



神奈川県

KANAGAWA

“ME-BYO[®]”

The New Concept of
Health Innovation

「未病」

Kanagawa Prefectural Government, Japan

Overview

Me-byo (未病) is a venerable term that originated in China's Han Dynasty of some 2000 years ago. Kanagawa Prefecture has taken this term and adopted it as a new concept, “ME-BYO”, in developing its policy towards innovative new health approaches for a future era when people live to be 100 years old.

ME-BYO is defined as follows: Instead of clearly defining our physical and mental condition as being either healthy or sick, under the concept of ME-BYO, the mental and physical conditions evolve continuously between healthy and sick states, and ME-BYO applies to all conditions between being “healthy” and “sick.”

To date, human health has largely been divided into two conditions of either being healthy or sick, with prescriptions and treatments being applied accordingly. As a result, depending on the physician's diagnosis, a person who had been healthy until then suddenly becomes a patient, and must begin treatment such as medication and surgery.

However, if we put such matters as external injury and infectious diseases aside, people do not suddenly become sick. Through long lifestyle habits and changes to their genetic makeup, symptoms gradually become noticeable. It would be more realistic to consider that for a period, health and illness occur at the same time and proceed in a continuous, gradual fashion. In particular, in middle and old age, the basic idea for living should not be that of “battling” the gradual onset of aging and illness, but rather of “coexisting” with these conditions.

It is said that about half of the children born in Japan in the 21st Century will live to be more than 100 years old, while the prevailing opinion is that the majority of those currently in middle and old age will live to be more than 90 years old. When planning one's life under these assumptions, the storyline up to now of “staying healthy through age 40, thereafter becoming vulnerable to lifestyle diseases, then receiving treatment after age 65, and living mainly under nursing care after age 75,” ceases to be relevant for a society where people are expected to live to age 100.

Japan is now at a point where the blueprint used to consider treatment for the elderly needs to be redrawn from the beginning. If the Japanese people continue to live along the lines of the storyline mentioned above, not only will it drain public finances available for medical treatment expenses, but also cause the collapse of the

(Government) administration underpinning that system. Thus far, public funds have been relied on for providing people with medical treatment and nursing care in a defensive stance under the advice and guidance of the administration and physicians. However, this approach has not been an active one tailored to the everyday lives and needs of the people, but mainly for the requirements of others. While the system of nationalized insurance and post-war (WWII) public health policy have achieved many positive outcomes, they have not been translated to improved awareness, understanding, and self-help attitude of the individual recipients of care, preventing them from self-help. Furthermore, the domain between health and medical care, which has minimal official guidance, is referred to as the “gray zone” which tends to be looked at askance, with corporate players avoiding entry into that realm.

Japan is now at the crossroads where the dependency attitude of “we want someone to restore our health; we want someone to cure our illness,” must be discarded. Instead, health literacy at the individual and private sector levels must be raised and “ME-BYO Space” of a new era must be created. Given the notion of living to age 100, health becomes inseparable from the way of life as well as the fulfillment of everyone. Hence, the effort to self-manage and self-maintain one's health becomes indispensable.

In order to support this effort, instead of relying on limited shared assets and inflexible policy of government, it will be more realistic to allow the participation of private sector industries which can operate in a wide variety of effective ways. The particulars of the Japanese legal system prevent profit-making activities in medical care, but this does not exclude the entry of corporate players into all domains of health. Rather than being overly cautious of the “gray zone” or treating activities as such, the more sensible choice would be to explore ways to bring together “well informed consumers” with “sound companies” to achieve the best results.

“ME-BYO” concept also has a role as an industrial policy, and in the future, this is expected to help develop an industrial sector valued at more than JPY 10 trillion. Furthermore, aging is expected to rapidly become a global issue, so for Japan, which is the pioneer of aging societies, the healthcare sector represents an opportunity for Japanese companies to enter overseas markets.

