The Future of Healthcare as Envisioned by PGP

Global Healthcare Paradigm Shift

Personal General Practitioner (PGP)

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Introduction to the Presentation

Everyday Innovations: Shaping Sustainable Healthcare

- Healthcare systems worldwide face a diverse range of challenges that impact the sustainability of medical services, irrespective of whether they are in high or low-income countries. To address these issues, there is an urgent need for innovative approaches utilizing digital technologies and artificial intelligence.

- The 2024 World Economic Forum proposed a new global initiative aimed at accelerating the digitalization and AI integration of national healthcare systems. This initiative seeks to transition to sustainable medical services across the globe.

- This presentation discusses the challenges and transformative trends in healthcare both globally and in Japan. It elaborates on the "Daily-life Driven Healthcare Reform" advocated by PGP, which is based on initiating healthcare reforms starting from everyday life activities.

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Global Healthcare Challenges

Why Global Healthcare Transformations?

Global Healthcare Challenges

- **Increased Demand for Medical Services**: The global aging population and the rise in lifestyle-related diseases are intensifying pressures on healthcare systems.

- **Crisis in Medical Provision**: Labor shortages and escalating healthcare costs are causing constraints on the capacity to provide medical services in many countries, raising concerns about future crises.

- **Disparities in Healthcare**: There are widening disparities in the quality and access to healthcare based on regional and economic conditions.

- **Social Issues and Health**: The increase in solitary living and resultant social isolation are heightening health risks such as heart disease, stroke, and dementia.

Global Healthcare Challenges

The Progression of Aging

- **Demographic Changes**: The aging global population, driven by a continuous decline in birth rates and an extension of life expectancy, is progressing. As a result, the number and proportion of people over 60 are increasing, and for the first time in history, the number of elderly is set to surpass the number of younger people.

- **Projected Demographics**: By 2050, it is projected that the global population aged 60 and over will more than double to 2.1 billion, up from the current figures. Furthermore, the population of those over 80 is expected to increase from 143 million in 2020 to 426 million in 2050, according to the World Economic Forum.

- **Regional Impact**: The increase in the elderly population is particularly significant in low- and middle-income countries. By 2050, about 80% of the elderly population is expected to reside in these countries.

Global Healthcare Challenges

Aging and Healthcare

- **Importance of Healthy Lifespan**: In an aging society, extending the "healthy lifespan"—where individuals can live independently and in good health—becomes increasingly important. Diseases typical of older adults often lead to diminished life functions.

- **Common Health Issues**: Elderly individuals frequently encounter health problems such as vision impairments (age-related macular degeneration, glaucoma), hearing loss (age-related hearing loss), joint pain, cardiovascular diseases, diabetes, depression, and dementia. These conditions often occur simultaneously and require a comprehensive approach.

- **Promoting Healthy Aging**: Sustaining the health of the elderly involves balanced diets, regular physical activity, and avoiding tobacco use. Maintaining these health behaviors throughout one's life is essential to improving the quality of life (QOL) for older adults.

Global Healthcare Challenges

Prevention of Lifestyle-Related Diseases

- **Widespread Impact of Lifestyle Diseases:** According to the World Health Organization (WHO), 74% of deaths worldwide are due to non-communicable diseases (NCDs). These include lifestyle diseases such as cancer, diabetes, cardiovascular diseases, as well as chronic respiratory diseases and mental health issues.

- **Major Causes of Premature Death:** Cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases account for 80% of premature deaths before the age of 70.

- **Identification of Risk Factors:** Key lifestyle risk factors include smoking, lack of physical activity, unhealthy diets, and excessive alcohol consumption.

- **Importance of Prevention:** Proper diet and regular exercise can reduce the risk of lifestyle diseases and prevent premature death.

Global Healthcare Challenges

Increasing Healthcare Costs

- **Common Challenge**: The rise in healthcare costs is a challenge commonly faced by countries worldwide, including Japan.

- **Factors Driving Cost Increases**: Factors influencing the rise in healthcare costs include an aging population, an increase in lifestyle-related diseases, advances in medical technology, economic growth, and higher income levels.

- **Advances in Medical Technology and Cost Increase**: Particularly in OECD countries, advancements in medical technology have led to the treatment of more diseases and more sophisticated treatments, which in turn increase healthcare costs.

- **Need for System Reform**: If healthcare costs continue to rise as a proportion of Gross Domestic Product (GDP), the current healthcare system will become unsustainable, necessitating comprehensive system reforms.

Global Trends in Healthcare Transformation

- **Transforming Healthcare (World Economic Forum 2024)**

- **2024 Global Health Care Sector Outlook (Delloitte)**

- **Health 2050 (Domo Helsinki)**

New Global Initiative to Advance Digital and AI-Driven Transformation of Healthcare Systems

World Economic Forum 2024 ✕ Boston Consulting Group

- **Progress in Digital Transformation**: The report focuses on the transformation and expansion of healthcare through digitalization, data utilization, and AI. It emphasizes improving the efficiency and quality of traditional healthcare systems, promoting the digitalization of patient-facing applications (front-end) and enhancing digital capabilities for non-patient-facing elements (back-end).

- **Collaboration Among Stakeholders**: To scale digital healthcare, cooperation among different stakeholders is essential. This collaboration enhances the overall 'connectivity' of the system, allowing for a more integrated approach.

- **Technologies Involved**: The transformation targets technologies for patients (Patient Tech), providers (Provider Tech), and life sciences and pharmaceuticals (Life Science and Pharma Tech).

- **Value and Patient-Centered Healthcare (Value-Driven Healthcare)**: Through these initiatives, the goal is to enhance the value of healthcare while focusing on patient satisfaction and quality of life.

2024 Global Health Care Sector Outlook

Deloitte Analysis

- **Healthcare Transformation through Artificial Intelligence**: AI streamlines diagnosis, treatment, and patient care management, enhancing the precision and efficiency of healthcare delivery. From predictive analytics to the automation of electronic health records, AI technologies are having a continuous impact.

- **Addressing Costs and Accessibility**: Governments and providers worldwide are taking measures to control costs while maintaining healthcare quality. This includes value-based care models and innovative pricing strategies.

- **Responding to Healthcare Worker Shortages**: Globally, providers face a shortage of clinicians, with efforts underway to improve pay, reduce burnout, and build trust in the workplace.

- **The Importance of Social Care**: Healthcare is expanding beyond medical services to include comprehensive social care. This shift recognizes the significant impact of social determinants on overall well-being.

- **Towards a Sustainable Future**: Sustainability is becoming a crucial aspect of the healthcare sector. From green hospital designs to sustainable supply chain management, the impact of sustainable practices on healthcare operations is being emphasized.

Health 2050: Four scenarios for human-driven health and freedom of choice
Future Scenarios by Domo Helsinki

- **Future Vision and Scenarios of Healthcare:** The report focuses on enhancing people's responsibility for their health through the advancement of digital health, community involvement, and the new roles of professionals. It presents four scenarios that outline how these elements could combine to shape future healthcare.

- **Key Concepts and Scenario Overview:**

  - **Human-driven Health:** Focuses on health driven by individual choice, expanding health promotion into everyday life, requiring societal contribution to health production.

  - **Four Future Scenarios:**

    - **Democracy of the Fittest:** Scenario where local decentralization and civic engagement allow residents to plan their living environments.

    - **Open Health:** Promotes health through transparency in health information and leveraging digital technologies.

    - **The New Nordic Model:** The society values health as a central principle, fostering shared economy and societal engagement.

    - **Hero Doctors:** Experts and digital tools support healthy choices through advanced health technologies.

- **Balance Between Technology and Humanity:** While emphasizing technology, the importance of human, societal, and community elements is recognized, exploring how these factors integrate into healthcare.

The Missing Pieces of the Global Reports

A Healthcare Perspective Centered on Individuals and Daily Life

1. **Under-discussed Issues of Individual Healthcare:** The healthcare challenges faced by individuals are not sufficiently discussed.

   - **Barriers to Health Priorities:** Many people desire to be healthy, but daily life concerns such as work, family issues, and leisure often take precedence, resulting in health behaviors being postponed.

   - **Preferences and Health:** In dietary choices, taste and personal preferences often prevail over health, including alcohol consumption.

   - **Overabundance of Information and its Difficult Use:** There is an abundance of health-related information available, yet it is challenging for individuals to effectively sift through and utilize this information.

   - **Impact of Economic Constraints:** Maintaining a healthy lifestyle through diet and exercise involves costs, and many people are unable to practice ideal health habits due to financial constraints.

