions, but as the regional societies have been changing lately, remote areas are becoming connected to urban areas by the transportation network. There is therefore no reason why even residents of a remote area cannot receive medical care. The only problem is that since there is no physician present, daily health management will become one-sided unless it is practiced sufficiently in these areas, and we are thus faced with the question of how to combine health management with diagnosis and treatment. Although we do not have a formal system of medical specialization in Japan, each doctor adopts his own field of consultation; in fact, many doctors are actually carrying out general practice to some degree.

In regard to the problem of primary care, the question of who will carry it out is not only a community problem but an important problem for the entire system. If we were to carry out primary care within a specialized medical system, some method for doing so would have to be considered. Problems such as grouping and training of physicians specialized in primary care could be considered.

In Japan, when we carry out primary care, the ratio of primary care physicians to those who are the equivalent of specialists is roughly 7 to 3. Although problems of education and life long training on primary care still remain, as far as human resources are concerned there is no difficulty, and our situation differs from that in Korea in this respect. This becomes quite a problem depending on the characteristics of the region and especially in remote areas.

At any rate, considerable effort should be made regarding education, and I think education in primary care itself is needed.

Prof. KATSUNUMA : In Japan, the economic aspects of medical care have been socialized since July 1, 1961, but since then doctorless villages have become an important subject in administration and in journalism. At that time, I was one of the permanent directors of the Japan Medical Association, and what the JMA insisted on was preparation of conditions for creating communities where physicians could reside in harmony with social development. This kind of idea is clearly stated in the Report of the Medical Care System Study Committee of 1963.

In regard to the specialized medical system, England, which has this system, has reconsidered it and set up a new medical education system and a program requiring physicians' certification, a program which coincidentally resembles Japan's. The reason that the United States has had success with a system of specialists is that it does not have a system of socialized medicine.

In this regard, it seems that Japan, whose situation is different from that of the United States, did not have to create a system of specialized physicians because it has a universal insurance system. Therefore, the current situation in Japan is that every physician selects the area in which he is particularly able in an environment in which he has the right to

perform any kind of medicine, and this has not developed into a specialized medical system.

Dr. LEE: There is a problem in equating medical care spheres with administrative units. For example, there may be doctorless villages even though there is a maternity hospital just across the bridge on the other side of the river. From such an example, we can see that the administrative sphere and medical sphere are important problems.

I think this kind of problem is better decided not by a single scholar but a variety of people who gather and reach a conclusion only after repeated discussion. I think this is only democratic.

Prof. EMI: I would like to hear the opinions of Mr. Tsubo about the meaning of the function and role of administration in the medical care system and the financial problems of the medical care system in relation to his statement that "allocation of medical care resources from now on will move from welfare to allocation because of administration's changing position from welfare of supply to welfare of allocation," and that "initiative in allocation will be taken by the administrative side."

Also, I think both the systematization of medical care and the systematization of administration will be important.

Mr. TSUBO: Medical care is not a relationship between demand and supply but between development and allocation. The fact that medical care in the past was given as a welfare policy means that there was a broad quantitative supply with quality as a second factor. There is no problem if it is supplied in balance with the economy, but during economic growth, a reserve for welfare is not considered important, and when the economy slows down, the cost gets to be unreasonable and good quality cannot be supplied at once since funds are drawn on which were not reserved in advance. Since technological development of medical care requires long years and accumulation of learning, development costs money and planning will take time. Therefore, it is necessary for the administrative side to put emphasis in regard to the allocation organs on how best to carry out national allocation. I explained this as "taking the initiative."

Looking at medical care administration in the United States, the policy there is to utilize a system whereby they could cope with the increase in the public burden for medical care expenditures, and it was not a systematization from the standpoint of the quality of medical care or the wide-range allocation of medical care in the true sense. That is what I was trying to say.

Forecasting Medical Manpower Requirements for Planning

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Any health planning process necessarily requires a projection of the probable demand for health services and/or health manpower requirements over time. Such a projection is not only one of the most important aspects of the health planning process, but also, is one of the most difficult tasks, considering the nature of the health sector, to be undertaken. This task is especially difficult for a developing country in which neither requisite basic data, nor previous studies are readily available. This paper deals with an effort to project medical manpower requirements as a necessary element of national health sector planning under the constrained setting extant in a developing country.

Because of the imposed constraints of insufficient basic data and the uniqueness of situations in Korea, a great deal of emphasis is laid on the development of a projection model suitable to conditions requiring extensive utilization of alternative proxy variables in order to bridge existing information gaps. The first part of this paper briefly examines alternative projection methods inclusive of the concept of demand for medical care, the most critical notion in any health manpower projection model. Then, a theoretical model and the variables and factors affecting it are presented, followed by the description of data used and the computational results. Finally, the implications of key variables crucially affecting the results and some feasible approaches to improvement are discussed.

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1. An Overview of Projection Methods

There are various techniques for projecting health service requirements[1], thus providing a basis from which health manpower requirements may be deduced. As in the case of any predictive model, each method has certain merits, but at the same time, each poses a number of limitations. The most commonly used methods for projecting health services are extrapolation of past trends, assessing biological needs for care, estimating effective demands for care, target setting approach, international comparisons, and various combinations of the above.

The method of extrapolating past trends presumes the availability of time series data, long and consistent enough to even out irregular variation factors. This precondition of data availability seldom can be met in the case of a developing country. Moreover, the *ceteris paribus* assumptions inherent in this method, i.e., that various forces affecting the past will persist the same in the future, or that various conflicting forces will continue to be counterveiling so as to be neutral to the main stream of changes, are hardly plausible in the context of recent experiences of developing countries. Should there be a serious enough planning effort to attempt health manpower projection, the past trends certainly would not prevail in the future. Nontheless, this method can provide a baseline for future requirements, subject to appropriate modification of identifiable strategic factors likely to affect the future.

Projection of biological need for medical care depends heavily on how expert opinion defines the need. Concensus on biological need is seldom reached and even a very conservative notion of biological need results in unrealistically high projections of service utilization. In addition, such factors as data limitations, methodological complexity, and lack of sufficient control over the behavior of both health care providers and consumers tend to make this method inappropriate or irrelevant for most countries.

Effective demand for care is a notion borrowed from economics. Except for possible abuses stemming from the ignorance and fear of upper income class in matters of health care consumption, effective demand for care is a subset of biological need. This concept of health service need is made more realistic by taking into account the cost of such services, given the actual or projected demographic and socio-economic characteristics of the population. However, it must be recognized that health care is regarded as one of the essentials of well-being, and that this approach completely neglects this important and unique characteristic of medical services. Thus, when the highly skewed regional distribution of health resources is identified as one of the most important policy issues, as in many parts of the world, projections based on this method would serve very poorly, as a basis for alleviating these inequalities over time, if not perpetuate them.

The target setting approach presumes a value judgement on the part of a projectionist as to what ought to be a desired status in a target year. By assuming the desired status and rate of improvement for the health sector,

this approach can specify various kinds of services produced and the manpower requirements to do so. Aside from the question of value-loaded target setting, there are at least two more prerequisites to be met in order for this approach to be useful[2]. First, that the health sector has within its power the necessary means to modify consumer and provider behavior. Second, that sufficient collateral data are available concerning the dynamics of utilization patterns and resource use to insure a feasible range for targets. Unfortunately, these preconditions are not frequently met, especially in the usual planning situation of a developing country.

Another often used method of projection is by the use of international comparisons. This method essentially determines the manpower requirements in the country under consideration by adopting as targets actual manpower levels existing in other countries who are at a similar level of development. In view of the divesity and complexities existing among developing countries, even among those countries within close geographical, cultural and economic proximity, it is almost impossible to find a model country suitable for another. For example, the Taiwanese pattern of development and cultural heritages have many features common to Korea. But, such underlying factors as weather conditions, disease patterns, topography, the sizes of population and territory, and other factors differ significantly so as to affect the utility of projection targets and outcomes. Nevertheless, such comparisons are extremely useful when analyzing broad trends in resource use and requirements.

Because of the utility and limitations of various projection techniques aforementioned, the usual practice in reality is to combine the various techniques described above at one stage or another of projections, partly to supplement the deficiencies of lack of data and other of the limitations implied by each method. Our own experiences during the recent plan preparation were no exception, since we also were confronted with various seemingly insurmountable problems due to nonexistence of certain prerequisites essential for projections. As a matter of fact, the following description of the model adopted, and of the computational results constitute a sequel of second best compromises thought to be most probable under existing conditions of uncertainty.

2. The Forecasting Model Adopted

Considering the constraints of available data, the forecasting model presented in this paper may be considered as a combination of various projection methods discribed above. In essence, what we had attempted may be broken down into three major segments. First, we tried to estimate health service needs based on projected population, disease prevalence rates and medical service utilization, including the average number of visits. Then, using the estimated numbers of working days and of cases treated per doctor per day, the manpower requirement for doctors is deduced. Finally, assuming certain realtionships, complementary or competing, between doctors and other medical and

health personnel, the projections of other medical and health personnel are estimated.

The preceeding procedures may be expressed in matrix form as follows:

$$D = VPM'U, \quad \ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where,

D; effective demand for health services in terms of the total number of visits to doctors at hospitals and clinics;
V; a diagonal matrix of the averages of visits per spell of illness;
P; projected age-specific and urban-rural population;
M; illness spell prevalence rates, urban-rural and age-specific; and
U; estimated age-specific and urban-rural utilization rates.

With the estimated number of patients treated per doctor per day (n), and the number of working days per year (d), and a correction factor allowing for seasonality in spells of illness over the course of a year (c), the required number of medical doctors (N) is calculated as follows:

$$N = \frac{c}{n \cdot d} D \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

In estimating other peripheral medical manpower, a number of postulates are introduced. These postulates pertain to three broad categories of medical personnel, namely: nurses and nurses' aids, dentists and mid-wives, and pharmacists and herb doctors; and concern the relationship of these personnel to physicians in providing health services. Since the services of pharmacists and herb doctors are substitutable for those of practioners of Western medicine, at least at the initial phase of an illness spell, the estimation of manpower requirement for this category of health personnel is made following the exact procedures used for medical doctors, using the utilization rates appropriate for the latters services. T'he services and functions of nurses and nurses' aids in the health delivery system are complementary and supplementary to those of medical doctors. Therefore, in estimating the required number of nurses and nurses' aids, the only modifications made to the estimation procedures used in the case of medical doctors consist of introducing the correction factor, the number of cases cared, and the number of working days in a year in Equation 2. The constraint of complete lack of data on dental services and utilization forces us to adopt the projection method based on international comparisons. In do this, we made extensive use of relevant data pertaining to Japan and Taiwan.

The effective demand projection model as specified leaves out, at least, two important determinants of the demand for health services. They are induced increases in demand for health service needs arising from generally improved standard of living, increased per capita income and improved level of education of the population. In the context of existing conditions and experiences of

Korea, the educational factor has very little impact on health needs and demands, especially in a short-term or intermediate term planning time horizon. Together, the economic factor of increased per capita income and improved standard of living is a double-edged sword. On the one hand, assuming that the income elasticy for medical services is positive, rising income would increase the effective demand for medical services. On the other hand, the improvement in the standard of living experienced by medical personnel would strengthen the preference for leisure on their part resulting in a reduction in the number of working days and the intensity of their work[3]. These influences have been considered in estimating the utilization rates of health services and the working days of medical personnel over time. In doing this, estimation of utilization rates in part relies on the target setting method by adopting the quantitative target of urban-rural utilization rates of health service in the target year.

3. Data Base and Adjustments

The time and budgetary constraints on the fourth five-year preparation did not permit any special surveys to be taken to gather new data or to supplement existing data. Under these circumstances, the best alternative was to extensively review and evaluate available data sources and to utilize them judiciously, since the resulting projections are affected and rather sensitive to the nature and reliability of the data used. Therefore, some remarks concerning basic data available and the necessary adjustments made in estimating key determinants of the model are in order.

3.1 Population and Its Composition

Since the early sixties, it is a well-established fact that Korea has experienced an unprecedented demographic transition as well as extremely rapid economic growth. The sharp decline in the population growth rate from about 3% in the early sixties to 1.6% in 1975 is indicative of the extent of population transition. Along with the sharp decline in the population growth rate, prolonged life expectancy at birth has introduced additional changes in the age structure of the population. The process of rapid development is also accompanied by an even faster rate of urbanization. For these reasons, the population projections were not only classified by age cohorts but also by the urban-rural classifications. In order to be consistent with the plan, the population projection for 1976–81 was derived from that being used for the guidelines for the fourth five-year plan preparation[4]. Since the guidelines do not provide population groupings by urban-rural resident classifications, except for the base and target year, the sizes of these population groups for the intervening years were extrapolated using the two bench mark years population age profiles. The Appendix Table 1 shows population sizes by age-specific and by urban-rural classifications for relevant years.

3.2 Prevalence Rates

Since the time horizon for the projections attempted here is for a five-year plan, it is safe to assume that no drastic changes in prevalence rates will occur during this period. Therefore, should there be a reliable set of recent and extensive studies on prevalence rates, this factor could be appropriately accounted for. However, since the pioneering survey on prevalence rate by Professors Park and Huh in May, 1962[5], there have been some thirty different surveys conducted using many different definitions, reference periods, sample sizes, survey procedures, etc., resulting in an extensive difference in the range among estimated prevalence rates[6].