“Super-aging” Proceeding on a Global Scale

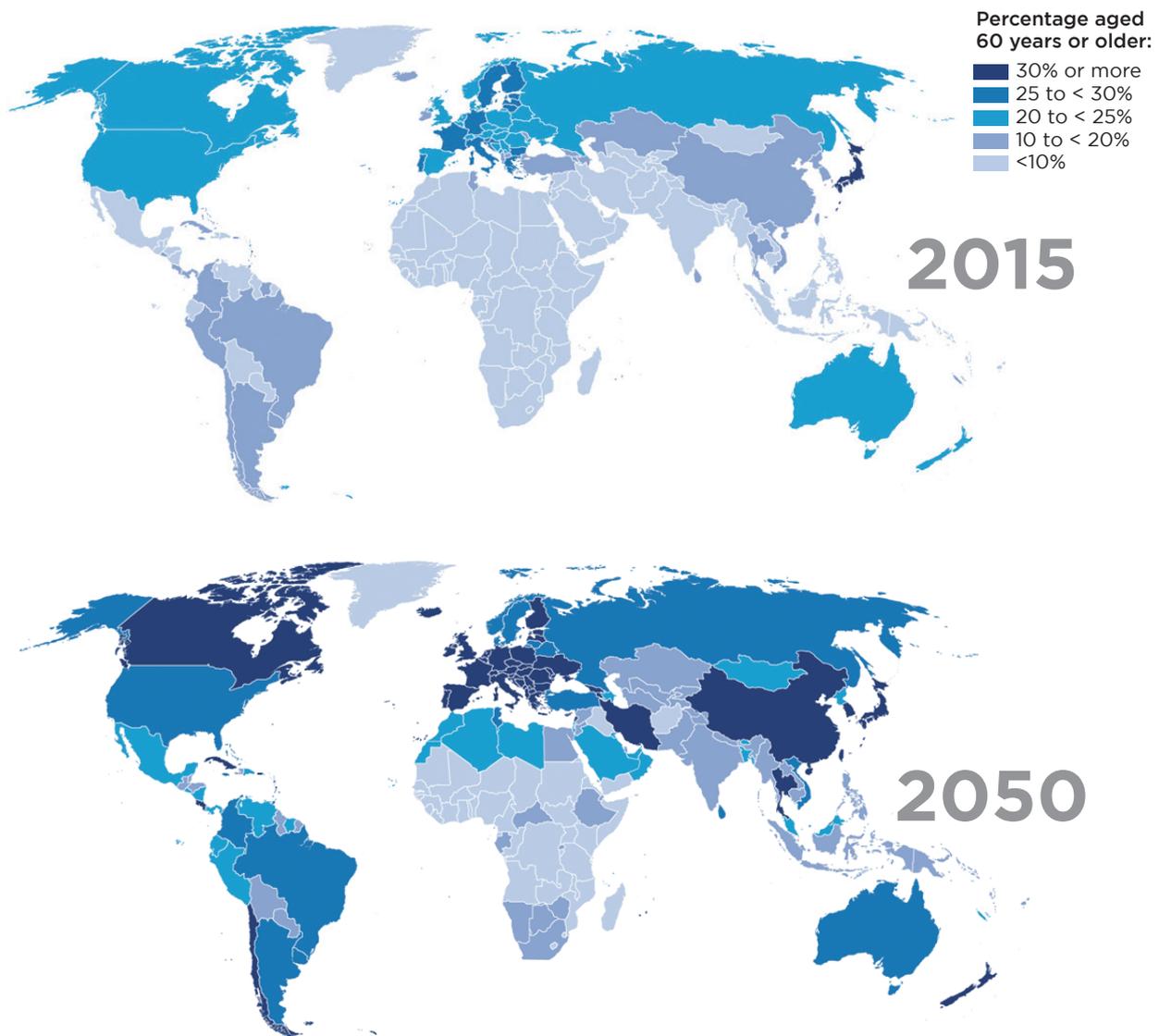
Japan is currently a “Super-aged Society,” a phenomenon never before experienced by humanity. The proportion of elderly persons (age 65 and older) will continue to rise and is forecasted to reach 33.3% of the total population by 2036. On the other hand, the working age population (age 20 through age 64) continues to decline. It is estimated that by 2050, there will be only 1.2 persons of working age for each elderly person.

Moreover, the aging of the population is proceeding not

just in Japan but around the world. The proportion of elderly persons (age 65 and older) in the global population was 5.1% in 1950, but increased to 8.3% in 2015, and is estimated to reach 18.1% by 2060.

In that sense, Japan, which has become a super-aged society ahead of the rest of the world, is attracting strong world-wide attention for the insights the country may provide in terms of how to cope with the aging society and how it will create sustainable social systems.