2. **Insufficient Focus on Healthcare Originating from Daily Life**

   - **Necessity for Daily Life-based Healthcare**: Lifestyle diseases develop and progress within daily life, yet the focus on healthcare that originates from daily routines is inadequate.
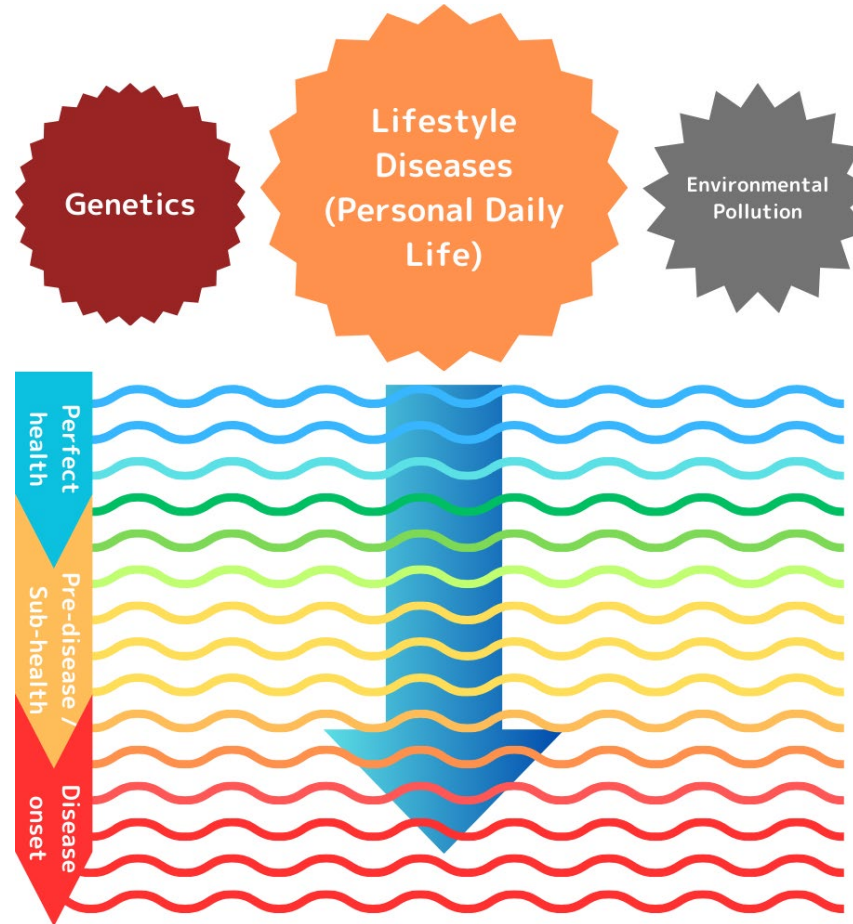
PGP's Perspective
Challenges of Personal Daily Life Not Fully Addressed in Global Healthcare Reports

Insights from 34 Years of Medical Experience on

Everyday Health Issues

Missing Pieces in Global Healthcare Reports

The 'Individual Everyday Life' That Most Affects Health Status

Genetics

Lifestyle Diseases (Personal Daily Life)

Environmental Pollution

Origins of Disease:

74% of diseases originate from the cumulative aspects of an individual's daily life.

Early Signs of Disease:

Early indications of disease occur during the course of everyday life.

Perfect health

Pre-disease / Sub-health

Disease onset

Missing Pieces in Global Healthcare Reports

Insufficient Perspective on Restructuring Healthcare Around 'Daily Life'

- **Lifestyle as a Primary Disease Factor**: Although there are many factors contributing to disease, the majority of increasing medical needs are derived from 'lifestyle', and daily choices significantly impact health.

- **Lifestyle Diseases—'life-related diseases', 'chronic diseases', 'noncommunicable diseases'**: These are preventable, and it is crucial to integrate prevention measures into everyday life.

- **Insufficient Prevention Focus in Previous Healthcare Reports**: There is a lack of emphasis on prevention through the framework of 'daily life'. There is a need to reconsider enhancing preventive actions in individuals' daily routines using the latest sensing technology.

Missing Pieces in Global Healthcare Reports

【PAINS plus I】 *Challenges Individuals Face in Maintaining Healthy Daily Life*

PAINS

- **Freedom (The Paradox of Choice)**: The freedom to choose and its costs.
    - **Freedom of Food (Preference over Health)**: Taste and personal preferences often take precedence over health, leading to unhealthy dietary habits. This includes excessive consumption of items like alcohol.
    - **Freedom of Action (Attention Diverted)**: While people want to be healthy, everyday life priorities such as work, home duties, and leisure often dominate, pushing health-related actions to the back burner.

- **Information Pollution**: The internet is flooded with health information, but it is challenging to discern accurate information and use it effectively.

- **No Symptoms, No Action**: Preventing lifestyle diseases is crucial; however, the lack of overt symptoms can lead to low motivation for prevention, resulting in minimal preventive actions.

- **Socioeconomic Constraints**: Economic and time constraints often pose significant barriers to leading a healthy lifestyle.

Plus I

- **Isolation**: The increase in solitary living and social isolation can have detrimental effects on mental and physical health.

The Dilemma of Freedom: Choosing Between Health and Preferences

The paradox of choice

- **Freedom of Food (Preference over Health)**: Often, taste and personal preferences are prioritized over health, leading to a preference for flavorful, high-preference foods and alcohol.

- **Freedom of Action (Attention Diverted)**: Despite an awareness of health, the focus often shifts towards work, household duties, and leisure activities, which tend to overshadow health-related actions.

Information Flood: The Dilemma of Selection and Utilization

Information pollution

- **Information Pollution**: The excess of health information on the internet does not serve its intended purpose of providing correct knowledge, but instead, it leads to confusion.

  - **Information Clutter**: The internet is flooded with articles written by non-experts, making it difficult to grasp accurate information. The lack of mechanisms to correct errors is also a problem.

  - **Data Smog and Information Noise**: Useful information is buried under useless data, making it increasingly difficult to identify important knowledge.

Action Deferred by Lack of Symptoms

No symptoms, no action
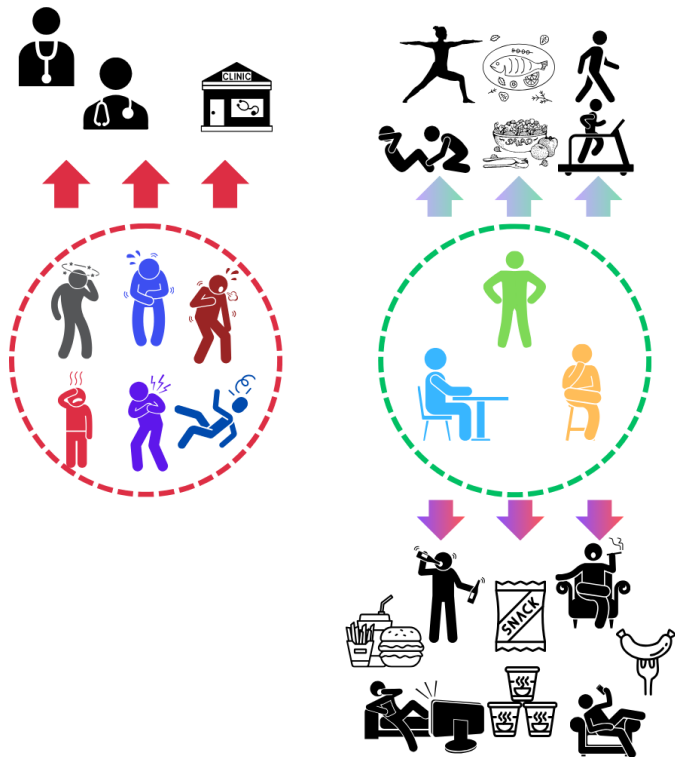
- **Visible Symptoms Prompt Immediate Action**: When diseases or injuries are visibly symptomatic, patients seek medical help immediately.

- **Asymptomatic Nature of Lifestyle Diseases**: Many lifestyle diseases are asymptomatic until they manifest, leading to a lack of motivation for preventative measures.

These delays can result in the deterioration of preventable conditions and increased treatment costs.

Lack of Time and Money: Barriers to Maintaining Health
## *Socioeconomic constraints*
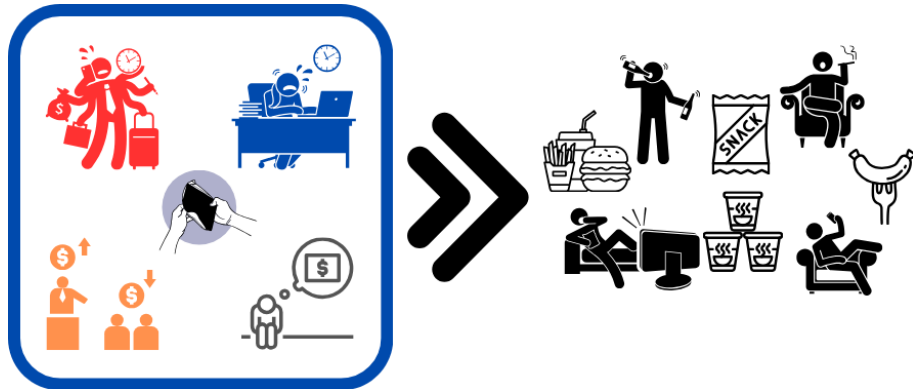
- **Busy Lives Cut into Health Maintenance Time**: The hectic nature of daily life reduces the time available for maintaining health, fostering unhealthy habits.

- **Costly Nutritious Diets and Regular Exercise**: Often, eating a nutritious diet and engaging in regular exercise involve substantial costs, which are difficult to afford on a limited budget.

- **Time and Financial Constraints Hinder Health Investments**: These constraints make it challenging to invest in health. Especially among lower-income groups, these issues exacerbate health investment disparities.