Given these circumstances, a few representative survey results were selected, after a careful assessment of survey procedures and findings, resulting in the adoption of a probable range. Then, the simple averages of these figures were calculated to derive the prevalence rates adopted for purposes of this study. The resulting illness spell prevalence rate is shown in Tables 1 and 2.

Table 1 Monthly Average Spell Prevalence Rate for City Population

Age	Average	Male	Female
0 — 9	254.4	266.6	242.5
10 — 19	136.9	135.8	138.5
20 — 29	147.4	111.0	180.6
30 — 39	229.0	151.9	295.3
40 — 49	233.9	173.8	295.4
50 — 59	255.3	188.6	331.4
60 —	296.1	244.4	324.5
Average	203.7	176.1	230.8

Table 2 Monthly Average Spell Prevalence Rate for Rural Population

Age	Average	Male	Female
0 — 9	147.7	157.6	137.5
10 — 19	102.1	99.6	99.7
20 — 29	120.2	108.6	131.9
30 — 39	193.1	192.6	195.3
40 — 49	235.9	200.5	268.9
50 — 59	259.1	242.5	276.1
60 —	160.3	153.7	166.9

Since the reference periods of basic data are confined to selected months, the computed prevalence rate needs to be adjusted for seasonal variations. Although such variation may be identified in a developed country such as the

U.S.[7], it would be hazardous to directly apply the seasonal pattern of a developed country to any developing country. Therefore, no effort is made to adjust for seasonality in the prevalence rate used in this study, except allowance was made for such variations in deriving a correction factor that will be discussed later.

3.3 Hospital and Clinic Utilization Rate

In countries where the division of labor between physicians and pharmacists is not clearly established, and where alternatives for curative services are available, not all the sick and the ill rely solely on the services of hospitals and clinics. This is especially true in the case of Korea where a significant proportion of patients seek the services of pharmacists, herb doctors and others, in addition to others who can not afford to do anything but stay in bed. However, the utilization rate used here is confined to that of the number of cases seen by hospitals and clinics.

Again there are a numerous estimates of health service utilization rates for both urban and rural residents. Not only the survey procedures, sample sizes and the reference periods, but also the findings vary rather widely as

Table 3 Utilization Rates of Hospitals and Clinics, City Population, 1966

Age	Average	Male	Female
0 — 9	36.1	35.2	37.2
10 — 19	24.7	24.6	24.8
20 — 29	26.5	24.6	27.6
30 — 39	19.8	21.5	18.9
40 — 49	19.6	24.7	16.5
50 — 59	21.0	17.8	23.3
60 —	20.9	22.2	20.4
Average	27.2	26.7	27.5

Table 4 Utilization Rates of Hospitals and Clinics, Rural Population, 1974

Age	Average	Male	Female
0 — 9	24.2	27.3	20.3
10 — 19	18.8	16.3	21.4
20 — 29	28.9	29.6	28.2
30 — 39	30.6	34.9	26.9
40 — 49	33.3	43.6	26.0
50 — 59	28.8	31.1	26.7
60 —	22.4	19.1	26.0
Average	26.6	33.2	21.0

their variety in approaches[8]. As in the case of the prevalence rate, a judicious selection of survey results were examined to determine the utilization rate. After considerable assessment and numerous debates concerning various results, the utilization rate adopted for this study was that compiled by the Social Security Council of the Ministry of Health and Social Affairs in 1966 for urban residents[9], and that of Professors J. Huh and M.O. Moon in 1974 for rural residents[10]. These figures are shown in Tables 3 and 4.

To be consistent with the targets of the health sector plan, the yearly utilization rates for the years of 1977–81 have been adjusted also by extrapolating the utilization rate from the base year of 1975 to the target year of 1981[11]. The increase in utilization rate of 23% in 1975 to 50% in 1981 not only incorporates the increased demand for health service utilization caused by the anticipated general improvement in standard of living, but also is an expression of the intent of the government to ease the accessability of such services to the rural residents and the urban poor.

3.4 Other Relevant Factors

The other relevant factors in the projection model, as shown in Equation 2, are the estimated number of patients treated by a doctor per day, the number of working days per year, and a correction factor for seasonality. As of now, there are practically no such estimates available. However, according to a hospital operations survey by the Korea Hospital Association conducted in 1971[12], the average number of patients treated by a doctor at all hospitals was 7.4 persons. This figure seems to be extremely low as compared to the Japanese average of 20.9 patients per day in 1964[13]. Therefore, this number was adjusted by taking into account needs as reflected by working hours of doctors' in the base year, assuming that the equilibrium condition for effective demand and supplies was satisfied in that year. The resulting estimate obtained is 16.4 persons per doctor per day.

The working days of a doctor was found to be 317 days in 1971, according to a published survey by the Korean Hospital Association[14]. Given anticipated significant growth in per capita income and improvement in standard of living, there would certainly be some reduction in the number of working days occupying during the remainder of the seventies. Allowing for holidays and summer vacation, it was determined that 299 working days seemed to be appropriate for purposes of this study.

As noted earlier, the annual average prevalence rate of illness was not applied. Consequently, there would be some peak and slack seasons for incidence of illness and acute conditions. In the case of the U.S., the monthly incidence of all acute conditions varies normally from around below 40 to over 60 per 100 persons[15]. By taking a rough average on the lower side, we have allowed 20 percent of the estimated requirement to account for seasonal variations.

4. The Results of Projections

By following the projection procedures and by using the data as described above, the results of projection of manpower requirements are obtained as shown in Table 5. The manpower requirement for physicians is expected to

Table 5 Projected Health Manpower Requirements and Supplies, 1975-81

(Unit: 100 persons)

		1975	1976	1977	1978	1979	1980	1981
Physicians	Requirements	125.7	131.9	146.0	158.4	170.7	184.3	197.4
	Supply	124.9	130.5	143.8	155.6	167.5	180.3	191.8
	Surplus (Shortage)	(0.8)	(1.4)	(2.2)	(2.8)	(3.2)	(4.0)	(5.6)
Nurses	Requirements	113.3	131.5	151.9	175.2	201.5	230.8	263.4
	Supply (Liscensed)	112.6 (230.3)	129.9 (265.9)	142.3 (294.8)	165.3 (328.4)	184.4 (362.2)	205.0 (395.6)	225.8 (435.4)
	Surplus (Shortage)	(0.7)	(1.6)	(9.6)	(9.9)	(17.0)	(25.8)	(37.6)
Nurse Aids	Requirements	143.2	166.2	190.8	217.3	245.0	273.6	304.0
	Supply (Liscensed)	142.4 (223.4)	163.2 (276.0)	182.2 (296.0)	201.2 (316.0)	220.2 (336.0)	234.2 (356.0)	250.0 (378.6)
	Surplus (Shortage)	(0.8)	(3.0)	(8.6)	(16.1)	(24.8)	(39.4)	(54.0)
X-Ray Technicians	Requirements	8.6	9.6	11.7	13.5	15.4	17.5	19.7
	Supply	8.6	9.3	10.4	11.6	12.8	13.9	15.1
	Surplus (Shortage)	(0.0)	(0.3)	(1.3)	(1.9)	(2.6)	(3.6)	(4.6)
Medical Laborator Technicians	Requirements	14.2	15.8	18.3	21.4	25.6	29.5	33.6
	Supply	14.1	15.5	17.8	20.1	22.6	25.2	28.0
	Surplus (Shortage)	(0.1)	(0.3)	(0.5)	(1.3)	(3.0)	(4.3	(5.6)
Dentists	Requirements	22.0	23.8	25.8	28.0	30.4	32.9	35.6
	Supply	21.8	23.0	24.7	26.7	28.8	31.9	35.0
	Surplus (Shortage)	(0.2)	(0.8)	(1.1)	(1.3)	(1.6)	(1.0)	(0.6)
Dental Technicians	Requirements	6.8	7.6	8.8	10.6	12.4	14.8	17.1
	Supply	6.8	7.2	7.8	8.4	9.0	9.6	10.2
	Surplus (Shortage)	(0.0)	(0.4)	(1.0)	(2.2)	(3.4)	(5.2)	(6.9)
Pharmacists	Requirements	165.2	167.6	170.1	172.6	175.2	177.8	180.5
	Supply	166.0	173.3	180.7	188.2	193.9	199.4	205.2
	Surplus (Shortage)	(0.8)	(5.7)	(10.6)	(15.6)	(18.7)	(21.6)	(24.7)
Midwives	Requirements	16.3	19.3	22.8	26.9	31.8	37.6	44.4
	Supply	16.2	16.9	17.6	18.2	18.9	19.6	20.3
	Surplus (Shortage)	(0.1)	(2.4)	(5.2)	(8.7)	(12.9)	(18.0)	(24.1)

increase from 12,570 in 1975 to 19,750 in 1981. Considering the number of medical school enrollment, percentages of those passing the national medical examination, physicians engaging in professions other than health service delivery, of retirement, of overseas employment and other factors, we also estimated the projected supplies of medical personnel.

If we relate the projected medical manpower requirements and supplies, there are shortages and surpluses of specific medical skills of varying degrees. First, considering the projections pertaining to physicians, who play the leading and decisive role in the health service delivery network, the results show a slight shortage over the period, ranging from 0.6% to 2.9% of the total requirement. However, this level of shortages is not so significant as to require any immediate countervailing policy measures. A similar result was obtained and a similar conclusion was reached in connection with the supplies and requirements of dentists. Second, the projected requirements for nurses and nurses' aids also exceed the effective supplies for these professions. However the potential for meeting these gaps seems to cause no fundamental problems, considering the large numbers of those with liscenses. Should there be serious shortages, we assume that market factors would induce those who are inactive to enter the job market, this augmenting the growing second hump in female age-specific labor force participation rates[16]. Third, such paramedical personnel as X-ray technicians, medical laboratory personnel, dental technicians and especially midwives appear to present problems of increasing shortages of these types of manpower during the projected plan period. However, considering the existence of abundant supplies of trainable potential labor force, and the relatively short, say one to two years, gestation period required to replanish the stock of qualified personnel, the Korean society as a whole has enough potential built-in capability to adjust and to meet future needs for most of these personnel. But, to alleviate the projected shortage in the manpower requirement for midwives, some institutional changes in their training must be initiated, in addition to an attitudal change on the part of ultimate users of these services in the practice of delivery. Currently, the one year on-the-job training requirement at a below subsistence salary level at only a limited number of recognized hospitals beyond collegiate level nursing training discourages many qualified nurses from acquiring a liscense to practice midwifry, even though the potential demand for this type of service has been left unmet. Lastly, excess capacity in the supply of pharmacists is evident and cumulative in view of the projection of needs. This suggests that there exists a need to alter the training mix of health manpower in the interests of more nearly approaching optimality. Unless prompt action is taken to correct the enrollment quotes very soon and/or external demand for them is created, it is almost certain that a glut for this type of manpower will occur at least until the end of the seventies.

As noted above, there are no major problems in meeting the projected health manpower requirements, except in the case of paramedical personnel and mid-wives, for which some institutional changes in training could reduce the

shortage of manpower supplies to a large extent. More importantly, one should not lose sight of the fact that these projections, as in the case of any projections, rest on the basis of both the explicit and implicit assumptions stated elsewhere. Therefore, some qualifying remarks concerning these projections are in order. Primarily due to the constraints imposed by insufficient time and data, we were forced to presume the current practices of health service delivery and production to prevail. But considering the inadequacy of the current mix of medical personnel at clinics[17] and, to a lesser degree, at hospitals, and the heavy emphasis in the health sector plan on institutional improvements in existing health delivery system[18], the projections of manpower requirements should have taken into account the implications of such changes and innovations. But, unfortunately, these matters are only in the discussion stage currently, and no concrete measures can be readily implemented. To be able to reflect such changes, detailed micro level studies aimed at a functional analysis of health needs and services[19] should be undertaken. The results of such efforts would yield feasible recommendations and decisions concerning desirable modifications of the health delivery system, at least in the public sector. However, such efforts are very time consuming, and must await the systematic study of these problems by group of manpower experts representing different but relevant disciplines.

Another uncomfortable aspect concerning the projections presented above is that they deal only with aggregates at the national level, or at the best, within broad urban and rural classifications. Therefore, the most important aspect of any social sector problem, namely that of distribution is not adequately considered. It seems that issues of distributive equity involved in health and medical services manpower projections must be simultaneously examined along with questions of both appropriate health manpower mix and reform of the health care delivery system. However, any change and reform in order to alleviate distributional inequity in medical resources, unless accompanied with rather unexpected and drastic measures, would result in a moderate redistribution of medical manpower and in their fuller utilization by providing alternative options for delivering curative services. Consequently, such distributive changes and reforms, possibly would relieve modest shortages of medical and paramedical personnel in the aggregate as well.