Populations are getting older all over the world



From WHO website



The Need for a New Life Model for the 100-year-life Society

In 2017, the Government of Japan launched “The Council for Designing 100-year Life Society.” Professor Lynda Gratton of London Business School, who took part in this conference presented data showing that children born in 2007 in Japan will live to 107 years of age. She pointed out that for Japan in the future, the traditional 3-stage life model of “education, work, and retirement” will cease to apply. Assuming a life span of more than 100 years, the 40 years after retiring from work at the age of 60, will be much

too long for someone to be spending somewhat mindlessly in old age.

This requires a paradigm shift from the model where people retire from work at the age of 60, to one where they continue to learn and work even after becoming 60. It goes without saying that this change also requires adapting the outlook on health and medical treatment to those appropriate for the coming new era.

ME-BYO as a Socially Transformative Concept

It is exceedingly difficult to draw a strict line between the healthy and the sick. For example, patients of lifestyle diseases may be sick in the medical sense, but many of them maintain and control their condition to go on with their daily lives.

This requires a shift in thinking about healthcare. Until now, the primary focus of healthcare has been “curing.” In the future, individuals must assess their own health condition and then, under the guidance of appropriate health management, choose on their own from “maintaining the condition,” “receiving support,”

“recuperating,” and “undergoing treatment” in order to manage their ME-BYO.

This shift in each person’s behavior and thinking towards health is also indispensable for the survival of the medical care system. Rather than “curing after becoming sick,” it is necessary, through the management of ME-BYO, to convert to a lifestyle of holding off the travails of illness for as long as possible. In that sense, ME-BYO has a direct impact on the transformation of each person’s lifestyle and quality of life.

What is ME-BYO?

Until Now: Two areas of “healthy” or “sick”



Future: A new area that is not just 2 options of “healthy” or “sick”



➡ New way of thinking that leads to lifestyle reform

Various Concepts Fanning out from “ME-BYO”

When considering a person’s health, the notion to date has been that he or she is either healthy or sick. However, this kind of traditional notion mainly stems from the supply-side (government administration) and is not necessarily based on the individual’s own awareness. On the other hand, ME-BYO concept, with its focus on body and mind undergoing continuous change, is indeed based on the individual’s perceptions. Considering health and medical care through ME-BYO concept means shifting the focus from the supply-side of medical care to the individual recipient.

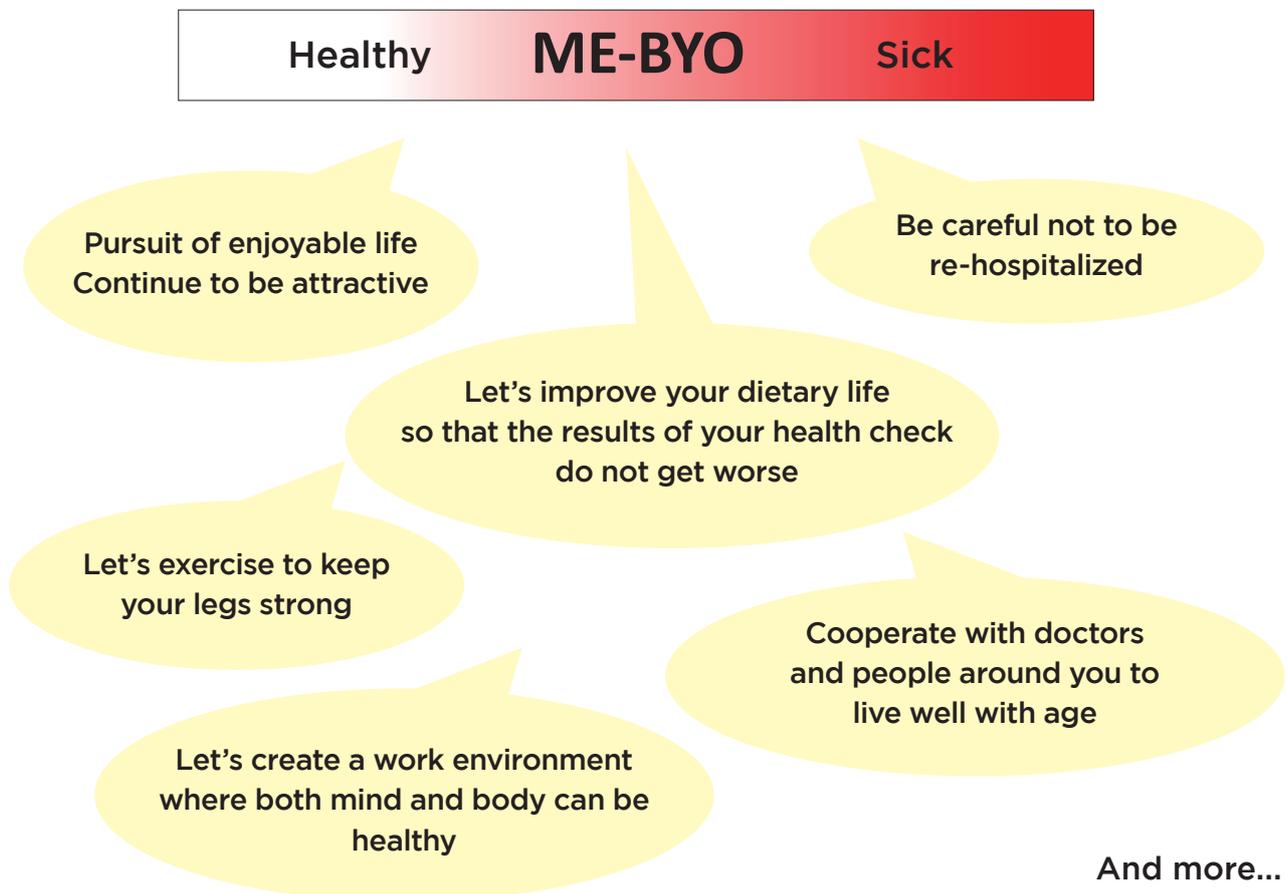
When individuals engage actively in “Managing ME-BYO,” the options are broadened from merely seeking treatment after becoming sick to ideas such as “Let’s improve the diet or lifestyle so the results of health checkup will be better,” or “Let’s exercise to keep our legs strong.” A business owner might explore ways of managing the workforce in