Increase in Solitary Living and Its Health Impacts

Isolation

Single-person households are increasing globally. In Japan, they make up 32%.
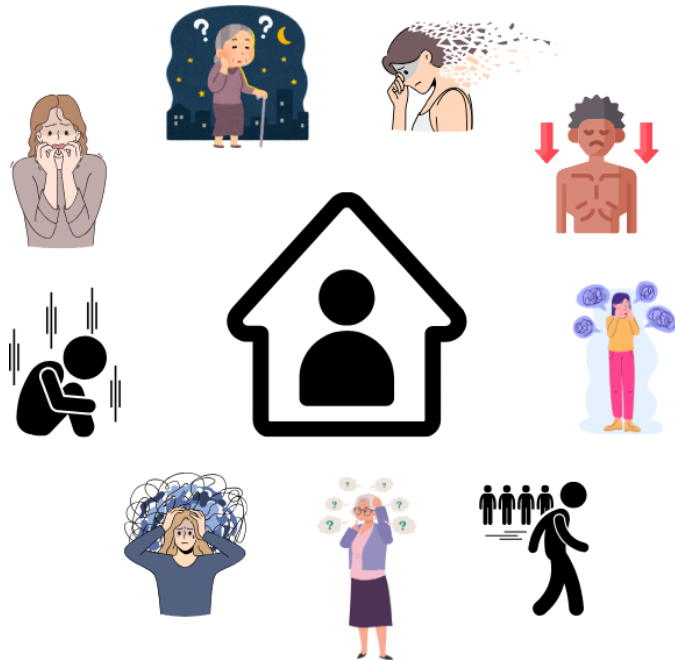
- **Social Isolation and Psychological Effects**:
  - **Loneliness**: Individuals living alone often experience increased feelings of loneliness, which can contribute to depression and anxiety disorders.

- **Deterioration of Lifestyle Habits**:
  - **Nutritional Deficiencies**: Solitary dwellers often struggle to prepare balanced meals for themselves, leading to poor nutrition.
  - **Lack of Exercise**: A decrease in social activities leads to reduced physical activity, which can cause various health issues.

- **Increased Risk Behaviors and Delayed Emergency Responses**:
  - **High-Risk Behaviors**: Living alone can lead to risky behaviors such as alcohol and drug abuse.
  - **Delayed Emergency Response**: It can be difficult for solitary individuals to seek help in emergencies, turning minor incidents into major issues.

Highlights of This Section

Personalized Health Behavior Change: Integrating Technology and Behavioral Health Science

- **Linking Health to Daily Life**:

  - Research and practice in behavioral health that promotes individual behavior change by connecting health to everyday life are essential.

  - This requires an approach that views individuals within the context of society as a whole, deriving concrete health improvement measures through daily activities.

- **PGP proposes a vision for 'Daily-life Driven Healthcare'** and will develop the necessary technologies and frameworks for its social implementation an integrator, aiming to realize this vision in the future.

Challenges in Japanese Healthcare

Challenges in Japanese Healthcare (Universal Issues)

Unparalleled Aging Worldwide

- **Overview of Demographics:** Japan has the highest proportion of its population aged 65 and over at 29.1%, which is the highest level globally, 5.4% higher than Italy, which is next in line. For the first time, the population aged over 75 has exceeded 20 million, with one in ten individuals being over 80 years old.

- **Increasing Health Challenges:** Aging leads to an increase in lifestyle-related diseases such as hypertension, diabetes, and cancer. These conditions are primary contributors to the gap between health lifespan and life expectancy (9.02 years for men and 12.4 years for women) and often lead to severe terminal illnesses. Complications such as heart failure, chronic renal failure, stroke, and frailty, as end-stage manifestations of lifestyle diseases, pose significant burdens on individuals and society. — 2017 Japanese Academy of Sciences Clinical Medicine Committee on Cardiovascular, Endocrine, and Metabolism

- **Need for Measures:** There is an urgent need to develop preventive measures and treatments suitable for an aging society and to strengthen policies aimed at extending healthy lifespans.

Challenges in Japanese Healthcare (Universal Issues)

Strengthening Preventative Measures Against Lifestyle Diseases

- **Impact of Lifestyle-Related Diseases:** The major causes of death among the Japanese population are cancer and cardiovascular diseases (heart and brain), both predominantly caused by lifestyle-related diseases, accounting for about half of all deaths. Lifestyle-related diseases consume approximately 30% of Japan's total medical expenses.

- **Potential for Prevention and Current Issues:** Although lifestyle-related diseases can be prevented through lifestyle improvements, the preventive efforts of medical institutions are still inadequate. In Japan, there is an overemphasis on visiting medical facilities, and the guidance on lifestyle by physicians is not sufficient.

- **Measures and Recommendations:** To enhance the prevention and management of lifestyle-related diseases, not only medical institutions but also communities, workplaces, and schools need to cooperate to establish a culture of health promotion. The social environment supporting individual health management is inadequate, necessitating strengthened support through public policies and measures. — Ministry of Health, Labour and Welfare, "Promotion of Measures Against Lifestyle-Related Diseases (Interim Summary)"

Challenges in Japanese Healthcare (Universal Issues)

Rising Medical and Nursing Care Costs

- **Current Situation and Future Projections of Medical and Nursing Care Costs:** According to estimates by the Mitsubishi Research Institute, by 2040, medical and nursing care costs are expected to increase by 60% from current levels, with a projected shortfall of up to 27 trillion yen (Source: Nikkei). For the working-age population (20-65 years old), the annual per capita burden of medical and nursing care costs is expected to increase by approximately 460,000 yen. For employed individuals, this translates to an image of a monthly insurance premium increase of 230,000 yen split between employer and employee.

- **Causes of Increasing Medical Costs:** The progression of aging and the increase in lifestyle-related diseases are the primary causes of the rising medical costs.

- **Challenges and Need for Reform:** Current measures to control medical costs are often superficial, and there is a demand for fundamental reform in system design and a shift in focus to prevention. However, these reforms are expected to face opposition, making the formation of a social consensus crucial.

Increased Medical Costs and Social Burden Due to Aging

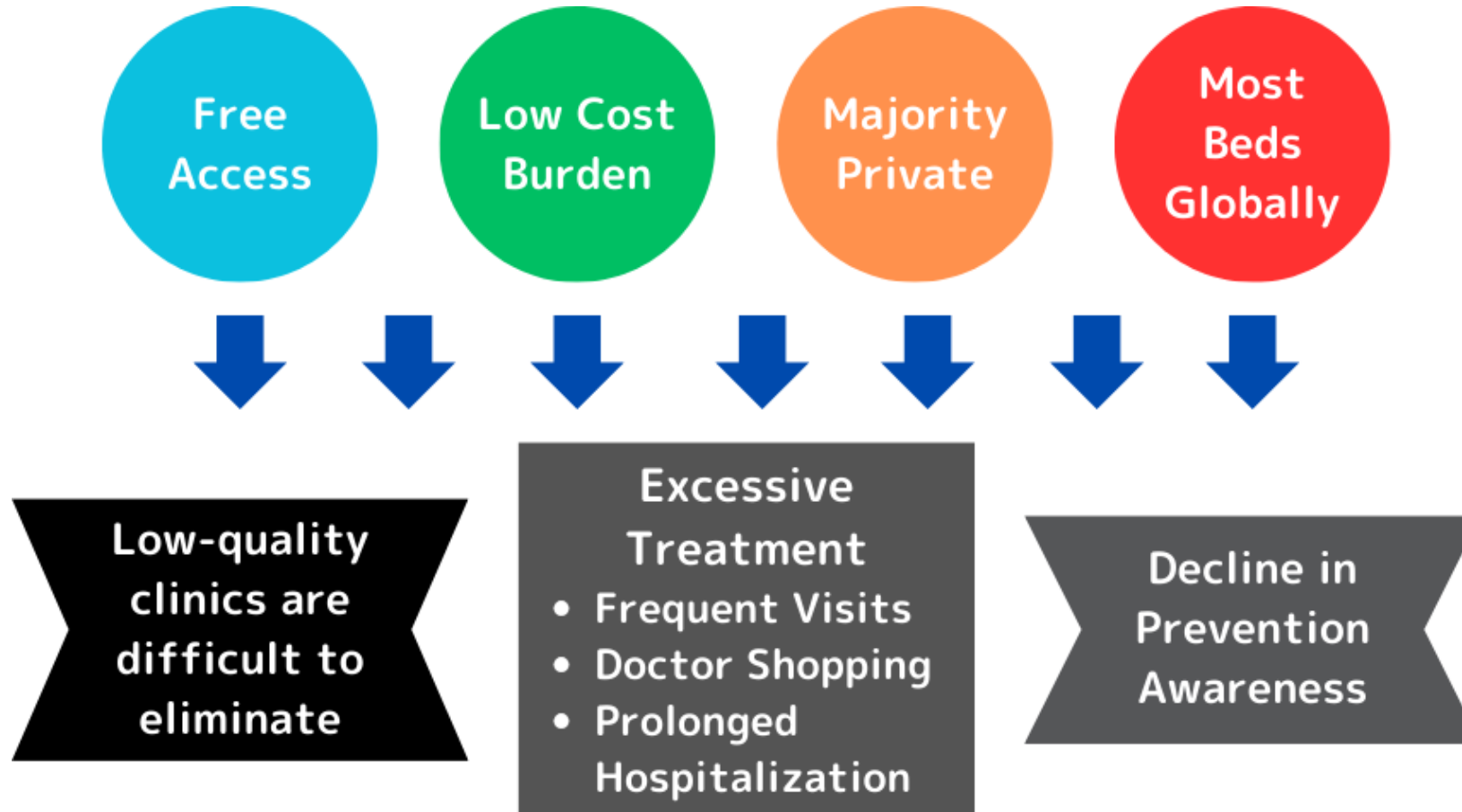## *Can Japanese Society Sustain Itself As It Is?*

Challenges in Japanese Healthcare (Unique to Japan)

Unparalleled Free Access and Provision of Advanced Medical Care

- **Free Access Medical System:** Japan's healthcare system allows patients to visit any medical institution freely. Even in major hospitals, patients can receive care without a referral if they pay a special fee.