5. Summary and Conclusion

Projecting any social phenomena is of a risky, conditional and probalistic nature. Despite a number of alternative projection methods for health services and manpower, no single method is absolutely superior to others. Attempting such projections under severe constraints on data availability, let alone their qualitative limitations, could be considered as somewhat less than heroic. In the process of recent plan preparation, what we have attempt in forecasting health manpower requirements is simply another attempt to quantify what would most likely occur during the time horizon of the plan. It is granted that

some of the underlying assumptions employed in deriving key variables and determinants deserve further scrutiny and elaboration.

Subject to the limitations of the adopted projection methods aforementioned, and in view of projected supplies, there seems to be no serious foreseeable bottlenecks in meeting medical manpower requirements until 1981, except the case of paramedical personnel and mid-wives. The projected requirements for nurses and nurses' aids may appear to be somewhat problematic in view of their currently low labor force participation rates. However, considering the existing and abundant liscense holders, the demand-pull for such professions would be met by fuller utilization and employment of the pool of the liscensed. Anticipated shortages in the projected requirements for paramedical personnel could be early met by expanding the capacities of such training institutions during the plan period. More urgent actions should be taken to reduce the student quotas for the schools of pharmacy, to ease the requirements for obtaining the liscense for mid-wifry, and to increase the size of enrollment for dentists.

To accomodate the emphases in the fourth five-year plan for distributional equity and social development, redistribution of medical resources and institutional reforms to augument the availability of medical services to the rural residents and the urban poor are two of the major priorities in developing the health sector plan. If these emphases are translated into specific policy measures, some changes in the manpower mix for medical service production, the utilization of hospital and clinic services, and the distribution of medical resources are expected to occur. The probable course of changes anticipated at this time, be it the redistribution of medical resources, the promotion of operational efficiency of national and provincial hospitals, the institutional reforms to strengthening health centers and sub-centers or others, would not cause the projected requirement of medical doctors to increase. However, it is most likely that the projected requirements for dentists, paramedical personnel and medical technicians would be increased in correspondance to the extant and intensity of such improvements. Needless to say, this basic framework of projections should be adjusted as necessary upon the finalization of reforms and improvements in the plan.

Footnotes

* The author is Senior Fellow, the Korea Development Institute, in charge of social development. This paper was developed while the author was serving as a standing members of his Sub-Committee, especially Professor Jong Huh of the Graduate School Health Resources for the fourth five-year plan in recent years. He is grateful to all members of his Sub-Committee, especially Professor Jong Huh of the Graduate School of Public Health Seoul National University, Mr. Man Ho Kim of the Ministry of Health and Social Affairs, Mr. Nam Hee Kang of the Korean Institute of Family Planning, and Mr. Dai Hwan Choi of the Korea Development Institute. He also acknowledges his indebtedness to Professor James R. Jeffers of the University of Iowa for his unselfish editorial help and encouragement in finalizing this paper. However, any error and omission remains to the author.

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6) The prevalence rates in these various studies range from the lowest of 30.2 per thousand to the highest of 986.1 per thousand.
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14) Korea Hospital Association *op.cit.*
15) US Dept. of Health, Education, and Welfare, *op.cit.*
16) Soo Kon Kim, *Labor Force Behavior and the Unemployment in Korea,* Korea Development Institute, 1976 (unpublished manuscript)
17) As of 1975, for every practicing doctor, 0.97 nurse, 1.30 nurse' aid, and 0.26 medical technician are employed. Considering the fact that the major portions of nurses and nurses' aids are employed at hospitals, the ratios of average nurse and nurse' aid to an independent practicing doctor would be even lower.
18) The Ministry of Health and Social Affairs, *the Draft of the Fourth Five-year Health Sector Plan, 1977-81,* pp. 35-96
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Appendix

Actual and Projected Age-Specific Urban and Rural Population Unit: 1,000

1975 (Actual)	Male		Female	
	Urban	Rural	Urban	Rural
0 — 9	1,891	2,413	1,770	2,331
10 — 19	2,088	2,590	1,993	2,370
20 — 29	1,662	1,341	1,724	1,098
30 — 39	1,239	1,019	1,145	1,033
40 — 49	734	837	747	950
50 — 59	430	659	439	703
60 —	273	392	650	766
Total	8,320	9,254	8,472	9,255

1976	Male		Female	
	Urban	Rural	Urban	Rural
0 — 9	1,882	2,353	1,780	2,276
10 — 19	2,146	2,593	2,044	2,374
20 — 29	1,761	1,407	1,823	1,148
30 — 39	1,256	996	1,170	997
40 — 49	789	864	793	969
50 — 59	435	657	459	708
60 —	399	963	551	645

1977	Male		Female	
	Urban	Rural	Urban	Rural
0 — 9	1,895	2,322	1,808	2,244
10 — 19	2,167	2,552	2,061	2,337
20 — 29	1,852	1,464	1,917	1,195
30 — 39	1,302	996	1,218	978
40 — 49	843	884	838	982
50 — 59	463	658	483	717
60 —	418	581	570	662

1978	Male		Female	
	Urban	Rural	Urban	Rural
0 — 9	1,896	2,275	1,821	2,193
10 — 19	2,186	2,505	2,081	2,304
20 — 29	1,965	1,538	2,034	1,255
30 — 39	1,346	992	1,265	956
40 — 49	899	903	882	991
50 — 59	485	662	513	732
60 —	437	596	586	675

1979	Male Urban	Male Rural	Female Urban	Female Rural
0 — 9	1,915	2,251	1,854	2,166
10 — 19	2,187	2,439	2,081	2,249
20 — 29	2,083	1,615	2,155	1,314
30 — 39	1,391	987	1,311	930
40 — 49	948	912	925	995
50 — 59	511	671	548	752
60 —	454	609	600	686

1980	Male Urban	Male Rural	Female Urban	Female Rural
0 — 9	1,946	2,241	1,897	2,147
10 — 19	2,168	2,342	2,059	2,171
20 — 29	2,212	1,702	2,292	1,383
30 — 39	1,444	985	1,369	910
40 — 49	997	917	964	993
50 — 59	534	673	580	764
60 —	374	494	732	830
Total	9,682	9,356	9,897	9,201

1981	Male Urban	Male Rural	Female Urban	Female Rural
0 — 9	1,972	2,123	1,932	2,118
10 — 19	2,162	2,181	2,060	2,119
20 — 29	2,345	1,782	2,424	1,447
30 — 39	1,480	970	1,410	876
40 — 49	1,058	928	1,015	1,000
50 — 59	556	672	611	772
60 —	500	648	641	722

Comment on Dr. Choo's Lecture and Discussion (Abstract)

Dr. Saburo NISHI*

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From my experience in participating in the economic planning consented to by the Cabinet last month, and in participating in the seminar on health manpower in the Western Pacific regions by WHO, and from the current status of Japan, I have been impressed by this detailed plan from Korea.

Future medical care can no longer be grasped by dividing it into traditional, classical public health and classical therapeutic medicine. For concrete health manpower planning, as Dr. Choo has pointed out, we cannot help but place some degree of emphasis on clinical fields. Our estimation has also fallen into the same kind of result, but I think that in regard to health manpower for the new medical care we should employ a new method. Especially estimation of demand has the greatest influence. Although we have not yet done this, but the problems of environmental health should be thought of as health manpower.

Dr. Choo makes a division into the three stages of biological needs, felt needs and demand, but I wonder whether it is not difficult to divide and measure in this way. He also assumes a fixed prevalence rate, but from our experience in Japan, it has been increasing rapidly. It is not easy to measure the prevalence rate in actuality, and as WHO and Dr. Choo have pointed out, there is a tendency of measuring the degree of awareness of illness. I wonder whether it will increase a little also in Korea.

Although "productivity" may not be the proper word, in the sense of the number of patients per physician, Japan's "productivity" is extremely high on an international scale. One reason for this may be that because of the characteristics of the physicians, they cannot help doing diagnosis and treatment even beyond the limits of his "productivity." On this point, there are arguments on where to limit this "productivity," but no conclusion has been drawn.

In regard to the demand side, we could not give quantitative investigations in the way Dr. Choo has done, but only in qualitative form.

At the bottom of the chart (Material No. 3) which I have submitted, a future estimation of the supply side based on the plan in our country is shown.

The ratio of physicians to nurses is higher than that in Korea, but for

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Table Estimation of Health Manpower

		1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
Physician	total	107,009	117,280	126,539	139,043	151,336	171,004	201,066	229,830	256,547	281,470
	per 100,000	119.9	125.5	128.8	135.3	137.7	147.5	166.4	184.2	199.9	213.5
	ratio to physician	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
Dentist	total	34,492	36,482	39,197	42,041	47,013	56,097	66.521	76,590	86,333	95,775
	per 100,000	38.6	39.1	39.9	40.9	42.8	48.4	55.1	61.4	67.3	72.6
	ratio to physician	0.36	0.31	0.31	0.30	0.31	0.33	0.33	0.33	0.34	0.34
Pharmacist	total	57,982	69,257	82,967	102,234	127,999	156,178	183,637	209,701	234,171	256.909
	per 100,000	64.9	74.1	84.4	99.5	116.4	134.7	152.0	168.1	182.5	194.9
	ratio to physician	0.54	0.59	0.66	0.74	0.85	0.91	0.91	0.91	0.91	0.91
Health nurse	total	(1957) 11,743	12,796	13,752	14,007	14,400	14,187	14,313	15,176	16,295	17,209
	per 100,000	12.9	14.0	14.0	13.6	13.1	12.2	11.8	12.2	12.7	13.1
	ratio to physician	0.11	0.11	0.11	0.10	0.10	0.08	0.07	0.07	0.06	0.06
Midwife	total	(1957) 55,468	55,436	46,349	31,559	22,829	16,096	11,861	10,018	11,018	11,425
	per 100,000	60.9	60.9	47.2	30.7	20.8	13.9	9.8	8.7	8.6	8.7
	ratio to physician	0.51	0.49	0.37	0.23	0.15	0.09	0.06	0.05	0.04	0.04
Nurse	total	(1957) 106,028	105,800	121,026	139,229	174,544	208,966	238,190	271,542	306,321	336,857
	per 100,000	116.4	116.2	123.2	135.5	158.8	180.2	197.2	217.7	238.7	255.5
	ratio to physician	0.97	0.93	0.96	1.00	1.15	1.22	1.19	1.18	1.19	1.20
Assistant nurse	total	(1957) 41,299	70,065	108,408	164,464	219,708	263,439	293,745	317,056	338,010	355,497
	per 100,000	45.3	76.9	110.3	160.1	199.9	227.2	243.2	254.2	263.4	269.6
	ratio to physician	0.38	0.61	0.86	1.18	1.45	1.54	1.46	1.38	1.32	1.26
X-ray, radialray technician	total			9,984	14,191	20,281	28,044	35.503	42,554	49,172	55,329
	per 100,000			10.2	13.8	18.1	24.2	29.4	34.1	38.3	42.0
	ratio to physician			0.08	0.10	0.13	0.16	0.18	0.19	0.19	0.20
Sanitary technician	total			9,317	17,365	37,144	59,032	79,473	101,884	124,481	144,483
	per 100,000			9.5	16.9	33.8	50.9	65.8	81.7	97.0	109.6
	ratio to physician			0.07	0.12	0.25	0.35	0.40	0.44	0.49	0.51

future planning, the training of paramedical staff is not sufficient. If we assume that all nurses must be college graduates, that would mean that approximately 13% of all college graduates, including junior college graduates, would have to go to nurses' training schools.

There are very difficult problems in the training of paramedical staff for the future.

The point which perplexes me in the material given to me is that educational training in order to obtain the number of physicians listed there can be considered to entail many difficulties.

This is not touched upon in our plan, but probably we should also consider the regional allocation of physicians as a future subject. However, it should not be an mechanical allocation plan, but functional sufficiency is necessary. Even if the ratios between the population and physicians are not necessarily the same for urban areas and rural communities, it will be all right if medical care is functionally sufficient, and I think it might be more efficient. I think one idea is to create various environments as social conditions for the effective use of physicians.

Dr. ChHOO: I want to explain this in relation to the utilization rate, which parallels economic growth, rather than in relation to the prevalence rate.
(Explanation on the blackboard)

In regard to regional allocation of health services, we plot the distribution of health facilities and manpower on a map as the consultation life-sphere, and then on top of that we consider transportation facilities. Right now we are carrying on the work hoping to attain a simultaneous time sphere within the consultation life-sphere, but after attaining it, ideally we would like to set up a same-cost sphere. We are studying regional distribution from this kind of viewpoint.

SUMMARY REPORT

Chairman : Prof. Masakazu KURATA
Keio University, Japan

COMMENT

Dr. Taro TAKEMI

President, Japan Medical Association, Japan

When the health insurance system was inaugurated in Japan, the Japanese expectation of life was 45 years. Therefore, when citizens died at the age of forty-five, many things went well, but now that they survive to seventy-five years, it has become difficult for insurance methods to cope.