a healthy fashion, such as creating an environment where employees can feel healthy in body and mind.

It should be noted that ME-BYO should never be dealt with by inexperienced individuals, but rather under the guidance of their primary care physicians or specialists. Furthermore, ME-BYO is not merely about prevention, but it should be correctly understood that ME-BYO also encompasses day-to-day living after recovering from illnesses.

The first step towards managing ME-BYO is to think and ask, “Why am I doing this?” The key is for individuals to have clear intent and motivation for pursuing ME-BYO management. They should set tangible and concrete goals that enable them to lead a fulfilling and rewarding life such as, “I want to stay attractive as long as possible,” “I want to continue making meaningful contribution to society,” and “I want to see my grandchildren growing up.”

Various images from the concept of ME-BYO



Areas Covered by “ME-BYO”

Sometimes, ME-BYO is understood to be the same as “prevention.” However, ME-BYO is a more wide-ranging concept that not only covers the prevention of infectious diseases as well as lifestyle diseases, but also the promotion of health and daily lives, such as active exercise, healthy diet and rest. Whether discussing strategies or events for greater enjoyment of life, or making efforts to maintain physical beauty, ME-BYO covers all such activities that contribute to healthy living. In short, this somewhat fuzzy thinking is itself a feature of ME-BYO concept.

While ME-BYO may be misinterpreted to refer to the period before one develops an illness, it is all-encompassing, including the period during and after the illness. Even when conditions deteriorate, requiring hospitalization or surgery, the patient eventually returns to his or her daily life and work through rehabilitation. During

this period, the person is both in a condition requiring the management of a primary care physician, as well as ME-BYO. In other words, under ME-BYO, the notion of health is not about fighting illness or aging, but coexisting with them. In an aging society where people live to age 100, with increasing cycles of illness and recovery, this idea of managing ME-BYO becomes ever more crucial.

ME-BYO tends to be interpreted narrowly to apply mainly to health and health care for those in middle and old age, but it encompasses all ages from prebirth to old age. More recently, there is growing attention and interest in retaining and centrally managing health and medical data, with efforts underway to make use of data spanning a person’s entire life from birth to the present.

ME-BYO is not merely a clever concept replacing the term “prevention”.

Healthcare in the New Era

To date, healthcare in Japan has been based on a public sector framework. As shown in the “past” category on the diagram (Top of p.7), individual awareness had at its core, medical care covered by public health insurance, with prevention of sickness as the prior stage.