- **Public Support for Medical Expenses (Affordable Medical Costs for Advanced Care):** Public health insurance covers approximately 70% of medical costs, with patients responsible for the remaining 30%. The sources of national medical expenses include public funds (national and local) at 38.4%, insurance premiums (from employers and insured individuals) at 49.5%, and out-of-pocket payments at 12.1%.

- **World-Leading Number of Hospitals and Hospital Beds:** Japan ranks third globally in the number of hospitals per million people, second in hospitals per 100 square kilometers, and first in the number of hospital beds per 1,000 people.

- **Majority Private:** Public hospitals account for less than 20% of all hospitals, with the majority of hospitals and clinics being privately operated.

Challenges in Japanese Healthcare (Unique to Japan)

Paradoxical Issues Arising from Japan's unparalleled healthcare system

Free Access

Low Cost Burden

Majority Private

Most Beds Globally

Low-quality clinics are difficult to eliminate

Excessive Treatment
- Frequent Visits
- Doctor Shopping
- Prolonged Hospitalization

Decline in Prevention Awareness

Japan Risks Falling Behind
in Global Healthcare Transformation
The Heavy Legacy Hinders Change in Japanese Healthcare

- **Background of a Japan's unparalleled healthcare system:** Japan's public health insurance system allows anyone, anytime, access to high-standard medical care, which was established during the high economic growth period as one of the unparalleled healthcare system Japan can boast of.

- **Delays in Transformation Due to Legacy:** Due to this legacy, Japan may lag behind the global trend in healthcare transformation.

- **Economic and Social Challenges and Sustainability:** Given Japan's current situation with economic slowdown, population decline, and advancing aging, sustaining the current medical insurance system is challenging. To address these issues, fundamental system reforms and a transformation in public consciousness are necessary.

- **Shift in Mindset Required:** To enhance the sustainability of healthcare system, transitioning to a system centered on prevention and everyday health management is crucial. This requires a change in mindset among the Japanese, who are accustomed to the current system, yet there is a tendency to resist change.

Japan's Health Culture Lacks Personal Healthcare Awareness

Japan's Excessively Medical-Dominated Health Culture

- **Ease of Medical Access and Its Impacts:** In Japan, access to medical facilities is available at any time and consultations and treatments can be received at a low cost. This system reinforces a tendency to prioritize treatment over prevention, leading to a lack of motivation for preventive measures.

- **Dependence and Its Social Impacts:** A strong dependency on physicians exists, with the prevailing belief that "Getting sick? Just see a doctor, you'll be fine," shaping excessively medical-dominated health culture. This culture can be seen at least in part as a legacy issue of past policies of free medical expenses. Source: [Evolving Medical Compensation in Japan](#)

- **Need for Reform:** There is a need for reform in health culture, requiring the introduction of policies and educational programs that promote a shift in focus from medical care to prevention. It is crucial to cultivate a culture where individuals manage their own health and emphasize prevention.

Challenges Arising from a Excessively Medical-Dominated Health Culture

Health Issues That Cannot Be Solved by Medicine Alone

- **Limits of the Current Medical Approach:** In Japan, the conventional style of "visit a medical institution when you feel something abnormal" is mainstream, but this alone leaves many unresolved health issues.

- **Specific Unresolved Health Issues:**

  - **Increase in Lifestyle Diseases:** The rise in lifestyle diseases and related deaths due to unhealthy habits such as lack of exercise and nutritional imbalances is well-known.

  - **Low Resuscitation Rates for Sudden Deaths:** The overall resuscitation rate for cardiac arrests in Japan is about 5%, with notably insufficient life-saving measures for sudden deaths at home.

  - **Traffic Accident Deaths:** Deaths from traffic accidents caused by poor health conditions occur.

  - **Increase in VDT Syndrome:** Excessive use of PCs and smartphones is causing physical and mental health issues.

- **Need for Everyday Environmental Reforms:** To solve problems that occur in daily life, health-based reforms are necessary in various aspects such as living spaces, work environments, and urban development. Designs that incorporate health-promoting perspectives are needed from public spaces to individual homes.

  Source: [Preventing Sudden Death at Home](#)

Enhancing the Sustainability of Japan's Healthcare

Healthcare Paradigm Shift for Japan

- **Shift to Preventive Medicine:**

  - **Goal:** To curb the increase in lifestyle diseases, extend healthy life expectancy, and reduce the unhealthy period, thereby lessening the financial burden on healthcare and society.

- **Promoting a Change in Consciousness:**

  - **Transformation from Medical Dependency:** Change the mindset of Japanese accustomed to the current system, encouraging a shift towards self-responsible healthcare.

  - **Understanding Resources:** Foster a shared understanding that medical resources are limited, and promote a shift towards a prevention-focused consciousness.

- **Specific Measures:** There is a need to develop new systems that support people in leading healthy lives.

Enhancing the Sustainability of Japan's Healthcare

Discerning the True Nature of Diseases
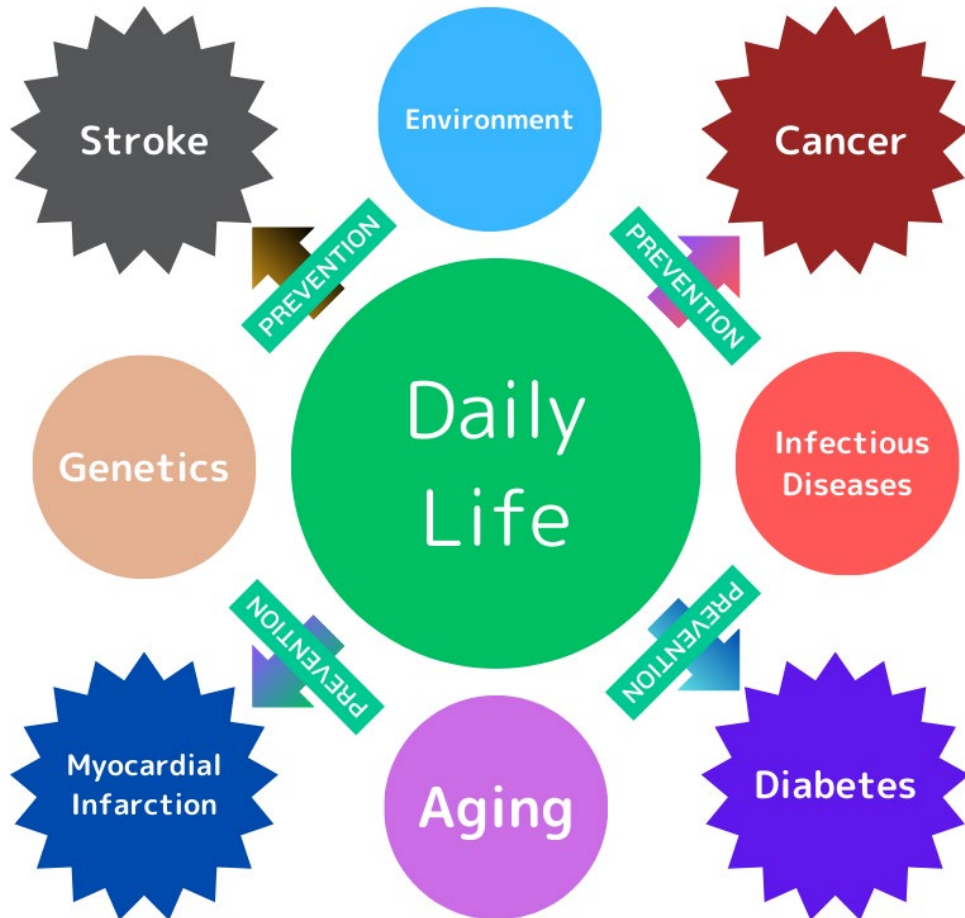
- **Preventing Lifestyle Diseases from Daily Life (Daily-life Driven Healthcare)**

  - Extending healthy life expectancy enhances personal well-being, which in turn reduces the social burden.

  - Reducing social welfare costs, including medical and nursing care expenses, contributes to lower overall health costs (Low Cost Health)

  - Required is a mindset change into understanding the true nature of diseases and taking responsibility for one's own health.

Highlights of This Section

Common Challenges Worldwide + Challenges Unique to Japan

- **Global Health Challenges:**

  - **Aging population, increasing lifestyle diseases, and rising healthcare costs:** These are challenges not only faced by Japan but by many countries around the world.

- **Japan's Unique Situations:**

  - **Equity in healthcare access and the increase in unnecessary medical treatments:** While Japan's public health insurance system ensures access to high-quality healthcare, it has led to an increase in unnecessary medical treatments.

  - **Crisis of sustainability:** The sustainability of the current public health insurance system is being questioned due to rising healthcare costs and aging.

- **Risk of Delays in Transformation:**

  - **Legacy of the insurance system:** The legacy of this public health insurance system includes the risk of falling behind the current global trend of Healthcare Transformation.

- **Proposals for the Future:**

  - **PGP's Proposal:** We propose promoting Daily-life driven Healthcare, which is based on everyday life and can connect with the medical system, making it easier for individuals to manage their health in their daily lives. This approach can significantly reduce lifestyle diseases and control the rise in healthcare costs.

  - **Global Expansion:** This model is developed in alignment with and as an advancement of the global trend in healthcare transformation, and can be expanded internationally.