Because of this situation, as I mentioned here (Chart 1), the health insurance managed by associations is on enterprise unit basis, and it exists to protect the enterprise. The employer's share is from one-half to four-fifths. The individual's share is from one-half to one-fifth. The employers' share is a favor for the employees and their family members, and for diversification of risks within the enterprise, but does not possess solidarity as social insurance. Also, in regard to age characteristics, it is for adolescence and maturity, and this is the period of high income. The union might be called a kind of health insurance industry, and it takes the form of a self-supporting system. The surplus funds are not returned, but are plundered. Their labor management is exellent, and the morbidity rate is low. This forms a system in which the wealthy have their own kind of insurance. Its main object is to protect the enterprise, and I think it does not essentially belong to the category of social insurance, but with the order of occurrence, a strong insurance system which is managed by the union was established in Japan.

Next is the health insurance system managed by the government for the small and medium size industries, in which the employer's share and the individual's share are each one-half. One characteristic of small and medium size industries is that working conditions are not good. As for age characteristics, although adolescence and maturity predominate, the aged group is comparatively large. Also, they belong to low income groups, and their morbidity rate is high. The current status is that their morbidity rate is higher than that of people covered by the health insurance manages by the associations.

CHART 1: Characteristics of Major Health Insurances in Japan

● Health Insurance Managed by the Associations — enterprise unit — protection of enterprises

Insurance Fees employer's share 1/2 — 4/5
individual's share 1/2 — 1/5

1. meaning of employer's share — favor for individual and his family
2. diversification of risks within the enterprise
3. no social solidarity of social insurance
4. age characteristics — adolescence, maturity, period of high income
5. union is health insurance industry — self-supporting system
6. good labor management — low morbidity rate

● Health Insurance Managed by the Government: small and medium industries

Insurance Fees employer's share 1/2
employee's share 1/2

1. characteristics of small and medium size industry — labor conditions
2. characteristics of age — adolescence, maturity and good number of senescence
3. low income group — high morbidity rate

● National Health Insurance — Low Income Group, Self-Employed

1. no employer's share
2. all costs borne by the individual
3. diversification of risks for city, town or village unit
4. enclaves of aged people
5. low income groups, highest morbidity rate

Characteristics:

1. no function of re-allocation of income on a national scale.
2. different insurance methods for high income groups and for the poor — unlike social insurance
3. incapable of lifelong insurance
4. does not correspond to the prolongation of life span
5. increased gaps among the various insurance systems due to the growth economy.

Next is National Health Insurance, which is for low income groups and the self-employed, and since there is no employer's share, it is totally supported by the individual. Also since this has diversification risks on a city, town and village basis, this has very narrow area of diversification of risks. They belong to low income groups and the morbidity rate is highest. I experienced that when the Japan Medical Association carried out research on a specified area, the morbidity rate was found to be over 60%.

I presented mainly just these three. There are still various insurances flooded, but I would like to present the three main ones.

They don't have the function of re-allocation of income on a national level.

Also, these are intended for high income groups and poor people separately, and are not like social insurance.

Further, they are not capable of lifelong insurance, and do not correspond to the prolongation of life span. In twenty years, the average life span for

CHART 2: Path to the Future Guarantee of Health

1. To combine solidarity of health into the basic conception. Guarantee of Health
2. Characteristics of diseases

of { community / occupation / ageing } (natural environment / social environment)

Community Health — Insurance
Industrial Health — Insurance
Geriatric Health — Insurance

3. Prolongation of lifespan — Introduction of the idea of guarantee for all generations.

Age	10	20	30	40	55	60	70	80
Characteristics	dependent period	high incom period			retirement		low income period	no income period

Japanese will reach eighty, and the aged will occupy almost 25% of the total population. If this happens, three young people will support one aged, and we are already facing a period when insurance cannot bear the burden before us.

Also there is a serious problem of gaps among the various forms of insurance which have increased because of the economic growth. I think it a very weak point as a social insurance that the gaps have been widened among the various insurance due to the economic growth.

Therefore, when we think about the subject of the path to the future guarantee of health (Chart 2), one should combine the solidarity of health into the basic theme, and take a stand for the guarantee of health.

A second point is to consider community, occupational and age characteristics of diseases, and making divisions of community health, industrial health and geriatric health, to consider insurance for each.

The problem of community health is to form fields which will correspond to community characteristic within one national formula.

Now, there are many types of industrial health, but this can be carried out within the bounds of the employer's share by combining it with workmen's accident compensation insurance. I don't think it necessary to include industrial health especially in the health insurance system.

Next is the problem of geriatric health, and we have to give consideration to this by all means. When we think about it, because of the prolongation of lifespan, we have to introduce the idea of guarantee for all generations, and it is not appropriate to consider only one generation. Assuming one lives to be eighty years old, as I mentioned there, he goes through a period of being supported, a period of high income, reaches retirement and a low income period, and goes into a period of no income. I think if we consider a solidarity of health throughout these periods, consider solidarity of one's own health and also solidarity with others, and if we integrated insurance with the idea of community health industrial health and geriatric health, there will be no problem.

REPORT

Prof. Emeritus Isamu YAMADA*

Hitotsubashi University, Japan

I would like to make a summary report for the Japanese side, but I might touch to some extent upon the subjects that the Korean side has discussed as cases may require.

Young and energetic scholars from Japan and from Korea, have analyzed the various problems and reported on the problem of medicoeconomics from their respective specialized field, and they are very helpful to my own study.

1. Since time is limited, I would like to get into the subject straightforward. First, we had President Takemi's lecture on the global structure of medicoeconomics for the first time, or at least for me this is the first opportunity to hear it, and I think if there had not been this kind of symposium, I could not have had a chance to hear him. The President gave a report which enlightened us very much on the relations among human existence, environments, and medical care. Of course, since there is no need to repeat it again here, I would like to mention just the main points. First, he gave a new definition on the subject of the existence order of human being. Next, after talking about the concept of health, he touched upon the concept of resources. The problem here is that until now economic resources have been considered in a materialistic sense, but on the contrary he extended this into broader sense and pointed out that problems, which we economists couldn't even perceive, such as environmental resources, cultural resources, and thought resources, are very important problems, and this is an excellent guide for us.

He also tried to seek a solution to the problem of relationships between medical care and medicine from the standpoint of life science. In order to do so, he said that their relationship to other related sciences should be considered, and that it is especially necessary to consider their relationships to economics. He talked about the inevitability of the idea of medicoeconomics as a conclusion. And he said that in medicoeconomics, economic problems and medical care problems should be combined or united, not in bilateral forms

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but, in economic terms, in mutually dependent or general equilibrium relationships. He spoke on this kind of matter, and it was a very valuable lecture which gave an important guideline for us to consider the problem of medicoeconomics for the future.

2. Next, there was a report from Prof. Koichi Emi as the first speaker from the Japanese side on the first day.

It was a report entitled "Progress in Medical Care Economics by the Japan Medical Association—Special Emphasis on the Research and Study Activities of the Japan Medical Association." Since he presented a very detailed report, there is no need for me to repeat it again, but I would like to add one point. Prof. Emi presented the activities of the Japan Medical Association based on the record after 1953, but prior to that time I participated in the study groups on the relationship between economics and medical care in the Japan Medical Association during the period of 1950 to 1955. Therefore, I would like to point out the problems of that period. Based on Dr. Takemi's opinion that economics would by all means be necessary to solve the problem of medical care economics, staffs including myself put our efforts into solving such problems.

I would like to touch upon the circumstances of those days. It might be especially helpful to Korean study. I should think so because in the nearest future it becomes an actual problem how to introduce the problems of social security and social insurance into the execution of policy in Korea. At that time, the decision taken by the authorities (by which I mean governmental agencies, especially the Ministry of Health and Welfare) was that how to determine the medical fee was made by a so-called "Simple Labor Formula" (you may call it Stop-Watch Formula also) it is a method for measuring the medical fee in proportion to the time spent, using a stop-watch. In short, it is a method to calculate the medical fee as a linear function of working hours. In other words, this is a calculation method where a stop-watch is a means to find out how much the medical fee is, including technical allowance. Speaking from the economic standpoint, even Marx did not take up such a simple formula. Marx said in his "Capital," that labor should be divided into simple labor of low quality and complex labor of high quality. Although the problems of physicians were not taken up by Marx, he said that evaluation of the work of people who performed highly qualified labor, such as lawyers and those who performed lowly qualified labor, such as street construction workers could not be done on the same basis. The difference between them should be determined by social evaluations. Moreover, such a simple idea as measuring by a stop-watch was not mentioned even by Marx. Anyway the then Japanese authorities adopted exactly this kind of Stop-Watch Method. I remember that the Japan Medical Association rebutted it especially in the estimation of technical allowance, and the Association asked us to give an economic justification. Even now we can not conclude that such a kind of Stop-Watch Method has been completely abolished by the authorities.

What was most problematic here was the question of practical calculation of technical allowance, and the Japan Medical Association, which opposed the Stop-Watch Method, had to offer an altenative method of calculating technical allowance. This kind of methodology became a problem, and at that time three methods were suggested. One was to consider the technical allowance by international comparisons. Another was to calculate it by time series comparisons. The third was macro-analysis. Since these three methods were mentioned in Prof. Emi's report, there is no need to repeat them here. With respect to the necessity of its international comparisons, works in this direction have been initiated by the research section of JMA.

Also, there was a question as to whether we could perform appropriate calculation of technical allowance by the time series comparisons and the cross-section comparisons. This was also related to the methodological problem of whether it was possible to arrive at a reasonable figure based on the actual research data, but at any rate, recognizing the existence of the theoretical problem of how best to arrange the data in order to obtain a proper or nearly proper results in such cases, the field survey of the current status of medical care economics has been carried on up to the present. In my opinion it is necessary to approach the solution of the problem by carrying out a follow-up or chasing study on the well-managed clinics or hospitals and by time series comparisons. Anyway, this investigation of current status of clinics and hospitals has become one of the important tasks of JMA, and has been continued until now. Needless to say, the investigation of current status can offer row materials for the problems of computing fair medical fee. It describes the current status of medical care. The current status is, of course, not always ideal. But, it presents the information about the suggestion how to revise it and to make it reasonable.

Macronalysis, the third method to study, the ratio of medical care expenditures to national income, has been an issue since that time. It was calculated not only by JMA, but by the staffs of the Ministry of Health and Welfare. Our side was considering a macro-standpoint on how the medical care section should be situated in the national economic system as a whole. Considering these points, as Prof. Emi mentioned, it may be safely said that the directions of the JMA, especially regarding medical care economics, were theoretically and practically proper and reasonable to some degree and this has continued to the present.

Now, one example which I would especially like to take up as a problem is that at that time there arose the problem of how to determine a doctor's fee for a visit. In this case, I thought the Ministry of Health and Welfare was considering a method such as, shall I say, the Railway Fee Method, or Distance Diminishing Formula. Generally speaking it is a method of determining public fees. As to medical fees, this method is such that they calculate total cost and then add fair returns, or reasonable profits or allowance. We call this the full-cost principle in economics. With respect to full-cost principle, how to determine reasonable allowance is the most important problem. Anyway,

this is considered even now to be a established method of determining fees of public institutions including railway fares. However, new field of economics called public economics later came into being, and from that aspect, new methods of determining public fees have become a problem at present, as reported by other reporters. What I want to emphasize here is whether or not the-cheaper-the-better policy is only a question of the public fees. This policy is also taken up by the recent Korean Five Year Plan. From the standpoint of equity or equality, public fees should be kept cheap so that facilities will be easily available to users. This is so far a generally established theory. However, as recently appeared the problems such as railway fares and electricity fees after the so-called oil shock, the problem of resources has become a question, and the idea that from the standpoint of the security or saving of resources higher public fees cannot always be blamed. Thus, not only from the standpoint of equity (the-cheaper-the-better-policy) characterizing previous public fees, but from the standpoint of resource conservation, another factor enters into price determination. This is a very new and important problem, and its theoretical development will be needed from now on.

3. The second reporter, Prof. Tamura, presented "Indicative Community Medical Care Planning" at the beginning of the second day. I would like to avoid repeating it, but he explained the meaning of the word, "indicative," and it is used in contrast with the word, "planning." It was written as "indicative" in English, and although I have not yet fully understood the meaning of the word "indicative," at least it is not "planning." Whether it is indicative or not, the important question is what types of methods can exist in order to induce people's decision toward a certain direction under a free economy. Taking an example from France, he contrasted it with the situation in Japan. However, in conclusion, he considered the efficiency of the system. Prof. Tamura emphasized the necessity of the efficiency of the system and in turn that of a system of capital circulation.

In this case we often use the terminology, such as "indicative," "plan-making," or "projection," which is often used in the United States ("projection" has a special meaning, and it is something like "planning" and "prediction" put together. "Planning" has strong connotation of "plan," but "projection" is accepted as something weaker). For example in the case of "projection," we set up a guide-post, and investigate in various ways, what kind of means are needed in order to reach the guide-post. Anyway, whether it is a planning, or an indicative problem, I think there are two criteria which we have to consider, i.e. efficiency and equity. Prof. Tamura emphasized a system efficiency, and this point is also mentioned coincidentally by Prof. Fujino. However, efficiency and equity are two sides of planning, and we have to consider not only efficiency but equity at the same time as Prof. Fujino indicated. As such being the case, it is necessary to solve the problem of trade-off between efficiency and equity. We found out clearly from the explanation of the Korean staffs that the Fourth Five Year Plan in Korea puts emphasis on this problem of

equality. The difficulty we face if we put emphasis on "efficiency" is how to consider "equality." So that I think it is necessary to solve the problem of how to adjust these two—"equality" and "efficiency"—in a more practical manner.