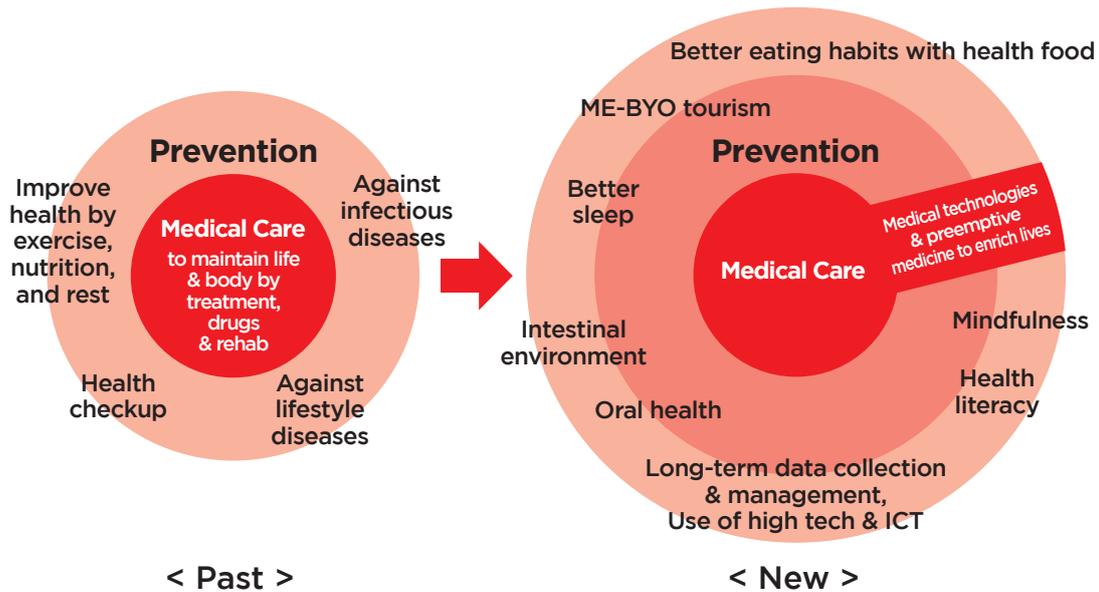
In this framework, medical care is treated as a preventive paradigm used to maintain and restore life and physical well-being, with expenses covered as income guarantee out of public insurance. When it comes to prevention, the basis of the concept goes back to protection of the individual’s lifestyle and of society, with prevention of the spread of infectious diseases, prevention of the onset of lifestyle diseases, and health screenings as the key steps.

On the other hand, ME-BYO concept, indicated as “new” on the diagram, suggests a more expansive and creative form of healthcare that is proactive and centers on the involvement of individual autonomy and private-sector industries. Medical care will expand into areas beyond

public insurance coverage and shed light on not only advanced medicine and individualized health care, but also on new medical developments that enhance and enrich people’s lives. As to “prevention,” under ME-BYO concept, in addition to the prevailing notion along the lines of public health, it will be expanded to encompass high-tech solutions and information and communication technology (ICT) for the management of long-term personal data. It will also encompass ideas such as the improvement of diet using health foods, intestinal environment, better sleep, and oral hygiene.

Of interest here is the possibility for expanding the economy through “ME-BYO”. With the infiltration of ME-BYO concept, while the share of public expenses will remain the same, the private sector economy will expand greatly. This will lead to a much higher expectation for new economic effects to be generated by the health and healthcare industries.

Healthcare for the New Era



New Policy Trends and Paradigm Shifts Emerging from “ME-BYO” – Departure from Administrative Reliance

Thus far, Japanese healthcare has been led by government, with individuals receiving medical services, institutionalized by government, from specialists such as physicians. One adverse side effect of Japan’s unparalleled national insurance system is that individuals are inclined to leave health and medical care matters to be “decided” by government and specialists, while they remain passive.