PGP's Perspective

Cultivating Health from Daily Life

Daily-life driven Healthcare (DLH)

Creating a Healthcare System Centered on Daily Life
Focusing on Lifestyle

- **The Importance of Everyday Life and Health:** The greatest desire of people is to live their daily lives in good health, and indeed, it is an undeniable fact that lifestyle diseases result from the accumulation of daily habits.

- **Limitations of the Traditional Medical System:** The current medical system focuses primarily on interventions by doctors when diseases occur. This alone has limitations in disease prevention, and more effective preventive measures are needed.

- **New Directions in Healthcare:** Healthcare should focus on preventing the occurrence of diseases. This requires a system where professionals intervene in daily life and take preventive measures. However, the field of preventive medicine is not yet fully established.

- **Proposals for the Future:** To support health maintenance within daily life, it is necessary to develop preventive medicine professionals and infrastructure that supports routine healthy behaviors. This approach is expected to reduce the incidence of lifestyle diseases and cut overall healthcare costs.

Redefining Healthcare with a Focus on Individual Daily Life

Shifting from Clinic-Centric to Daily Life-Centric

Traditional Healthcare Approach

- **Clinic-Centric Healthcare:** When feeling unwell, one consults a doctor and treatment is based on tests and diagnoses. Although advice on daily life habits is given, the actual change in behavior is left to the individual, and systematic support is insufficient.

Vision for the Future of Healthcare

- **Daily Life-Centric Preventive Healthcare:** Daily life is the main battleground for maintaining health, with a focus on disease prevention. This approach involves early detection of mental and physical imbalances within daily life and taking preventive measures through lifestyle improvements. Additionally, a system is established to smoothly transition to appropriate medical treatment when needed.

Integrating the Creation of Everyday Healthcare with Medical Transformation

Seamless Integration of New Daily Life and New Medical Care
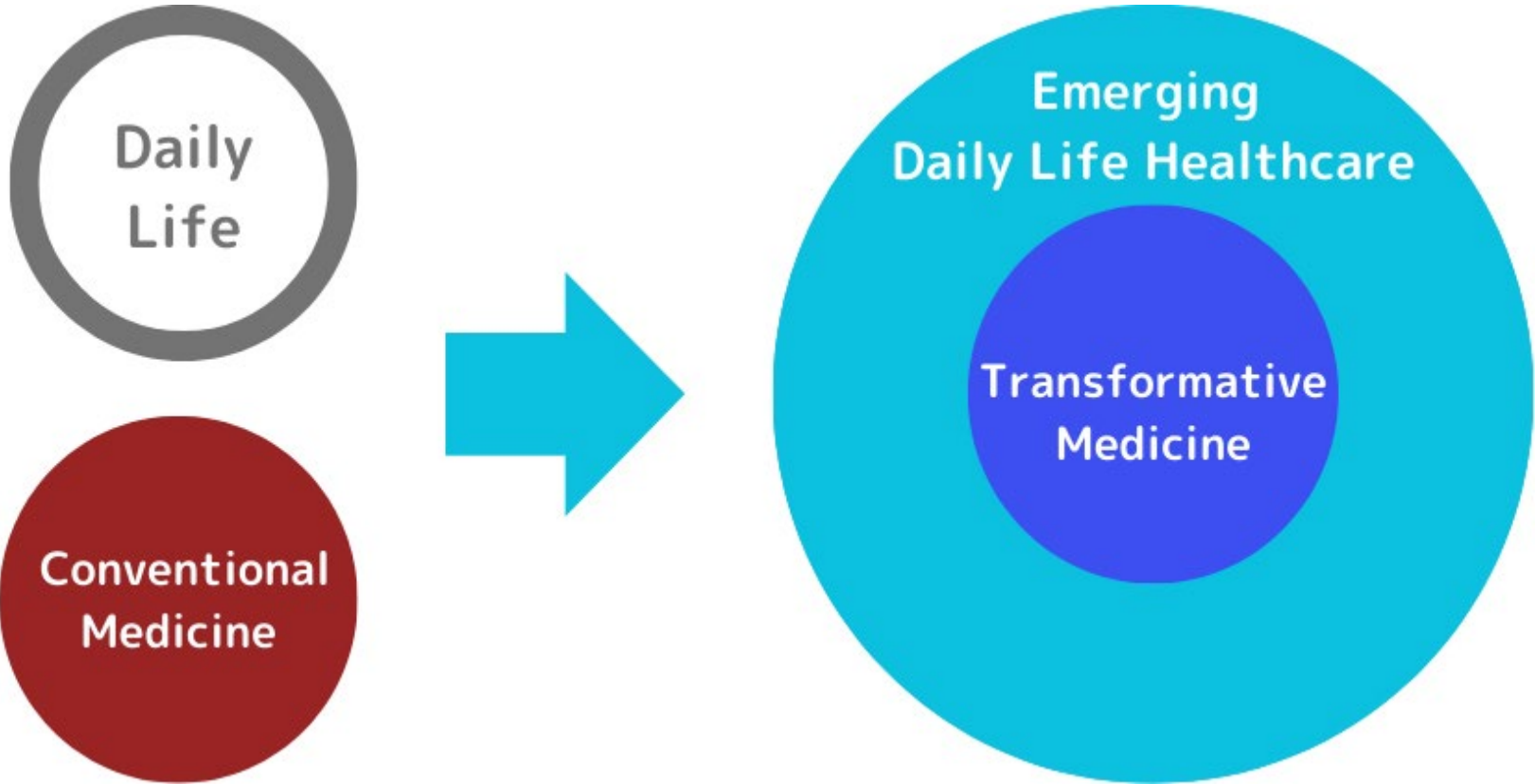
PGP's Vision for the Future of Healthcare:

"Daily-life Driven Healthcare"

How Can We Realize Healthcare Originating from Daily Life?

PGP's Vision for the Future of Healthcare

Two Technologies that Monitor Daily Life

Anytime Anywhere Health Monitoring:

- **Wearable and Built-in Sensing:** We introduce technologies that monitor health information within wearable devices and everyday items used in living spaces and social infrastructure.

- **Unconscious Sensing:** Technologies that continuously collect health information without active user awareness, evolving health management in everyday life.

- **Foundation for Preventive Medicine:** Use real-time data to detect health risks early and take timely preventive measures. This sets a new standard for preventive medicine.

Mother AI:

- **Data Integration Capability:** Integrates health data from various sources and manages it centrally, enabling optimized health information provision for each individual.

- **Big Data Analytical Capability:** Analyzes vast amounts of collected data to predict health risks and identify early health issues.

- **Nudging Power:** Based on analytical results, makes soft recommendations (nudges) to encourage healthy behaviors, supporting users in improving their health.

Technological Elements Enabling Everyday Healthcare Transformation
Digital Infrastructure

- **Sensor:** Devices that gather health-related data from everyday activities.
- **Data:** Information collected from sensors, which is processed and analyzed.
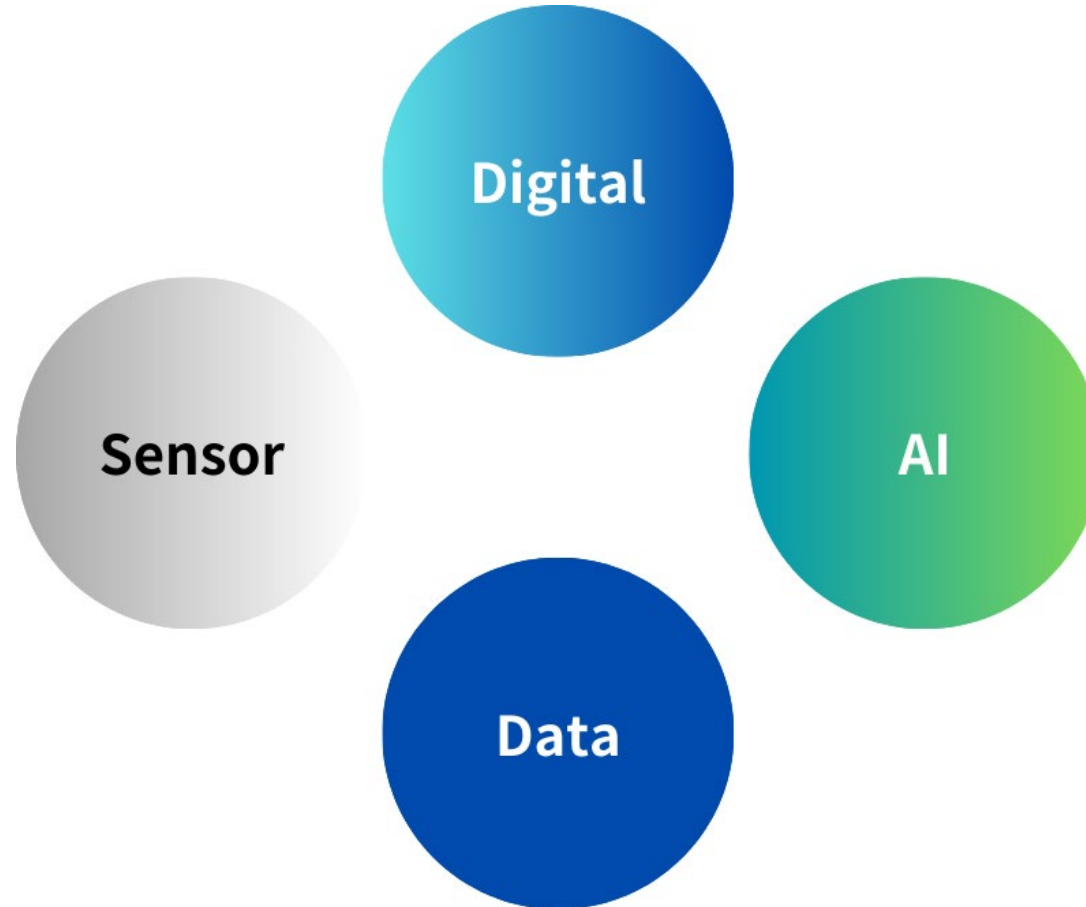
- **Digital:** The technologies and platforms that support the processing, storage, and management of data.
- **AI (Artificial Intelligence):** Uses the data to provide insights, make predictions, and support health management decisions

PGP's Vision for the Future of Healthcare

【Anytime Anywhere Health Monitoring 】

- **Everyday Health Monitoring:** Health and illness are shaped within the everyday context, making it crucial to continuously monitor health information in all aspects of life.