Other than the aforementioned items, when we consider a plan or projection, the problem of balancing in each sector becomes the third important matter. General equilibrium theory has considered the relationship of this balance, and also in planning or projection the balance problem should be maintained.

Fourthly, not only the problem of balance, but circulation also has to be kept in mind. In this sense, I agree with Prof. Tamura who emphasized a system of monetary circulation. In short, when we make a plan, we use the means of maximization to attain efficiency, and balance, and circulation, in addition to both this efficiency and equality have to be integrated without any contradiction in the plan. I think these four are the important matters when we talk about planning methods, or projection methods, or indicative cases.

4. Next was the report by Prof. Fujino. This was on "An Approach to Medicoeconomics," and he talked about the necessity or inevitability of medicoeconomics. The main point of Prof. Fujino's analysis was to divide human being into two. One is *homo economicus*—economic man, and the other is *homo medicus*—shall I say, medical man. From these two standpoints he considered especially the problems of medicoeconomics. He said that homo economicus, as economists have done in the past, aims at economic efficiency first. And in the case of homo medicus, life is the final objective. In order to integrate the behavior of homo economicus, where the economic efficiency comes first, into the behavior of homo medicus, administration is needed. He concluded that the problem of medicoeconomics is to consider the aforementioned various matters and presented one guidepost for the future of this medicoeconomics. I think the future problem is to find out a practical method to solve these problems concretely.

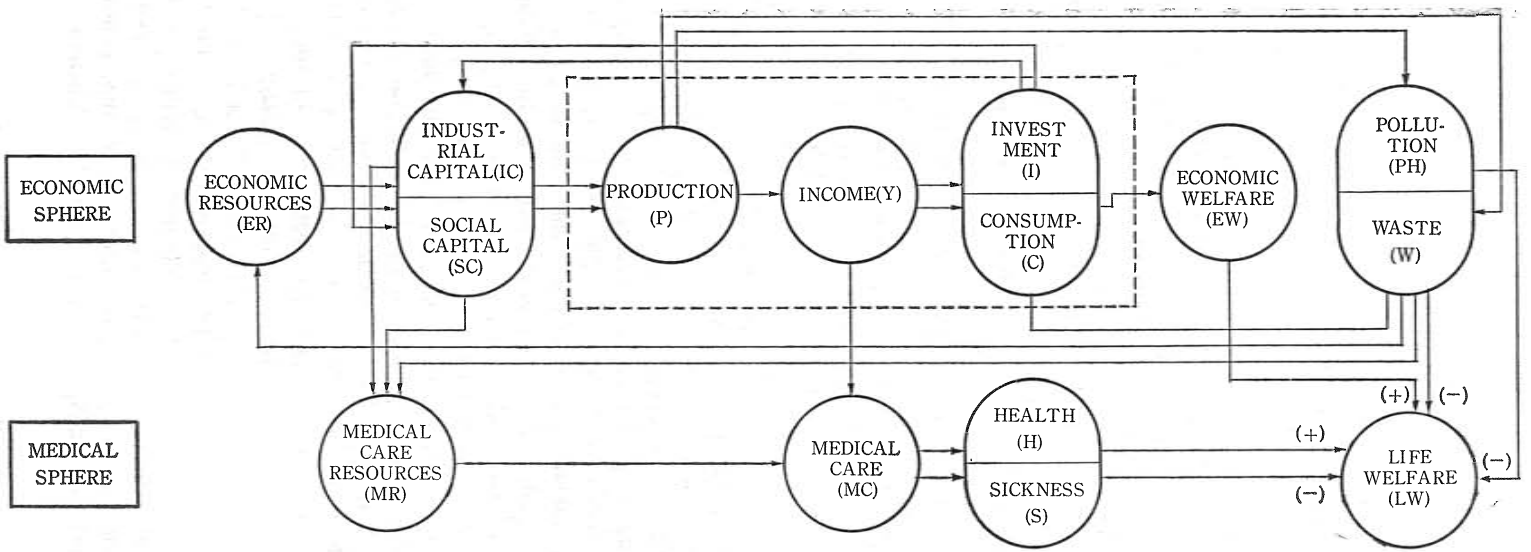
5. Next, Prof. Kurata reported on "Development and Allocation of Medical Care Resources—Medical Approach" in the afternoon of the second day, and if I were to put his problem in order from my viewpoint, it lies in establishing especially a medical care sphere, and this has to correspond to the so-called life sphere. Problems of doctorless villages and other problems were taken up in the discussion. He approached the problem especially from the standpoint of a medical doctor, and gave a great many suggestions to us who study economics. The only difficulty is, however, how to carry it out under a free economic system when we should set up this medical sphere and systematize hospitals or clinics or centers within it. I wish to have a sincere hope that we can get his suggestions in the future again on this point.

In this case, we have to consider the movement of the patient and the movement of the physician under the free economic system. In economics,

there is a tendency in which materials, labor and capital will flow to area where products with good quality and low cost are produced, but in medical care, in addition to these economic problems, factors such as the doctor-patient personal relationships of confidence, i.e. human relationships, will induce the move of patients. This is a problem which has never been taken up in economics in the past, and I think a new problem is offered here, and at the same time I think a clear direction toward the solution can be found by analyzing the principle of movement in medicoeconomics. On the other hand, in regard to the movement of the doctor, it is of course an economic principle that they gather at the place where the income is high but besides this, producers will gather at better environment. Producers will gather where the income is high, facilities are good and easily available, interest rates are low, and raw materials are easily obtained. Of course, it's a hard task to define physicians as producers, but if I am allowed to do so, in the case of physicians' movement, these factors are indispensable. However, at the same time, the above tendency is not only found among usual industries, but among doctors. Industries employ workers, and the latter gather at the area where they can enjoy better life, so that it is easy for industries to get abundant employment in the better environment. Besides this, in case of physicians, shall I say, moral choice affects the movement of physicians. For example, instead of the fact that physicians do not gather in out of the way places, based on their moral consciousness, they dare to go into remote places. How to grasp the problems of such kind becomes a very important issue. This, of course, cannot be solved alone by the past economics by any means, and we have newly to consider this as a problem of medical care. In economics, there is the so-called "Petty Law." As you probably know, it is the economic rule that, to an industry with high value-added, labor and capital move, and I strongly felt that we should think on this occasion what "Petty Law" is in medicoeconomics.

6. Next was the basic concept of systematization by Mr. Tsubo, the last speaker. He analyzed the situation of medicoeconomics in the over-all system in a very detailed way, and from the standpoint of his specialization of human engineering or ergonomics, he revised one example of systems of the United States so that it can admit to introduce medical care economics into it, and explained it with slide presentations. There are very many factors in it, and I think they will be very useful in finding out the factors for studying medicoeconomics and they are of use to consider how to combine them.

7. While listening to each speaker especially from Japan throughout this symposium, and based on what President Takemi said at the beginning, I have been contemplating since the day before yesterday what would happen if I make up a model which can be conclusive, and which can be put into a computer. Please look at the graph on page 110. I think in some sense I've taken up the important parts of the problems which have been presented by various speakers.



(1) $ER=a_1IC+a_2SC$
(2) $IC=b_1\underline{P}+b_2MR$
(3) $SC=b_3\underline{P}+b_4MR$
(4) $P=cY$
(5) $Y=e_1(C+I)+e_2MC$
(6) $I=f_1IC+f_2SC$
(7) $C=gEW$
(8) $EW=hLW$
(9) $MR=iMC$
(10) $MC=j_1H+j_2S$
(11) $H=k_1LW$
(12) $S=k_2LW$
(13) $PH=1LW$
(14) $W=m_1LW+m_2ER+m_3MR$

I would like to ask you to look at the chart. At the upper part, the main part which has been considered by economics in the past, especially in Keynesian economics or the theory of national income analysis are encircled by dots in the center of the Figure. Here, such as economic balance or circulation were considered, where sectors; production (P), income (Y), investment (I), and consumption (C) come in. But, as seen in the recent U.S. economics, it is not enough only to analyze the problem in such a narrow area, and something like an environmental economics has been introduced. In such environmental economics, what kind of situations must be given to pollution and waste sectors in the economic flow chart and how do they circulate in it? Also, as I mentioned just now, the problem after the oil shock must be treated in the framework. This problem can be solved by introducing resource sector in the chart. This idea is still in the experimental stage, and I would like to revise it after hearing your opinions.

What is at the bottom is related to the problem of the medical sphere. This is a field in which we economists would like to acquire some knowledge from doctors. Anyhow, I wrote it down in a very simple manner there. In short, the upper part is related to the problem of the economic sphere and the lower part to the medical sphere, but so long as they go in bilateral manner, it is still at the stage of medical economics, not of medicoeconomics. As President Takemi said, by uniting or integrating these two the problem of medicoeconomics will arise, and what kind of diagram is depicted when we think of how to unite them in balance and to think of their circulation? The answer is shown here.

Since there is not much time left, I will limit my time only to this idea. At the leftist sector of the Economic Sphere, economic resources are indicated as ER. This will be divided into two: industrial capital (IC), and social capital (SC). The arrows show the routes and the directions of flow. The flow of the industrial capital which comes from ER goes into the production sector, and the flow of the social capital which also comes from ER goes into the production sector, and the flow of the production sector next becomes income, and the income will turn into investment and consumption. Here the graph rules out both government sector and foreign sector, but even if we include these two sectors the basic rule will not change. In this manner, investment and consumption are derived out of income. This consumption flow goes toward the economic welfare sector (EW). There are the environmental pollution sector (PH) and the waste products sector (W) at the extreme right. Production emits pollution and waste products. This is drawn with arrows in the graph. And here another arrow from the consumption sector is directed to the waste products. Meanwhile, investment is fedback to industrial capital and social capital. The arrows indicate this. And as to the waste products, they are reproduced and fedback to economic resources. In regard to this, President Takemi especially emphasized the reproduction and utilization of waste products in his address, and I think there is no question that resources such as water resources have especially been treated very carelessly in Japan. It is necessary

to let these waste products flow back to the economic resources.

Now, with regards the Medical Sphere, while there are flows from industrial capital and social capital to medical care resources (MR), at the same time another flow from the waste products in the form of re-utilization comes into medical care resources, which is the same as in economic resources. From these medical care resources, medical care (MC) comes out. From MC, health (H) and sickness (S) come in turn. Finally, health gives a positive effect toward life welfare (LW), which is classified differently from economic welfare. Sickness, of course, gives a negative effect on life welfare. And another one, that is economic welfare which I've mentioned before in the Economic Sphere, flows into life welfare positively.

So this is how it is, and we call this a flow-chart, and the analysis by flow-chart is to analyze the relationships between an outgoing arrow (this is called "output") and an incoming arrow (called "input"). Therefore, take the economic resources sector, for example, then the outgoing arrows are toward the sectors of industrial capital and social capital, and these are outputs, and on the contrary an arrow comes into this from waste products as an input. Each sector has incoming and outgoing arrows in general, i.e. each sector has both input (s) and output (s). However, there is one exception. That is the life welfare sector. Here there are only incoming arrows; that is, there are inputs but no outputs. In this kind of sector, we call it the "objective sector". So that the objective sector has only input (s) but no output (s). In short, this sector is based on the idea that output is consumed by itself.

Now, by making this kind of flow-chart, one equation can be set up as to one sector, only by pursuing outgoings arrows. These equations are written at the lower part of the chart. I will omit details about these equations, as self-evident. After all, there are fourteen equations, while the sectors which are enclosed by circles or ellipses amount to fifteen. Therefore, the difference between the number of the sectors and the number of the equations, i.e. $15-14=1$; and this difference is called "the degree of freedom." This framework which is now shown in the Figure is that in which the number of the objective sector is just equal to the number of the degree of freedom. Then, the government can decide the value of the objective sector as it likes. Therefore, if I were to explain this in this chart, assuming the life welfare sector as the objective, the value of the life welfare sector can be planned by the government. Then, the other values of the rest fourteen sectors can be computed by the fourteen equations. The latter fourteen values can attain the balance of the value of the objective sector. In this case, according to the purpose of a decision maker, rather than considering life welfare as a final objective, medical care resources may be, for example, considered as an objective sector, and by determining this value first, it is possible to obtain each economic balance and circulation corresponding to this value. In this case, rearrangement is made again. Numerical values of planning or prediction can be obtained by so-called simulation method. Theoretically speaking, its coefficient matrix is easily proved as non-singular, and therefore, we have a necessary and sufficient condition of its

solution.

Here, the question remains with regard to the estimation of parameters which are involved in the fourteen equations. For example, if I were to explain about the first equation, $ER=a_1IC+a_2SC$, the economic resources will flow to industrial capital in the ratio of a_1 and to social capital in the ratio of a_2, but in this case, there is a problem of how to estimate parameters such as a_1 and a_2. This problem of estimation belongs to econometrics. If we were to decide the values of all parameters which appear in the fourteen equations, this system is so-called *under-identified* in econometric phrasiology, and we cannot determine all their values. However, we will consider a special device a little further about it, and we estimate separately parameters step-by-step as far as possible until the system becomes *over-identified* or *just-identified.* Then, the values of all parameters can be determined.