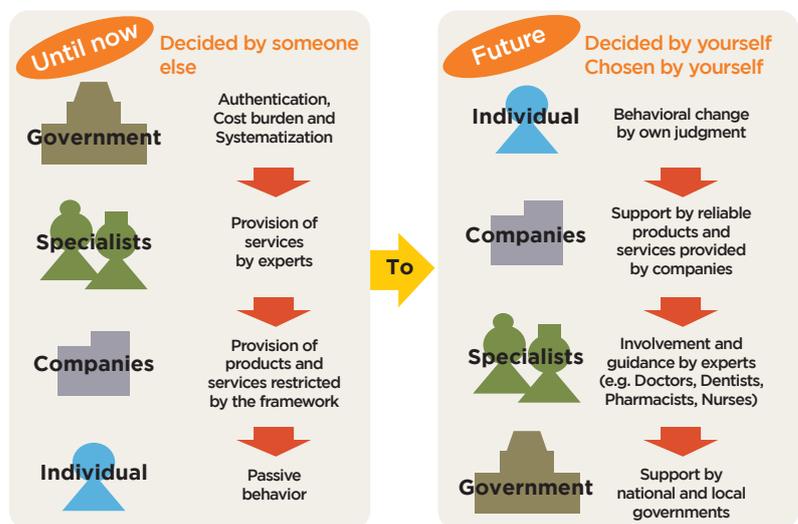
However, in the super-aged society, there is a need to shift the main player for healthcare from government to individuals. This triggers a behavioral and attitudinal change in which individuals actively engage in improving their own daily life and lifestyle.

In addition, individuals select by themselves products and services provided by private-sector firms for managing ME-BYO. Finally, having set up the proper conditions for medical professionals to contribute as necessary, government provides backing and support.

Moving away from this mentality of dependence on governmental administrative systems will be a critical paradigm shift that Japan needs to make in order to cope with the super-aged society. Achieving this requires that individuals shift their thinking to

see health and medical care as “personal priorities.” At the same time, the role of private sector corporations, whose role in healthcare has thus far been limited, will become indispensable.

Already, progress is being made for the development and commercialization of products and services which offer aggregation and visualization of data for giving advice on health. The involvement of well-informed individuals and sound companies for “Managing ME-BYO” will act as a major driving force for achieving the paradigm shift.



A new policy trend of “ME-BYO”

“ME-BYO” as a Health and Medical Care Strategy

Kanagawa Prefecture has been a frontrunner in Japan for incorporating ME-BYO concept in its public policy. These initiatives were introduced in the “Healthcare Policy” which was adopted by (the National) Cabinet in July 2014. This drew nationwide interest in “ME-BYO”.

Furthermore, when the national policy was amended in February 2017, the importance of ME-BYO and its definition were clearly recorded as follows:

ME-BYO “regards health and diseases continuously instead of separately. In this case, reform will be required in the social systems related to health and medical care and

emergence of new healthcare industries can be expected during the process of reform.”

The definition of ME-BYO was also included in the national policy.

ME-BYO “is a concept that indicates the entire process of changes between mental and physical health and illness, which are regarded as continuous instead of ‘dichotomous.’”

In view of the above, Kanagawa Prefecture’s ME-BYO concept has been clearly positioned as a critical national health and medical care policy.

Key Aspects of “ME-BYO”

When considering ME-BYO, the following are the main points.

Readopting “ME-BYO as a Way of Life”

Under ME-BYO, it is not just about one’s condition of health, but to start with the question, “How should I live?” and then to live according to the resulting answer such as, “In order to manage my ME-BYO, I need to change my diet and exercise more.”

Breaking the Spell of “Curative Treatment”

Not all mental and physical changes as well as illness that occur with aging are curable. Accepting this fact helps to break the spell of “illness must be cured” and to adopt a new attitude of “live a life co-existing with illness.”

Formation of a Sound ME-BYO Industry

1. Securing safety is an absolute requirement.

Shifting to a system of healthcare that is not dependent on government bureaucracy requires more products and services that contribute to ME-BYO management. They must have complete safety as an absolute condition, and must be enjoyable to use over time.

It will also be necessary for these products and services to contribute to the formation of a sound ME-BYO industry.