- **Technology Application Scenarios:**
  - **Home:** Built-in sensors in the home provide more precise data than wearable devices.
  - **Automobile:** Health monitoring during driving with built-in sensing supports safe driving.
  - **Office:** Built-in sensing and wearable devices are used in conjunction to enhance health management at the workplace.
  - **Public Spaces:** Sensors installed in public areas work together with personal wearables to continuously monitor health when outdoors.

- **Technology Selection and Integration:** Depending on the situation, built-in sensing and wearable devices are utilized interchangeably to provide consistent health management. Optimal technology is selected based on specific measurement needs.
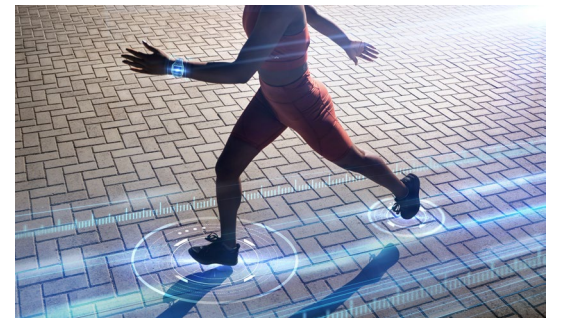
Anytime Anywhere Health Monitoring
The Qualities We Should Pursue
Unconscious Sensing

- **Sustainability Issue:** Current health monitoring apps and devices often see a decrease in use or discontinuation because they are difficult for users to continue wearing. For example, 70% of health app users stop using them early on (Jacob, C. et al., 2022).

- **The Need for Unconscious Sensing:** The collection of health information should occur automatically within everyday activities, without the user's conscious effort (unconsciously). This approach improves the sustainability of measurements and makes real-time health management feasible.

- **Means to Achieve Unconscious Sensing:**

  - **Built-in Sensing:** Utilize sensors embedded in furniture and living space items (chairs, desks, beds, toilets, bathroom fixtures, etc.) to collect health data routinely.
  - **Wearable Sensing:** Use everyday wearable devices like smartwatches and smart glasses to continuously monitor health status.

PGP's Vision for the Future of Healthcare

Mother AI

- **Real-time Data Aggregation and Big Data Management:** Health data collected through 'Anytime Anywhere Health Monitoring' are aggregated in real-time and managed as big data. This vast database forms the foundation for more accurate health status assessments and more timely personalized health advice..

- **AI Functions for Data Integration:** Data from various sensors, which may be inconsistent, are integrated using machine learning and statistical methods. This integration enables the provision of consistent health information.

- **Applications of AI in Health Management:** Insights derived from AI analysis guide health status assessments and interventions. This includes regular or as-needed health advice and nudging individual users towards healthier behaviors.

PGP's Vision for the Future of Healthcare

Sensing and Nudging Mother AI
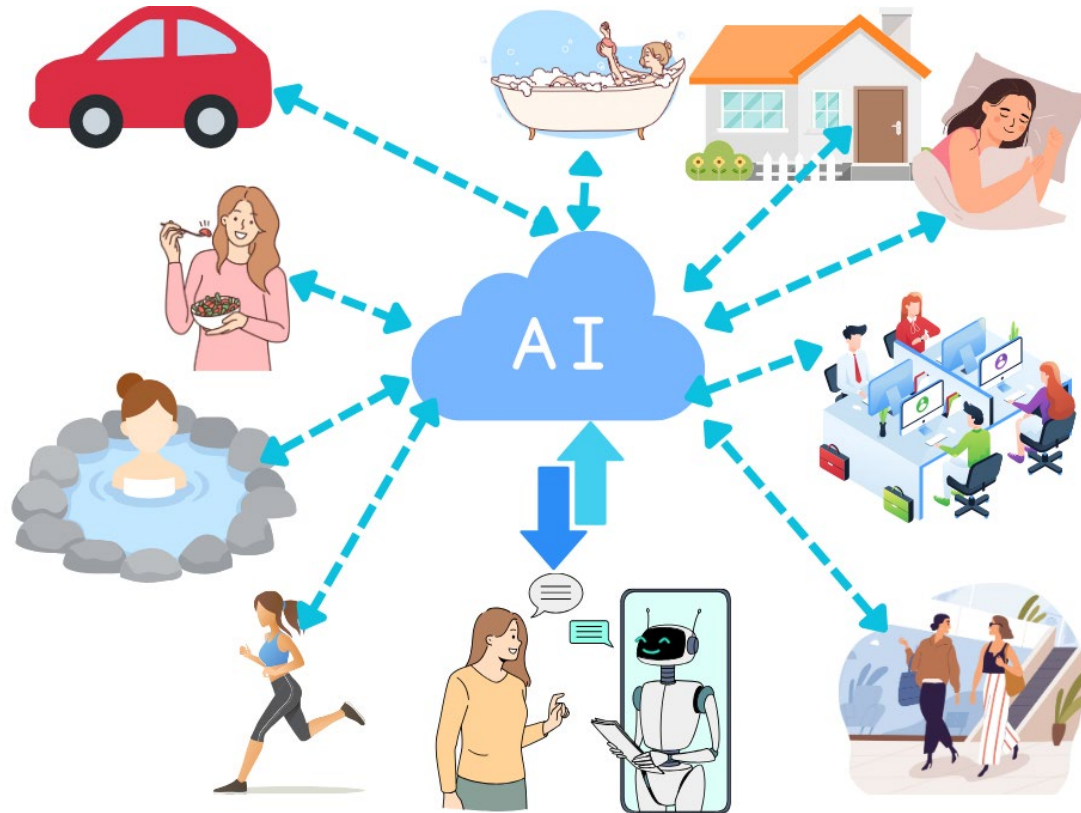
The diagram illustrates how Mother AI integrates data from various everyday activities—driving, eating, working, sleeping, relaxing in a hot tub, and walking. It highlights the role of AI in gathering data from these activities, processing it in the cloud, and providing personalized feedback and nudges to promote healthier behaviors. This AI-driven approach exemplifies how healthcare can be seamlessly integrated into daily life, enhancing health management through continuous monitoring and timely nudges.

Branding

The Origin of Mother AI

- **Traits of 'Motherhood':** Love, protection, devotion, nurturing, understanding—these traits of motherhood symbolize the role of a mother who supports and raises her children unconditionally.

- **Unconscious Presence:** Children are watched over by their mothers even when they are not aware, and this presence provides them with a sense of security. Similarly, Mother AI continuously monitors health without the user's conscious awareness.

- **Trust between Humans and AI:** Mother AI aims to build a trust relationship between people and AI healthcare akin to that between a mother and her child. This trust serves as the foundation for users to naturally accept the health management provided by AI.

How Can Daily-life Driven Healthcare Solve Common Global Healthcare Challenges?

Solving Global Issues Through Daily-life Driven Healthcare

Reducing Medical Demand

Current Challenge

- **Increased demand for healthcare:** The ongoing rise in medical demand due to global aging and an increase in lifestyle-related diseases.

How the Challenge is Addressed

- **Reduction in medical demand through a decrease in lifestyle diseases:** By implementing preventive measures based on daily life activities, we can significantly reduce the incidence of cardiovascular diseases, diabetes, cancer, and obesity, thereby decreasing the demand for medical services.

- **Extending healthy life expectancy:** Routine prevention and early interventions allow older adults to live more independent and healthier lives. This reduces the social burden, such as the need for caregiving, and enables a more sustainable societal structure.

Solving Global Issues Through Daily-life Driven Healthcare

Reducing Medical Burden

Current Challenge

- **Healthcare Delivery Constraints Crisis:**

  - Globally, workforce shortages are imposing constraints on healthcare delivery capabilities.

  - The cost of healthcare continues to increase.

How the Challenge is Addressed

- **Reducing Healthcare Burden:** By basing healthcare on daily life, we promote a shift from reliance on medical care to self-management, reducing pressure on the healthcare system.

- **Cost Control through Prevention:** By implementing preventive measures, we reduce the incidence of diseases, thereby cutting healthcare costs and supporting economic sustainability.

Solving Global Issues Through Daily-life Driven Healthcare

Reducing Healthcare Disparities

Current Challenge

- **Healthcare Disparities**

  - **Uneven Quality of Care:** The quality of healthcare varies significantly by region and income, greatly impacting patient health outcomes.

  - **Inequitable Access:** Many individuals are restricted from accessing high-quality healthcare due to geographic and economic factors.

How the Challenge is Addressed

- **Reducing Healthcare Disparities**

  - **Uniform Preventive Care:** A healthcare system based on daily life ensures that everyone, regardless of location or economic status, receives uniform preventive care services.