Now, another point we have to mention here is the problem of life cycle or the problem of life science suggested by Dr. Takemi. The above system is understood as static, i.e. it has no time element. In an economic terminology, it is a cross-section chart. However, we are able to make it dynamic by applying it to the past, the present and the future. In this case we have to determine a great many factors. However, I think the computer capacity of today can cope with this difficulty.

Finally, one more point I would like to add is where the problem of maximization comes in here, and as I said earlier, life welfare is the objective sector, so that we introduce here a method which will maximize the value of this LW. In this connection it is appropriate as a rule to obtain the maximum value of LW for each point of time, not for throughout time including the past, the present and the future. In regard to this method, I recommend the Multi-Stage Decision Theory which was proposed by Bellman fourteen or fifteen years ago. This issue has become a problem. For maximization in this dynamic model, a usual linear programming method (which is known as Dorfman-Samuelson-Solow Method) has been mainly used by economists up to now. This will be effective for long term aims, but not answer the purpose of the actual policy. So that I think it is better to apply the Bellman's method in order to meet short term aims.

At the end, I present my own opinions, but this is only a tentative scheme, and at the same time it is just to show you a bit about what kind of model can be considered if we were to calculate by computer, especially in relation to the methodology of medicoeconomics.

REPORT

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Before I proceed to summarize and highlight the presentations of the Korean speakers, let me make a few observations on the two exciting full-day sessions we had. Although the sessions seemed so diversified from economics to medicine, and to systems management; from a global point of view to a specific aspect of a sub-system; and from development of medical resources to redistribution of them, the common theme carrying through all the presentations and discussions was how to improve conditions of human well-being and maintain human survival.

While the presentations by the Japanese contributors centered around the concepts of medicoeconomics, originated by Dr. Takemi, and development and distribution of medical resources primarily with emphasis on its conceptual developments, both long run and comprehensive, the papers by the Korean counterparts deal with policies and measures with particular reference to our fourth five-year development plan, 1977 through '81. Therefore, we felt some gaps in the points of views, and especially the analysis and the conclusions of Korean speakers necessarily presumed both implicitly and explicitly the prevailing historical conditions of Korea, both political and social, economic and institutional.

Being especially constrained by competition with national security, economic growth, industrialization, and fuller employment in the use of available non-human resources, and being overwhelmed with time and resource constraints and the lack of convincing and established theories and analytical methods for health economics, emphasis is given to the distributive aspect and effectiveness of health and medical delivery systems taking a rather short-run perspective. Of course, we grant that such a global and comprehensive approach as the system of medicoeconomics would broaden our scope in dealing with the policy issues. As a matter of fact, we are taking back with us further synthesis and critical self-examination of our analysis in view of the broad system of medical economics as homework for tomorrow.

With these notes I am proceeding to the summary of Korean presentations. In presenting the basic framework of the health sector plan for Korea's fourth five-year plan, 1977 to '81, Dr. Koo gave as a background the characteristics and strategies of the three earlier five-year plans. Namely, that being confronted with both common problems of underdevelopment and unique problems of

Korea, the Korean planners could not help but pursue the strategy of outward-looking industrialization for export-led growth. Specifically, the previous plans laid the highest priorities on promoting the manufacturing sector and export industries, and on social overheads to back this up. Sometimes these efforts are made at the risk of inflation under Korea's population pressure and scarce endowment of material resources. Such a development strategy, despite some undesirable side effects and induced problems from rapid growth, was the main engine of the success story of recent Korean growth experience in the '60s.

After a decade and a half of almost two-digit growth rates, the Korean planners have presented growth, equity, and efficiency as three guiding principles in preparing the fourth five-year plan. From the egalitarian point of view, the emphasis on equity, and to a lesser extent on efficiency, may be considered as a significant break-away from the past planning effort in Korea. It is the first time in Korea's planning history that promotion of equity through social development is so emphatically emphasized. To my knowledge, we never even used the term "social development" in our former plans.

Without a doubt, health is one of the important elements of social development. According to a survey conducted by a daily newspaper in Seoul commemorating the 30th anniversary of Korean liberation, the utmost concern of the public was, as a matter of fact, health. Especially in the context of Korea, the problems and issues in the health sector are considered as the most important by the general public of Korea. Some of the important issues and problems in the health sector highlighted by Dr. Koo were relatively high infant mortality rates, maldistribution of health and medical resources among regions and among social classes, low utilization rates of medical facilities and manpower, low rates of public investment in health, lack of basic sanitary facilities such as piped water and sewage equipment, and emerging problems of a deteriorating environment. These problems were further complicated by administrative ineffectiveness and inefficiency in both public and private sectors.

To tackle these problems and issues, Dr. Koo reviewed some basic directions of the health sector plan and specified policy measures and programs. In presentation of his policy measures and programs, there were sometimes warranted questions and doubts, particularly on the part of Japanese participants. I think these questions should be reviewed in terms of differences in point of view and lack of mutual understanding, particularly the understanding of the basic conditions prevailing in Korea. First of all, our point of view is rather shortsighted. We are primarily dealing with five years, from 1977 through '81. Second, we are primarily concerned with the issues and problems in the context of Korean development. That is to say, we have examined the last fifteen years of development processes, and we have critically examined where we stand now and the conceivable critical problems in the next five years.

Another difference may stem from semantic problems. We use the terms "growth, equity, and efficiency" to emphasize a certain point of view. As a matter of fact, these three elements may all be integrated into one, namely, fuller development. We certainly do not desire equity without growth as in

the case of Sri Lanka. We certainly do not desire growth without equity as in the case of some of the Latin American countries. Without efficiency, we cannot imagine growth.

Our emphasis on equity and efficiency in the health sector is because we have so much under-utilization of the medical resources currently available. On the other hand, we see relatively little difficulty in developing medical resources since we are favorably endowed with trainable human resources.

I hope my summarization has clarified some of the questions that have been raised in the earlier session, and since I'm dealing with limited time and don't want to take up as much time as I did yesterday, I will rest my summarization of Dr. Koo's presentation at this point. If you have further questions, then I'll certainly be willing to take up the questions in the afternoon session.

Dr. Park's paper primarily deals with financial aspects of health delivery in Korea. First, Dr. Park examines the organization of health care within the framework of the social security system. His main concern was with the question of sources and methods of financing. His presentation was divided into three broad sections.

He first described the magnitude of Korea's national health expenditures in comparison with those of Japan and the United States, although he also made some reference to Canada and Great Britain in his presentation. Per capita health expenditure in Korea in 1974 was only $14 compared with $130 in Japan and $490 in the United States. The percentage of GNP devoted to health services varied from 2.8 percent in Korea and 3.6 percent in Japan, to 7.5 percent in the United States. He also found that Korea's consumers allocated relatively greater portions of their consumption expenditures for clothing, personal care and cigarettes—I cannot help smiling on that—and a smaller portion on health care. Drugs and drug sundries made up the largest part of the consumer's health bill, accounting for 62 percent in 1974. Nearly 30 percent of the expenditures were for physician's services and only 8 percent for hospital care. These findings reflect the current Korean health care delivery system. In Korea, a significant amount of treatment for acute illness is provided by nonphysicians such as pharmacists and herbalists, although we currently export a significant amount of medical manpower to advanced countries.

The organization of health care delivery is relatively underdeveloped in Korea. The predominant pattern is one of primary care by a physician with a solo fee for service in urban areas. Group practice is almost non-existent. The bulk of health services are supplied through the mechanism of the free market. The private sector absorbs a substantial portion of Korea's health resources. Private hospital beds represent 73 percent of all hospital beds available in the nation. The public sector of health service in Korea includes health care schemes at a number of levels.

While the Ministry of Health and Social Affairs is responsible for broad health policy coordination and for broad technical supervision, the Ministry of Home Affairs has responsibility for budgeting and for operating a geographic network of health facilities through provincial and other local governments.

Fragmentation of responsibilities and authority among ministries has resulted in inefficiency and waste in the management of public health services in Korea.

In order to alleviate this problem, Korea recently established the National Health Council which should provide an effective forum for policy coordination, planning, resource allocation decision-making, and also implementation for the health sector.

A new national health planning strategy is also incorporated in the creation of the National Health Secretariat and Korea Health Development Institute. In Korea, the role of social insurance in financing health care is very limited. Private consumer spending is still the major source for financing health services. The Medical Insurance Law of 1963 is the basis for operation of eleven pilot insurance programs. As of 1975, only 15,600 workers and 51,900 dependents in eleven groups were covered by these pilot schemes. Unfortunately however, these pilot insurance programs have resulted in inequalities and financial problems. Therefore, one could safely conclude that Korean health insurance schemes are still in an experimental and embryoic stage.

Taking advantage of these unfortunate experiences and the lessons from other experiences in other countries, we will eventually have to develop a system of health insurance best suited to the needs and the conditions of our country. It is especially essential to carefully evaluate the cooperative advantages of various health insurance financing mechanisms in terms of risks and persons covered, incentives toward over-utilization or under-utilization of health resources, costs relative to benefits conferred on society, administrative feasibility, and other considerations. These will be carefully examined by the research team headed by Dr. Park in the near future.

In the discussion which followed, I'm sure that Dr. Park was enlightened in many ways by the lessons from Japanese experience shared by the various discussants.

My presentation primarily dealt with some of the problems involved in projection, especially in reference to manpower planning in Korea. Despite a number of alternative projection methods for health services and manpower, no single method is absolutely superior to others. Therefore, attempting such projections given the severe constraints of data availability, let alone their quantitative limitations, could be considered as somewhat less than heroic.

In the process of recent planned preparations, what we have attempted in forecasting health manpower requirements is simply another attempt to quantity what would, at best most likely occur during the timed horizon of the plan. It is granted that some of the underlying assumptions employed in deriving key variables and determinants deserve further scrutiny and elaboration. Subject to the limitation of the adopted projection methods aforementioned, and in view of projected supplies, there seem to be no serious foreseeable bottlenecks in meeting medical manpower requirements until 1981, except in the case of paramedical personnel and midwives for Korea. The projected requirements for nurses and nurses' aides may appear to be somewhat problematic in view of their currently low labor force participation rates.

However, considering the existing abundant number of license holders, the demand for such professions would be met by fuller utilization of the pool of the licensed. Anticipated shortages of paramedical personnel could be easily met by expanding the capacity of training institutions during the planned period.

More urgent action should be taken to reduce the student quotas for the schools of pharmacy, to ease the requirements for obtaining the license for midwifery, and to increase the enrollment for dentists.

To accommodate the emphasis in the fourth five-year plan on distributional equity and social development there are three considerations to be made. First, in projecting manpower requirements, what should be the appropriate concept of health service need? In presenting this there were three conflicting concepts, namely the biological need, felt need, and effective demand. Second, what would be the most appropriate mix of health manpower to produce the type of services required? The last consideration was what would be the health delivery system that we are attempting to propose for Korea?

I'm sure that in the process of finalizing the fourth five-year plan, these considerations would be translated specifically into some sort of policy measures and schemes. When they are materialized, we will attempt to make the modifications for our manpower projection.

Dr. Nishi's comments on the paper were especially enlightening, and I have learned many things from his comments, except on one minor point that I did not have a chance to add my reply yesterday due to time constraints. That is, he queried the rationality of using the fixed prevalance rate. Especially in view of Japanese experiences, he remarked, the prevalence rate as well as the utilization rate increase, although the utilization rate increase at more or less a lower pace. But in the context of Korean experience, unlike Japan where you have reached the stage where the prevalence rate changes even more sharply than the utilization rate, we feel that Korea is in a stage where the utilization rate increases while the prevalence rate remains more or less stable, especially during the time span of five years.

In ending my presentation, we are very happy to be here and learn your experiences and, as noted by Professor Yamada, to have an opportunity to learn from the wisdom of age, noting that we are much younger than our Japanese counterparts. Especially, we are thankful to have the occasion to learn the system of medicoeconomics advanced by Dr. Takemi, and I think that in due course we'd like to experiment with this scheme in Korea.

SUMNARY DISCUSSION

Chairman: Prof. Haruo KATSUNUMA
Kyorin University
Graduate School, Japan

Prof. KATSUNUMA (Chairman): This is to be conducted as a general discussion, with everyone participating. We would like first to hear the opinions of the professors from Korea, who have come a long way.

Dr. PARK: When we take up the problem of allocation of resources and welfare, if we seek social fairness and equity, there is a tendency for efficiency to decrease. If we proceed on the basis of existing equipment and organizations, we cannot achieve both equity and efficiency at the same time. Our conclusion from our experiences in Korea is that if we strongly desire fairness and equity, our aims cannot be achieved without reforming the systems and organizations. Therefore, I feel that reform of the system is necessary when we undertake to solve the problems of health and medical care, and I would like to hear Prof. Fujino's comments on this point.