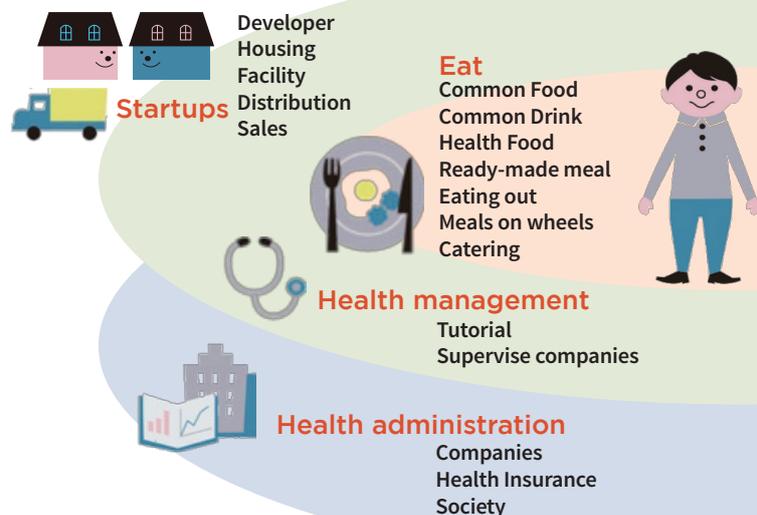
2. Evaluation of ME-BYO evidence

(different from medical care and pharmaceuticals)

Unlike medical care and pharmaceutical products, ME-BYO related goods and services require a more flexible standard of evaluation. In the future, it will be necessary to carry out research to show evidence of managing ME-BYO and the creation of new rules.

Raising the Foundation for Health Literacy is Necessary

Enabling individuals to autonomously pursue ME-BYO requires improvements in literacy to think, decide, and act on one’s health and medical care.



Private services related to “ME-BYO”

Benefits Resulting from ME-BYO Concept

1. Getting ready for the 100-year-life society

With the 100-year-life society approaching, there is a growing need for recurrent education for study and training of middle and old age people. This in turn requires people to have flexible and strong mind and body, and for this “ME-BYO” concept should be effective.

2. Growth of the ME-BYO industry

The area between health and medical care has generally been referred to as the “gray zone,” but if it can be developed into a dependable industry in its own right, it will be possible to open up a new competitive market. Furthermore, this will trigger the mobilization of dormant assets owned by the elderly, estimated at a value of over JPY 1,000 trillion (about US\$ 9.0 trillion).

3. Effective use of medical care expenses and sustainability of the medical care system

By curbing the expenditures for unnecessary visits to physicians’ offices as well as unnecessary medical and nursing costs will allow focusing medical assets to areas in need, and ensure sustainability of the medical system.

4. Presentation of Japan’s socio-economic model as a leading nation with aging population (ME-BYO as a global strategy)

Given that a rapidly aging population effect is expected in Asia and other parts of the world, if Japan can develop a socio-economic model as the first society to experience this sea change, it will enable Japan to craft a global strategy for international contribution and industrial exports.

The concept of “ME-BYO”

Three keywords

- Positive (Positive, Active, Clear)
- Flexible (Flexible thinking, Less strict)
- Safe (Safety critical)

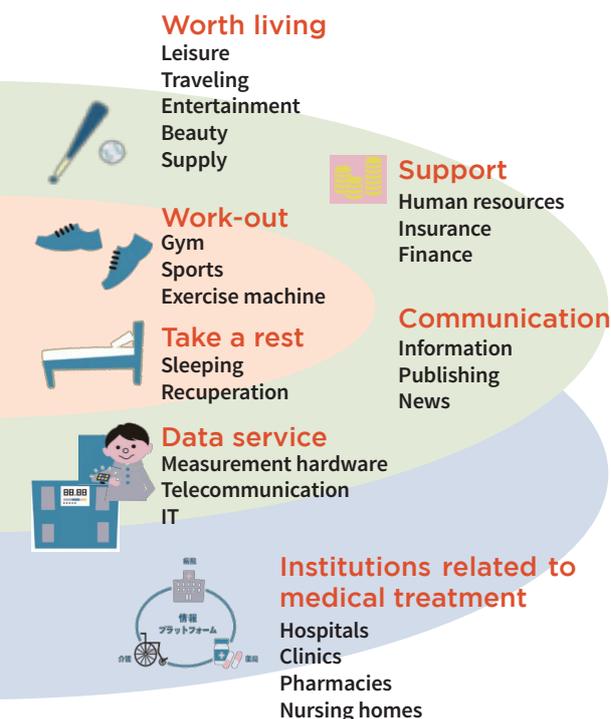
1. To interpret as “How to live ”

2. Release from the spell of “Curing”

3. Sound development of health industries

- Safety is an absolute requirement
- Concept of evidence (Different from medical and pharmaceutical products)

4. Raising the Foundation for Health Literacy



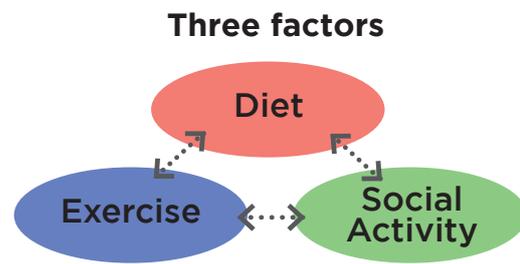
Three Factors that Manage “ME-BYO” (Diet, Exercise, and Social Activity)

The basis of ME-BYO Management is “diet,” “exercise,” and “social activity.” In terms of “diet,” this involves rethinking one’s daily diet and pursuing a healthier dietary regimen. In recent years, there has been growing interest in improving intestinal environment and addressing oral frailty (decreased mastication and swallowing ability and impaired oral function).