  - **Equal Health Monitoring and Intervention:** Leveraging technology to ensure that all individuals are equally monitored for health and receive appropriate nudges for behavioral support as needed.

Solving Global Issues Through Daily-life Driven Healthcare

Reducing Health Decline Due to Living Alone

Current Challenge

- **Health Decline from Increased Solitude:** The rise in solitary living leads to increased social isolation and feelings of loneliness, which in turn elevate health risks such as heart disease, stroke, and dementia.

How the Challenge is Addressed

- **Monitoring with Mother AI:** Mother AI monitors the daily lives of individuals living alone, supporting their mental and physical health. This AI nudges users towards appropriate health behaviors when needed, reducing the adverse effects of living alone.

- **Mitigating Social Isolation:** Through Mother AI, efforts are made to prevent individuals who live alone from becoming socially isolated by facilitating connections and providing necessary support. This enhances both psychological and physical health.

How Can Daily-life Driven Healthcare Solve Individual Healthcare Challenges?

Solving Individual Challenges through Daily-life Driven Healthcare

Nudging Eating and Exercise Behaviors with AI

Current Challenge

- **Preference Over Health:** During meals, taste and personal preferences often take precedence over health considerations. There is also the enjoyment of indulgences like alcohol.

- **Work and Household Priorities:** In daily life, work, home responsibilities, and leisure activities often take priority over health behaviors.

How the Challenge is Addressed

- **Nudging Toward Nutritional Balance While Respecting Preferences:** For example, after a meal high in sodium, nudging to choose fruits and vegetables rich in potassium.

- **Encouraging Exercise Within Daily Life and Leisure:** Nudging towards easily incorporable low-intensity exercises within daily activities. For instance, suggesting commuting methods that increase step count, making walkable restaurants more visible, encouraging shopping in physical stores as opposed to online, promoting the use of stairs, and recommending light stretches while watching TV. Source: [Redefining Mobility for Health](#)

Solving Individual Challenges through Daily-life Driven Healthcare

AI-driven Medical Information Trust Grading

Current Challenge

- **Information Pollution:** The abundance of information online leads to an overflow of unreliable information, making it difficult to distinguish between accurate and incorrect information. This issue is recognized as:

    - **Information Clutter**

    - **Data Smog**

    - **Noise**

How the Challenge is Addressed

- **AI-driven Trust Grading:** Utilizing AI, we develop a system to evaluate the reliability of online medical information, providing users with accurate information.

- **Examples of Grading Levels Based on Information Source:**

    - Level 1: Information proven by multiple peer-reviewed studies
    - Level 2: Information contained in a single peer-reviewed study
    - Level 3: Information from scholarly articles, pharmaceutical company articles, physician-reviewed articles, university hospital articles
    - Level 4: Information from clinic content marketing medical articles
    - Level 5: Other medical information

Solving Individual Challenges through Daily-life Driven Healthcare

Motivating through Visualization of Physical and Mental Health Information

Current Challenge

- **No symptoms, no action:** Prevention of lifestyle diseases is critical, but motivation is often low because symptoms are not immediately apparent, leading to a lack of preventative action.

How the Challenge is Addressed

- **Motivation through Visualization of Physical Information:** Within the framework of Anytime Anywhere Health Monitoring, even when symptoms are not consciously perceived, the system detects any abnormalities in physical and mental health and visually displays them to notify users clearly. This enables the AI to nudge users towards healthy behaviors before the onset of diseases.

Solving Individual Challenges through Daily-life Driven Healthcare

Motivating through Visualization of Physical and Mental Health Information

Image Description: The diagram shows a spectrum from potential health issues to optimal health, categorized as follows:

- ☐ **Dark Green Circle (Optimal Health):** Represents a state of complete health.

- ☐ **Light Green Circle (Moderate Health):** Indicates a reasonably good health condition, but noticeable health adjustments are needed.

- ☐ **Light Orange Circle (Pre-Symptomatic Condition):** Indicates a condition where no symptoms are present yet, but pathological measurements have been detected.

- ☐ **Dark Orange Circle (Mild Symptoms):** Represents a boundary state where mild symptoms are felt.

- ☐ **Red Circle (Critical Intervention):** Represents serious conditions where the disease has begun, requiring major health interventions.

- ☐ **Arrow labeled 'Nudging towards optimal health':** Indicates the progression from recognizing minor or potential issues to achieving and maintaining optimal health through regular monitoring and AI-driven nudges.

Perfect Health

Health

No Symptoms

Boundary of Onset

Disease Onset

Towards Health

Towards Disease Onset

Nudging through monitoring

Prescription for Realizing Daily-life Driven Healthcare via Monitoring and Nudging

Prescription for Realization

The Healthcare Revolution Led by All Companies Supporting People's Life

- **Importance of Corporate Partnerships:**
  - To realize Anytime Anywhere Health Monitoring, it is essential for companies from a wide range of industries, including those traditionally not involved in healthcare, to participate.
  - Each company must assess its potential in the future of healthcare and define its role in carrying out this vision.

- **Enhancing Corporate Value and Social Responsibility:**
  - Contributing to healthcare is a critical social issue, on par with achieving carbon neutrality. By engaging in this field, companies can enhance both their societal and economic value.

- **Data Integration and Community Formation:**
  - Using Mother AI, integrate data from participating companies to optimize overall health information.
  - Create new health communities and build cooperative frameworks with local communities and municipalities to promote implementation.

Prescription for Realization

The Leading Role of Companies and Their Economic Benefits

- **The Necessity of Investment and Its Effects:** The development of Anytime Anywhere Health Monitoring technology requires significant initial investment, but this cost is primarily borne by the participating companies, keeping the overall societal costs relatively low.

- **Brand Power and Return on Investment:** Companies enhance their brand strength and competitive position in the market through investments in this technology. A brand image focused on health management increases consumer trust and boosts corporate ratings.

- **Long-term Economic Benefits:** After implementation, this technology promotes the prevention and self-management of lifestyle diseases, significantly contributing to the reduction of medical and caregiving costs. As a result, not only do companies benefit, but the overall health costs for society are reduced, alleviating economic burdens.

Prescription for Realization

The Importance of Forming Health Communities

- **Individual Health Nudges Are Not Enough:** While it is crucial to monitor and nudge individual health statuses through Mother AI, this alone does not ensure that all individuals will take health actions.

- **Support from Health Communities Is Essential:** Health communities play a vital role in encouraging and sustaining health behaviors nudged by AI. This is particularly crucial for the elderly, who often require additional support and interaction within their communities to maintain their well-being.

- **Enhanced Response to Emergencies:** Technology alone cannot adequately respond to emergencies at home, such as cardiac arrest. Establishing community-based health support systems that can respond within five minutes of a cardiac arrest is key to saving lives.

Prescription for Realization

Collaboration with Municipalities and Public Bodies: Key to Success

<Essential Collaboration for Implementing Healthcare Innovations in Society>

Legal and Regulatory Compliance: New healthcare technologies must meet the regulatory standards set by local governments and national authorities. Close cooperation with municipalities is necessary to understand and adhere to these regulations.

Alignment with Public Health Goals: Public bodies aim to improve public health. Collaborating with municipalities facilitates integration with local health programs, making it easier to receive policy support and funding.

Promoting Sustainable Development: Introducing healthcare technology into local communities contributes not only to health but also to economic sustainability. Collaboration with municipalities enables contributions to sustainable development goals.

Expansion of Access and Diffusion: Partnerships with public bodies make it easier to spread new healthcare solutions throughout communities, thereby increasing their impact and acceptance.

Gaining Public Trust: Collaboration with public bodies enhances trust and public endorsement from citizens. This trust fosters acceptance of projects and products.

Prescription for Realization

Synchronizing Regulations: Accelerating Healthcare Innovation

〈**Rational regulations are necessary for businesses related to human health and safety, yet regulatory frameworks are often not sufficiently established in technological innovation**〉

- **Synchronization of Regulation and Innovation:** It is essential for legal regulations to evolve in support of technological innovation. Early dialogue with authorities is key to ensure that innovative healthcare solutions function effectively under a rational regulatory framework.

- **Joint Development of Regulatory Frameworks:** When new regulations are needed, collaborate with regulatory authorities to design regulations suitable for market introduction. This ensures that products are delivered to consumers safely and effectively.

- **Ensuring Transparency and Building Trust:** Regulatory compliance and transparent communication are critical to gaining market trust and promoting product acceptance.

- **Pilot Projects and Case Studies:** Data and feedback obtained through early pilot projects serve as a foundation for regulatory improvement and the design of new regulations.

- **Continuous Policy Advocacy and Lobbying:** Working with industry associations to advocate for innovation through policy suggestions and lobbying efforts helps promote the creation of a more flexible and modern regulatory environment.

Prescription for Realization

Incentive-Driven Adoption

- **Financial Incentives:**

    - **Tax Incentives:** Tax deductions and preferential tax rates for companies investing in digital healthcare technologies.

    - **Grants and Subsidies:** Support for mitigating initial risks and promoting research and development.

    - **Insurance Premium Adjustments:** Discounts on insurance premiums for individuals and companies using innovative healthcare solutions.

- **Regulatory Incentives:**

    - **Regulatory Relaxation:** Reducing market entry barriers.

    - **Fast-track Approval Processes:** Accelerating market introduction.

- **Market Access Incentives:**

    - **Opportunities to Participate in Public Projects:** Prioritizing the participation of innovative healthcare companies.

    - **Procurement Policy Revision:** Priority purchasing of innovative products by public agencies.