Prof. FUJINO: The problem of equity and efficiency is one I wanted to raise with the professors from Korea.

Equity or fairness is considered to be a very important goal of human societies, but under various economic conditions and in the process of economic development there are various kinds of goals. Although the ideal would be to achieve them simultaneously, however, under certain conditions such goals as fairness are difficult to achieve, and thus if the goal of efficiency is pushed to the fore, it is, on the whole, easier to achieve. In this way, looking at the long run, we may think of various priorities among our goals. We are considering how to handle these priorities and what sorts of systems and organizations are needed for the purpose.

To take an example from Japanese experience, before we entered the period of high economic growth at the beginning of the fourth decade of Showa (1955–1964), the emphasis was on efficiency, but now that Japan's economy has grown to its present stage, priority is given to fairness. Thus, in considering priorities among goals which stand in a trade-off relationship to each other, in view of the fact that there are various differences depending on country, society, climate, culture, attitude, education and the like, I do not think we can say definitely what kind of organization or system is best.

Prof. KATSUNUMA: Just now Dr. Choo said in his summary that he would like to consider equity, efficiency, and growth in a single package and to bring them to full development. May we talk about that?

Prof. FUJINO: I consider the problems of efficiency and equity to be priorities in regard to the target at each stage of development.

Dr. PARK: In Korea we are trying to achieve both goals simultaneously to some extent. It is certainly not easy, and the only method possible at present is a fundamental reform of the system. Thus, new plans are being put forward within the government for the revision of organizations and systems related to insurance and to insurance-supported medical care supply systems. This can be considered an opinion from the political viewpoint.

Prof. FUJINO: This may be too extreme, but in a situation where establishment of a supply system is considered urgent, I think it might be possible to set up an insurance system by levying long-term and short-term object taxes from which to form a system of resource allocation as part of the financial resources for the health delivery system.

Dr. PARK: If the taxation system is very progressive, and if reallocation of income is carried out in the right manner, an object tax is a good idea, but at present I do not have confidence in it. Even though the nation collected money in the form of national tax for certain purposes at the time when the law on national welfare pension was set up, there arose a suspicion among general citizenry that it might be used for people who were not originally covered by the object.

Collection of insurance fees related to health is extremely difficult, and I think it's a good idea to collect the capital through one national taxation system, but this arouses doubts among the general public.

Therefore, I am not at all sure whether objectives related to medical care can be attained by the method of an object tax. If an object tax is to be implemented, it will be difficult unless it is done after studying more equitable allocation of income and the taxation system which will be needed for that purpose.

Dr. CHOO: In regard to the relationship between allocation of income and progressive taxation, according to Dr. Beckman of Brookings Institute, based on the experimental research in the United States, progressive taxation does not contribute much to income allocation.

Prof. Fujino pointed out the problem of competition among various goals, and in our country we have aimed at complementarity and reinforcement in the developmental processes. There is certainly a problem of trade-off where things do no mesh, but I think even in these cases the priority should be decided as a matter of policy after grasping the relationship between complementarity and trade-off.

We are presently thinking of three criteria in regard to system evaluation standards but Prof. Tsubo listed approximately thirty times as many. I would like to hear how these large numbers of criteria can be weighed and put in order.

Prof. Tanuma reported on decentralized community medical care activities, and pointed out that the

Korean approach might be too centralized. Although for indicative community medical care planning, the community residents' planning capability is presupposed, in the case of Korea, such capability cannot be expected even of the central government office which is the equivalent of the Ministry of Health and Welfare in Japan. Especially in health planning, such problems have come out at the stage where the economic outlook has become clear. Our country has adopted a high growth policy at present, but we have Korea's own restrictions, such as that we have to place concentrated efforts on political targets, and there are KHDI's activities and community development programs locally. I would like to hear how the factors pointed out by Prof. Tamura should be introduced under these conditions.

In the report by Prof. Fujino, he touched upon the function of income reallocation which have been performed by physicians, and though this argument may be valid as long as the medical care costs receive a fair evaluation socially and if there is no waste on the physician's part, I am doubtful about it because the fact that today physicians are generally placed in the highest income bracket in any country.

Prof. TSUBO: When we evaluate medical system, in essence we determine whether or not the three objectives of medical effectivenses business effectiveness and welfare effectiveness are stisfied. However, by all means an economic evaluation should probably be carried out on these bases, and especially in the field of business, without having the quantitative aspects evaluated and elucidated in medico-economics, I don't think evaluation from the system side can exist. The essence of the evaluation pattern suggested by Prof. Choo was abstracted after considering how the evaluation should be done when we enter into the period of medico-economics, based on the evaluation method of the Millet Group of HEW, composed of health educators in the United States. This basically means to evalate the aforementioned medical, business, and welfare effectiveness along with equity as a total system.

Dr. CHOO: What I wanted to question was concretely under what kind of total system exaluation is made, and I think that statistically how to weight each factor will become a problem. I would think that unless these problems are solved, it will be difficult to give an evaluation by considering trade-off or complementarity.

Prof. TSUBO: The evaluation criteria which I listed were to show the details as necessary factors in order to carry out technical work. When we give an actual evaluation, weights must be given to the existing health care system and what will be furnished from now on. As for the existing system, various revisions are necessary, and in this case, it will be important to take the form of extending to the future.

In the past, whatever has been called a system seems to me too widely expanded, and since that which includes organization, automation, procedure, methodology, and mechanization, and the like, and

which works on one objective is a system, as for medical care, protocol programming which will function quantitatively and qualitatively toward the object of medical care becomes important. Therefore, the various criteria which I listed will be divided roughly into the three patterns I mentioned previously, and I think you have to transform them into a program.

Dr. KOO: This is an example in Korea. As a part of assistance, there was a time when research staff from the American university tried a systems-approach in the agricultural field. Despite the fact that a large sum of capital was invested, the people who were in charge of making policy, namely interested persons in the Ministry of Agriculture, could not understand what the system was. This shows that mutual understanding between scholars who study it academically and those who make decisions was not carried out smoothly, and I think it is extremely important to have communication between these specialized technicians and policy makers or decision makers who have knowledge through experience. I would like to hear your opinion on these points.

Prof. YAMADA: I think what Prof. Koo pointed out is a very important suggestion for model builders. When we draw up a model, the basic problem is to make it as simple a model as possible, yet easily understood. Otherwise, it is considered to be only a scholar's pastime, and it will not be adopted into policy.

Prof. FUJINO: I would like to know, in the flow chart of the model presented by Prof. Yamada, how human resources and human capital are positioned. Should we interpret them as included in the economic resources?

Also by introducing the time factor, since a dynamic model is possible, he pointed out Bellman's method, and I wonder whether it can be drawn in a more understandable form by methods such as Forester's system dynamics technique or the goal programming technique of linear programming, in the sense that it is an operational model.

Prof. YAMADA: I don't think human resources can be treated in the same dimension. Therefore, they are not included in the flow chart, but there exists a separate demographic sector, and I would like you to interpret it by combining them.

In the past, in the Turnpike theory and growth theory, an object function was set up through a certain N length of time, but this is not realistic. Therefore, I said that Bellman's method would be good for the purpose of making distinctions. Also, goal programming is used generally, but since the only object function in my flow is existence welfare, there is no need for weighting. If there are many goals, deciding weights becomes a problem as to what to choose, and I think a method such as linear programming or non-linear programming has to be employed, and I certainly would not eliminate the idea of goal programming.

Prof. YAMADA: In regasd to the problem of equity and efficiency,

when we think about the problem of equity, we can divide it into two situations: one is the situation in which supply is ample, and the other is when supply is short. In the latter case a policy of sharing among all the poor people should be adopted. When the supply is large, no policy or system is needed, and allocation is carried out automatically. Therefore, in policy we should first think of enlarging the supply side. If there is an excess number of medical care institutions and physicians, and it is very inefficient, it is considered that attention is paid to efficiency, the supply side of medical care will be enlarged, and this will indirectly affect equity. On the subject of system, it is good to set up a system which will examine whether such efficiency is attained. Whether this inspecting system is set up by an administrative national organ or by a democratic body is a problem which will be decided according to the conditions of the country. For planning purposes, I suggest starting to set up this kind of system.

Prof. YAMADA: Why does Korea have an excess number of personnel and institutions relating to the problems of medical care? What is the cause of this?

Prof. LEE: To answer accurately on this subject is very difficult. The medical structure in our country has special characteristics. After graduating from a medical college, one serves in the military for approximately three years, and afterward works in a doctorless village for six months. There are 900 graduates in one year. The number of physicians working in Korea is 24,000, and the population is 30,000,000. Other than this, there is Chinese medicine, and there is a college of Chinese medicine, and there are 2,500 practitioners of Chinese medicine. Medical practitioners gather in urban areas, and there are large hospitals and universities there, but there are actually few patients. The reason for this is that there is no health insurance system, and the ill mostly purchase drugs directly and treat themselves. Besides this, there are Chinese medicine practitioners and traditional ways of treatment. Also, due to community movements, preventive medicine has progressed, and epidemic diseases, parasitic worms, and tuberculosis have decreased. In this kind of medical care environment, physicians are in excess supply. However, in Korea we think that a delivery system must be provided. We have decided that "medics" are the answer. A professor of preventive medicine from the university in Hawaii came to Korea and lectured on "medics" and this created a great stir in the medical association. The government has decided to experiment with this, and after evaluation, the system is going to be applied.

The delivery system is to train nurses and paramedical staff, and to handle primary care where there are no physicians. Here there arises a legal problem, but this has been solved legally, and it has been decided that it will be carried out under a physician's supervision. Physicians have a problem of responsibility in case a medical care accident occurs. The government has begun to take the

position of relaxing legal restrictions on the activities of "medics."

The reason why "medics" carry out the work even though there are surplus physicians lies in the aspect of low cost. The ratio of medical care costs to GNP is high in the voluntary medical care system, and therefore medical care economics plays an important role.

Prof. YAMADA: Does that mean that if the delivery system carries out modernization of the medical care system, the number of physicians will come to be inadequate?

Prof. LEE: Yes, it does. Right now physicians and institutions are gathered in big cities, but they do not exist in rural areas. The government is planning to construct large general hospitals.

Prof. YAMADA: How does that come into the Fourth Five-Year Plan in regard to medical care? Does it have the premise that after modernization you will have full employment or over-employment?

I said that since you have an excess number of utilizable institutions and staff, efficiency should be taken up at first.

Dr. CHOO: The current status of Korea is co-existence of full employment and under-employment.

From this viewpoint of an economist, it is under-utilization, and we have a situation where the mixture of medical manpower is not very good. Under this kind of input mix, a conclusion will be found that doctors are doing work which they don't have to do. At present, medical care service is provided where an effective demand exists. We are approaching the problem from the viewpoint that efficiency and equity can be attained.

Prof. TAMURA: I think Dr. Choo's question was on the following three points:

(1) My use of the phrase, "decentralized community medical care activities" in my report, and how to regard the current status of Korea where the rural areas do not have sufficient capability.

(2) How to consider the problem of the balance in allocation of resources toward medical care with the aim of attaining economic growth in a short period of time.

(3) How to consider the proper sort of planning authority or a practical system in which community residents participate when the balance between efficiency and equity is taken into consideration.

In answer to the first question:

When I said, "decentralization," I meant that the system of physicians' groups which center on the Japan Medical Association is decentralized. In relation to the government, strong factors of centralization still remain in Japan traditionally. In this kind of environment, the Japan Medical Association has been steadily increasing the promotion of community medical care activities for twenty years. In this case, community medical associations have been working to heighten the demands to the status of effective needs through health education in the places of practice. I think it is possible in Korea to raise the

capability of the community through this kind of activities of the medical association.

In answer to the second question:

In regard to the problem of balance between growth and welfare, it is necessary to examine the success factors and failure factors in Japan, and to be careful not to commit the same blunders. The advantage of being a country which started later should be fully utilized. For example, I think that the history of community medical care activities in Japan for the last twenty years will offer valuable reference materials. The distinctive characteristic of the system in our country is in the system of practitioners based on free economy. Eighty percent of medical care is performed by private practitioners. Further, community residents also have the right to choose medical care freely. However, from standpoint of public benefit of medical care, a social insurance system has been adopted as a payment method. Under these kinds of systematic characteristics, we are trying to obtain efficiency and equity of medical care.

Answer to the third question:

Centralized allocation of medical care system is inefficient from the viewpoint of the characteristics of medical care. For example, it can be said that the gathering of medical care information will be most effective if it is done by physicians who are close to the community. For this kind of reason, a planning structure which is mainly led by the medical association is desirable. Also, as a method of payment for the allocation of medical care resources, I think that it might be necessary also for Korea to introduce the social insurance system. In this case, it is necessary to examine fully the contents of the current status and the future of the social insurance in our country, as was discussed by Chairman Takemi today.

Prof. KATSUNUMA: I think the answers given by Prof. Tamura were comments on the medical care problems in Korea with the background of Japan's current status, and the prospect for the future medical care in the community called Japan.

Next, since there has been a question from Mr. Tsubo and Prof. Fujino to Prof. Choo on the relationships among biological needs, felt needs and effective needs, please answer that question.