In terms of “exercise,” this involves incorporating sports and exercise in everyday life. A prolonged lack of exercise can weaken the bones, joints, muscles, and motor organs, thereby increasing the risk of locomotive syndrome, which impairs everyday life. It is not uncommon for people with this condition to be permanently bedridden or to require nursing care. Another key concern is achieving quality

sleep in order to properly rest the body and mind.

In terms of “social activity,” this refers to local volunteer activities, pursuing hobbies and interests, studying new fields in order to engage with others, and connecting with society. This has been proven to increase the autonomy of one’s lifestyle. ME-BYO concept is distinguished by its strong focus on individual’s engagement with society.



Players for Managing ME-BYO —Independent-minded Individuals and Corporations

The main actors for managing ME-BYO are individuals. The key point is their “self-awareness.” Rather than treating illnesses at medical institutions after the conditions worsen, individuals act proactively.

The important condition will be that “there is a wide variety of choices for individuals to select from.” If dietary changes or exercise regimens require patience and tenacity, both starting and keeping up these efforts can prove too challenging.

Hence, it is hoped that corporations can offer products and services to attract consumers and help them maintain their regimen.

It will be desirable for more corporations to enter this space applying ICT, artificial intelligence (AI), genetic analysis, robotics, and other cutting-edge technologies to create a new industrial sector (ME-BYO Industry).

Future Issues to be Considered

1. Establishing a methodology for evaluating ME-BYO

By the nature of ME-BYO management, accurate measurement of its outcomes is difficult. One key step to promoting ME-BYO concept to a wider audience is the creation of an objective method for evaluation acceptable to modern society which highly values objective evidence.

2. Ensuring reliability and safety

The screening criteria and testing rules used in the medical field do not apply to ME-BYO as such. Therefore, with securing safety as its foremost precondition, a new proprietary system for evaluating ME-BYO management

must be established that is different from the standards and rules that exist for medical care.

3. Local government initiatives

Using individual wishes and corporate services which support them as a basis to usher in policy dissemination has low affinity with traditional government bureaucracy. Local governments need to shift from “leave everything to us” approach to that of making best use of the potential of private sector firms in order to promote a “soft” movement to publicize ME-BYO management. It is hoped that this will result in new techniques for evangelizing ME-BYO management.

Global Rollout

Through its “Healthcare New Frontier” policies, Kanagawa Prefecture is promoting the creation and expansion of ME-BYO industry and disseminating this information overseas. The Prefecture signed Memoranda of Understanding (MOU’s) with overseas organizations concerning activities in the life sciences. The notable MOU’s are as follows:

World Health Organization (WHO)

Signed an agreement for increased cooperation in the field of aging. To date, held various symposia concerning aging and hosted training programs for personnel working in the field of international health and medical care policy.

Stanford University School of Medicine

Signed an agreement to promote joint development of scientific technology for the life sciences and its application and industrialization.

Singapore

Signed an agreement with National University of Singapore (NUS), National University Health System (NUHS), and Agency for Science, Technology, and Research (A*STAR) to promote joint development of scientific technology for the life sciences and its application and industrialization.

India

Signed an agreement with the Ministry of AYUSH of India to promote understanding of ME-BYO and Ayurvedic modalities as well as to promote intercultural exchange around improvement of everyday health.

Kanagawa’s Global Collaboration Platform

EUROPE

- UK
- Finland
- Germany
- WHO

ASIA

- Singapore
- China
- India

KANAGAWA

U.S.A.

- Massachusetts
- Maryland
- Stanford University

Cell Therapy Catapult, UK

WHO

Singapore

Stanford University

Massachusetts

Oulu City, Finland

Baden-Württemberg, Germany

Ministry of AYUSH, India

Liaoning, China

Maryland

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