- **Education and Awareness Incentives:**

    - **Educational Programs:** Educating healthcare professionals and the public about new technologies.

   - **Awareness Campaigns:** Promoting innovative healthcare through media and public campaigns.

Prescription for Realization

Strategies for Utilizing Diverse Funding Sources

- **Public-Private Funding Collaboration:** We advocate for joint funding initiatives between public entities and private sector companies as national projects to enhance global cooperation. Funding from companies that support daily life is a critical pillar, aiming for both social return and corporate value creation.

- **Government Grants:** Proactively use grants and subsidies from national and local governments. These funds are typically provided non-repayable for projects aimed at public health improvement and technological innovation.

- **Leveraging Private Investments:** Accelerate the market introduction of new healthcare technologies and services through investments from venture capitals, angel investors, and major industry players.

- **Public-Private Partnerships (PPP):** By spreading risks and costs, PPPs aim to increase the success rates of projects and achieve more efficient financing.

- **International Cooperation:** Utilize global funding sources, including financial aid from international organizations and foreign governments, especially to support projects in developing countries.

- **Research Grants:** Collaborate with universities and research institutions to secure grants needed for scientific research and technology development. This strengthens the foundation for innovation and promotes the development of new technologies.

実現への処方箋

Strengthening Integration with Transformed Medical Care
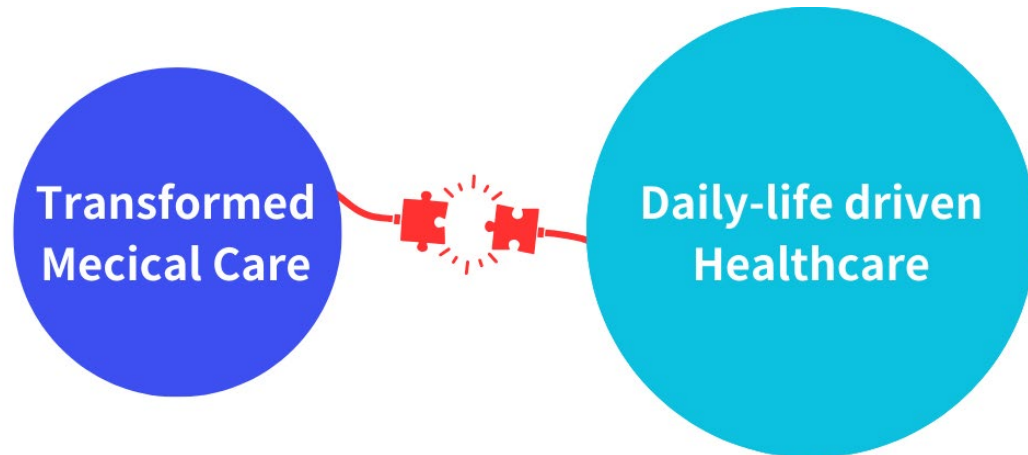
- It is anticipated that there will be a significant transformation in the medical sector globally, centered around digital healthcare and AI technologies.

- Our proposed daily-life driven healthcare aims to effectively integrate with this transformed medical care, striving for a comprehensive realization of digital healthcare.

- This integration will facilitate more holistic and continuous health management, improving the Quality of Life (QoL) for patients."

Transformed Mecical Care

Daily-life driven Healthcare

Monitoring and Nudge Society's Infrastructure

## *Data Integration, Data Interoperability*
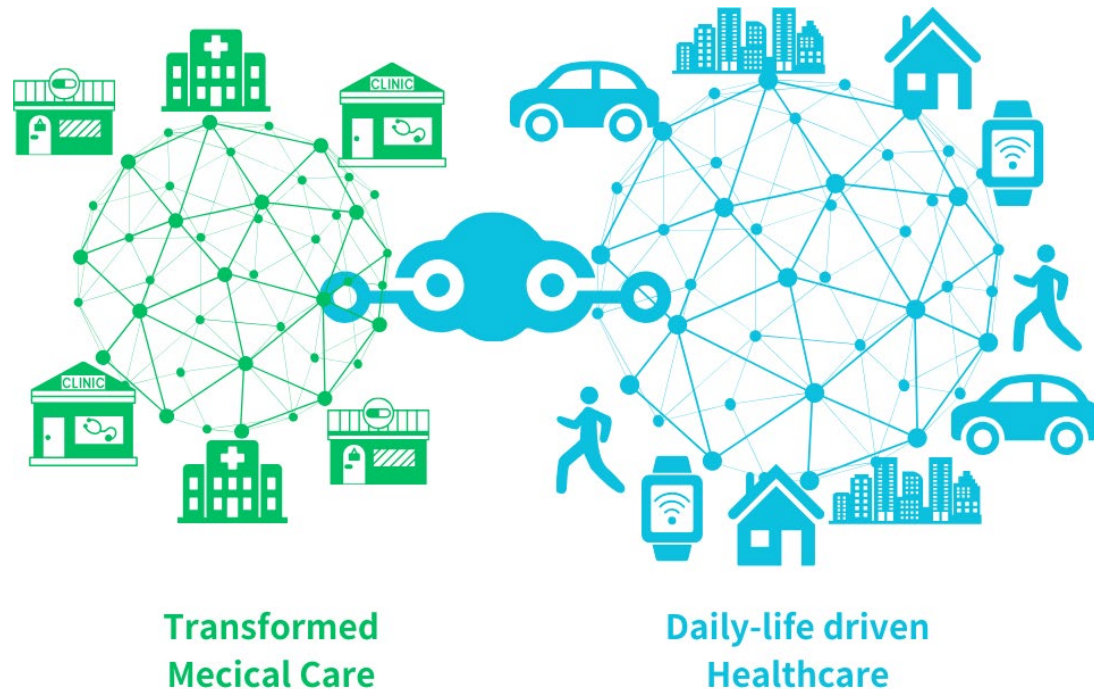
This diagram visually represents the integration of Transformed Medical Care and Daily-life Driven Healthcare through a connected network. The left sphere, labeled "Transformed Medical Care," features icons representing hospitals and clinics, connected by a network that symbolizes the interlinked nature of modern medical facilities and practices. The right sphere, labeled "Daily-life Driven Healthcare," illustrates elements of everyday life such as homes, cars, and personal devices, emphasizing how daily activities are integral to health management. The central linking gears between the two spheres symbolize the critical role of data integration and interoperability in enabling seamless healthcare across clinical and daily-life settings. This visual metaphor represents how the robust connectivity between advanced medical data and daily health data enables the realization of ideal and comprehensive health management.

Transformed Mecical Care

Daily-life driven Healthcare

Daily-life Driven Healthcare via monitoring and nudge
PGP's Role

PGP's Role in Implementing Daily-life Driven Healthcare

Role as an Integrator

To align and unite all stakeholders in realizing a Daily-life Driven Healthcare society, PGP will act as an integrator.
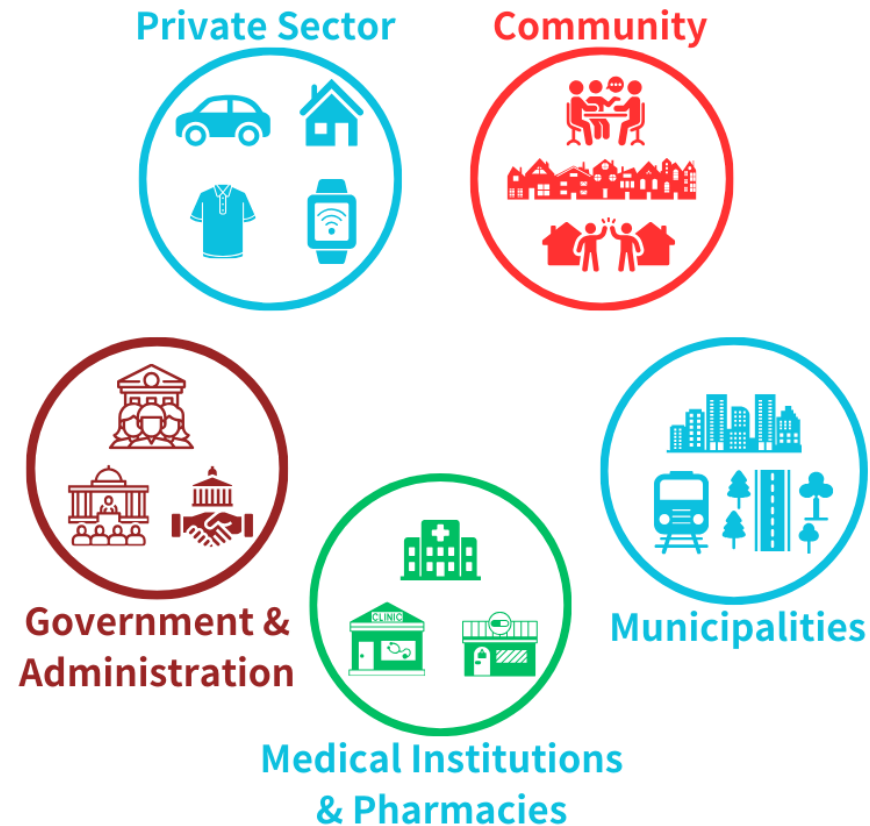
Using the backcasting method, PGP will determine projects and tasks for the next five years for each stakeholder, promoting collaboration to advance Daily-life Driven Healthcare

PGP's Aspiration

Creating a Personal General Practitioner for Everyone

Personal

General Practitioner

Anytime Anywhere Health Monitoring

Integration, Analysis, and Nudge by Mother AI