Dr. CHOO: I do not disagree with Prof. Tamura from the scholastic viewpoint. However, from the status of Korea, I have a feeling that the time is not still ripe. We are also walking in the path of free economy, and we are considering the problem of making medical care effective with the object of realization of economic growth in a short time.

Next, I would like to answer the questions by Prof. Tsubo and Prof. Fujino. I think that the biological needs can be measured by the medico-economics included in Chairman Takemi's talk. I think felt needs might become greater than biological needs if a social insurance system is implemented, or medical care becomes a free property. Since the effective needs are to materialize felt needs

with economic backing, I think this will become less than felt needs. When we do planning for medical care, I think in actuality it should be carried out with effective needs as a criterion. However, from the viewpoint of welfare, I think it should be raised up to the level of felt needs. For effective needs, income level becomes an important factor, and for felt needs, the standard of living, health and education level and community environment will become important factors. OECD says that felt needs can be measured by the results of public opinion surveys, and in the United States it is said that it is to be measured from social demands with emphasis on expert opinions.

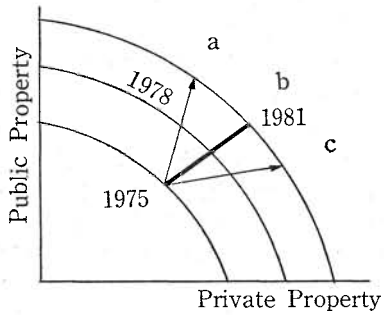
Prof. KATSUNUMA: Is it appropriate to interpret the word, "biological" in your speech to mean "human biology"?

Dr. CHOO: I am not an expert in this subject, but I think it so.

Prof. KATSUNUMA: Next, since there has been a question from Mr. Tsubo to Prof. Koo, we would like to hear him.

Dr. KOO: The content of the question is that in Korea an ambitious policy is being enforced to keep a balance between economic growth and social development, but how is the balance between them actually kept? I think about this as follows: In the general discussion today, many people talked about a trade-off between efficiency and equity. I don't think these can always be in a trade-off relationship. I think integration of these can also be considered. For example, good health not only gives equity, but also at the same time offers the basis for efficient economic growth. I would like to pursue the problem of social development during the five years in this sense. I would like to additionally explain about this from a specialized standpoint. In the first chart three production possibility curves are drawn. If the lowest curve is for the production possibility line of 1975, any point on the curve satisfies the criteria for efficiency. Which point on this curve is actually adopted is a problem of choice by social decision making.

Chart 1



If political relationships come in here, it is very difficult to solve the problem of social decision making scientifically. The three lines, a, b, and c in the Chart 1 show the form of social decision making accompanied by economic growth. If we take the direction of c, it will mean favarable treatment of the wealthy classes, and if the direction of *a* is taken, it will become advantageous for the poor classes. If the science called economics were fully developed and mature, it might be possible to make a choice by the criteria of efficiency alone, but unfortunately economics has not ripened to that degree. We would like to make our efforts

so that policies on economic expansion and social development will be carried out smoothly, by giving sufficient consideration to the problems of social decision making on a foundation of free economy.

Dr. LEE: I listened to Dr. Takemi's talk on future health with great emotion.

In economically highly developed countries, medical care equipment has developed to a high degree. Many expenditures are required, and cause changes in medical care, and President Takemi presented his future predictions there.

In the United States, they have begun to freeze people who are about to die. In such cases, what do you think of the inbalance between people who are rich and those who don't have money in under-developed countries?

In the United States, the kinds of diseases have also been changing: tuberculosis has decreased, and psychiatric symptoms have been increasing. I think now items such as neuromental insurance will get to be a serious problem.

President TAKEMI: I think there is a room for the growth of premium payments according to diseases in regard to private insurances. I think it will be fine if private insurance is set up in the sense that it will supplement social insurance.

I think in regard to social insurance, neuro-phychiatric problems should be solved in community health. However, since it is said that if the income doubles, the number of neuro-psychiatric diseases will triple, to develop mental health activities prior to developing the economy is not a problem of insurance, but one of public health or social welfare.

Dr. LEE: Isn't it a social problem that nearly 60% of the outpatients are neurotic? If we place priority on how to treat neuro-psychiatric cases, shouldn't we list one such insurance?

President TAKEMI: There are great problems in setting up social insuraance system according to the disease. There would be no problem if it were a private insurance.

I would like to make an addendum to the previous discussion.

In economics, the problem of equity and efficiency is very much argued, and it is natural that the center of economic discussion is directed to it. However, in the case of medico-economics, since technology is included, it is not only a problem of economics, but the nature of the problems changed by the inclusion of technology. If I were to give an example in Japan, at my urging, the medical associations in countries and cities constructed clinical examination centers. This is to carry out clinical examinations jointly. The same kinds of answers are obtained by the same machine in the mountains of the rural areas and in the center of Tokyo, and technological fairness can be obtained. Without this technological basis, there cannot be fairness in regard to health insurance. A serious problem will arise in how to combine the technological basis and economic policy planning. Also, an advantage of a clinical examination center is to be able to ob-

tain data on the degree of health in the community by aggregating the data collected there.

I have not heard that there are clinical examination centers supported by the medical association or the municipality in Korea, but I think that when you plan social development by implementing social insurance, if such centers are dispersed also in the rural areas, both the economic equity and efficiency will be solved.

Since the problem of medico-economics will inevitably be connected with technology, there is a problem of equity and efficiency in connection with technology. I would like to add that it does not exist apart from technology.

If the five-year planning in Korea develops in such a form, I think that the new biological experiment among humanity has succeeded in Korea.

Prof. KATSUNUMA : Before there were academic fields of economics or medicine, medical care work and economic activities already existed. Both of these were affairs carried out for the better existence of humanity. Even though the fields which are concretely dealt with differ since they have become "Economics" and "Medicine," it is understood that they aim at the same goal of welfare, and that they are working in the same framework of the sake of mankind. I began to be able to believe this at this conference. I wish that this kind of meaningful meeting would be held between Korea and Japan in the future, initiated by this conference.

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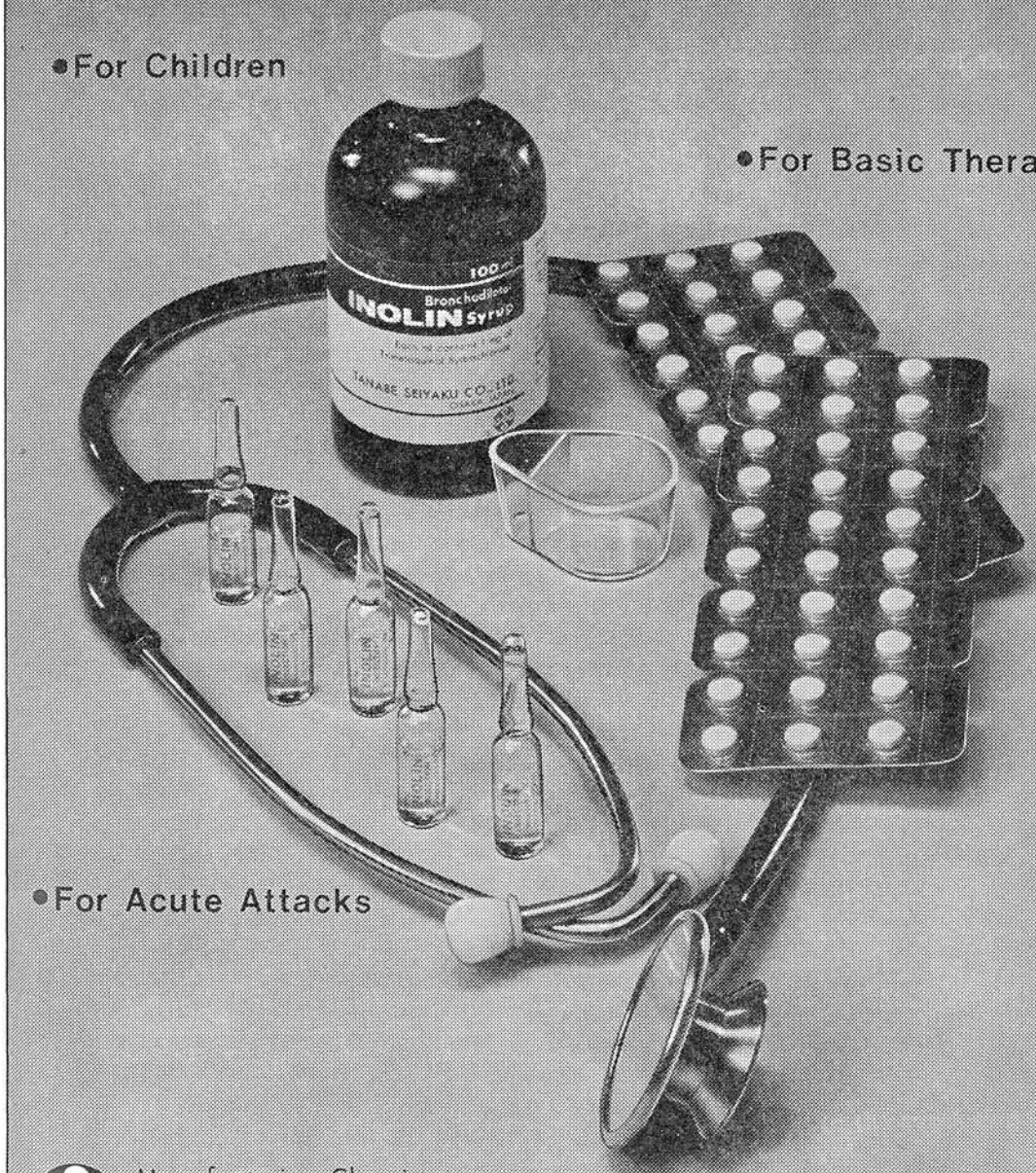

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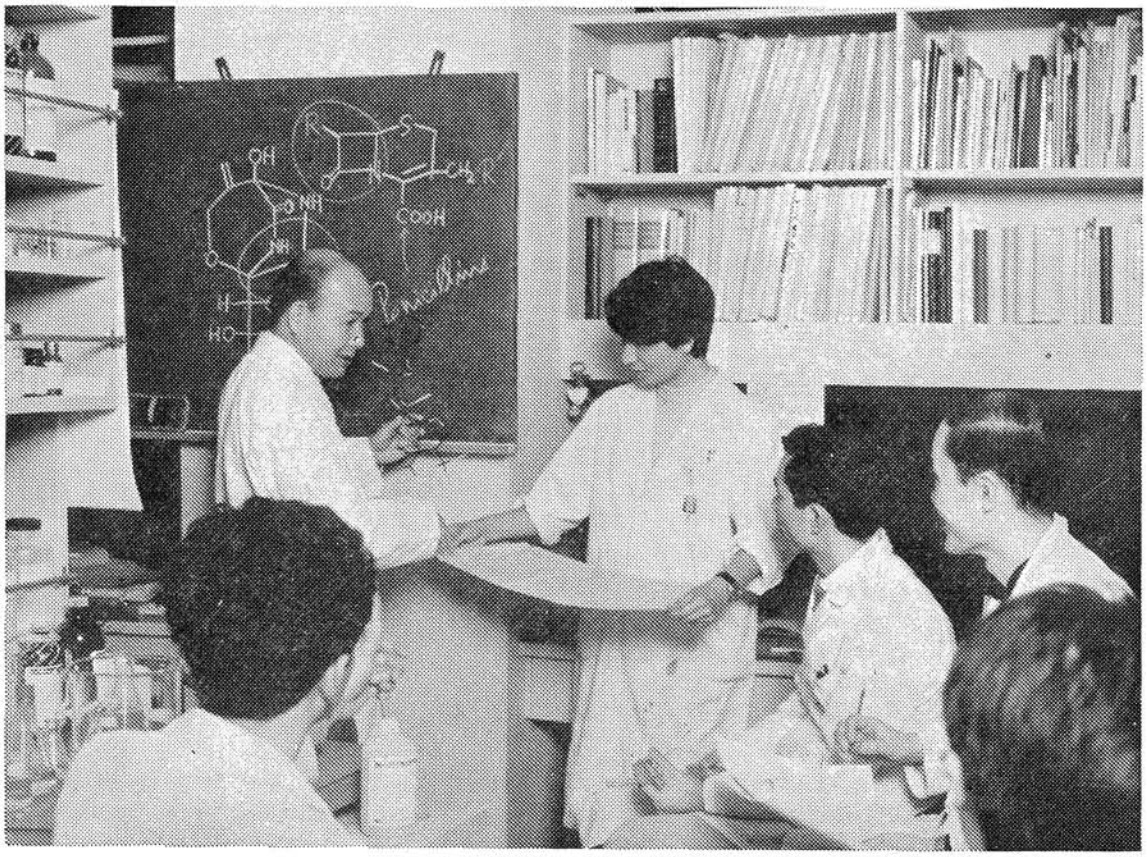

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Osaka, Japan

第3種郵便物認可　ASIAN MEDICAL JOURNAL 第19巻 第10号 昭和51年10月25日発行（毎月25日発行）