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The 447th International Symposium on Therapy

The 447th International Symposium on Therapy was held by the Zoom Webinar on January 28, 2021. Dr. Tsutomu Yamazaki, Director of the International Medical Society of Japan (IMSJ), presided over the meeting.

The past history and the future prediction of General Medicine in Japan

Introductory Message from the Chair

Tsutomu Yamazaki, MD, PhD
Director, IMSJ

The program was structured with the following theme: The past history and the future prediction of General Medicine in Japan.

Lectures were given by the following professors on the following topics: Yoshiyuki Ohira, MD, PhD, Chief and Professor, Department of General Medicine, International University of Health and Welfare School of Medicine, on Current status and future prediction of General Medicine in Japan and Mitsuyasu Ohta, MD, PhD, Professor, Department of Medical Education, General Medicine, Yokohama City University School of Medicine, on How can we reduce misdiagnosis in primary care settings?: Abductive inference models of diagnostic problem-solving. Both professors are young leaders of General Medicine, which must be developed significantly as the 19th fundamental field of Japan's Medical Specialists System. Prof. Ohira mainly spoke on the overall picture and future prospects of General Medicine while Prof. Ohta mainly spoke on clinical approaches that are actually being taken by general medicine physicians. As a result of these

lectures, I used to be under the impression that I had a general understanding of General Medicine but now I have an accurate and deep understanding of this field. I trust that progress will be made in establishing coexistence of General Medicine with AI and digital transformation.

Lecture I

Current status and future prediction of General Medicine in Japan

Yoshiyuki Ohira, M.D., Ph.D.
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Medicine

The Japanese have the longest life expectancy in the world, thanks to free access to medical treatment under universal health insurance coverage, which seems to be due to a variety of factors but is most likely the result of the availability of primary care physicians, primary care specialists and other healthcare professionals who are the backbone of community medicine. However, under the new medical specialty board system started in April 2018, there were only 184 clinical fellows in general practice in 2018 (2.2% of all clinical fellows in Japan), 180 in 2019 (2.1%) and 222 in 2020 (2.4%) in Japan. According to documents from the Ministry of Health, Labour and Welfare, there will be a need for around 100,000 primary care physicians by 2025, when the baby boomer generation will be over 75 years old. However, it will be impossible to achieve this capacity, even if general practitioners are

trained at 10 times the current rate. Thus, it is clear that this role cannot be fulfilled without the collaboration of primary care physicians, primary care specialists and other healthcare professionals. Therefore, a select number of general practitioners must not only develop community medicine themselves, but also focus on continuing medical education for primary care physicians and other healthcare professionals. General practitioners trained by collaboration of various healthcare professionals, such as those at local clinics, hospitals, pharmacies and in district nursing, contribute to the community as the mainstay of continuing medical education, which is expected to improve the quality of primary care in Japan.

When I became a doctor in 2000, specialising in general practice meant dealing with common diseases in all areas, including psychosocial disorders. However, as technology has advanced, you can now enter appropriate keywords in internet search sites, after which relevant differential diagnoses are displayed in the search results. In future, if artificial intelligence (AI) evolves and achieves singularity, it is very likely that the diagnosis and treatment of simple common diseases will be replaced by AI. The skills required of general practitioners in such an era will relate to providing medical care, education, and research that is centred on clinical interventions for patients with complex pathologies, such as patients with multiple diseases or patients who require multidisciplinary care.

Lecture II

How can we reduce misdiagnosis in primary care settings? : Abductive inference models of diagnostic problem-solving

Mitsuyasu Ohta, MD, PhD,
Professor
Department of Medical Education, General Medicine,
School of Medicine
Yokohama City University

Diagnostic reasoning has evolved from the application of cognitive psychology, especially the dual-process theory. The dual-process theory defines the existence of two processes, namely fast thinking and slow thinking. Fast thinking is non-analytical reasoning, called System 1, that takes place subconsciously and without effort. In contrast, slow thinking is

analytical thinking, called System 2, which is considered labor-intensive and conscious thinking. Both System 1 and System 2 are activated in various proportions in the dual-process theory, depending on the task's nature. Expertise in diagnosis depends on the transition from slow thinking to fast thinking. However, in difficult-to-diagnose cases, we cannot use pattern recognition, so efficient analytical thinking leads to correct diagnosis.

Diagnostic reasoning can be divided into two processes: disease hypothesis formation and hypothesis validation. Compared with the latter, based on Bayes' rule, the former has difficulty in strategies and coaching. Expert clinicians in diagnostic reasoning are known to recall disease hypotheses rapidly. Thus we have proposed a level-by-level approach by dividing the disease recall level into three levels; 1) easy, 2) unsure, and 3) unable to recall. When the recall is easy, use pattern recognition and pay attention to heuristic bias. If the recall is unreliable, use the compaction and adjustment heuristics to refine the disease hypothesis. If not recalled, select two or three keywords with high specificities. We should choose words from the medical history that indicate the onset (e.g. abrupt or gradually), time course (e.g., acute, subacute, or chronic), location, distribution (e.g., generalized or localized), laterality (e.g., unilateral or bilateral), and number (e.g., mono, oligo, multi, or poly). These words are often hidden in the medical history that the patient gives. And then, create a semantic qualifier (SQ) by using them and consider the conditions that match this. Learning about specific diseases is recommended to form an illness script that is an abstract shape on the disease. It is essential to add epidemiological information such as age and sex to SQ, keep a sentence with sensitive details that can differentiate the condition from similar diseases, and memorize them in one sentence. Illness scripts are dynamic and continuously going to be shaped by clinical experience. By comparing and contrasting it with a real patient, the most likely diagnosis can be established.

Discourse

Introduction of the speaker of discourse

Tsutomu Yamazaki, MD, PhD
Director, IMSJ

We invited Tetsuya Uekusa, Managing Director & Senior Partner of Boston Consulting Group, to speak on Management Strategy in Post Covid-19. According to the speaker, in addition to the

COVID-19 pandemic, which has been getting the most attention recently, the world is currently dominated by the following irreversible changes: geopolitical risks, systemic financial crises, and climate change. Mr. Uekusa indicated that these changes have been caused by economic globalization and the loss of buffer functions due to digital technology advancements. He subsequently suggested addressing the following management challenges:

1. Shift from Corporate Social Responsibility (CSR) to Sustainable Management.
2. Build a resilient supply chain while thoroughly building transparency into it.
3. Provide value through an ecosystem that enables coexistence with other entities.
4. Accumulate organizational knowledge by learning from continuously addressing the above challenges.

We will look back on his lecture from time to time in our daily life and think deeply about his suggestions.

Management Strategy in Post Covid-19

Uekusa Tetsuya
Managing Director & Senior Partner
Boston Consulting Group

Going beyond the topic of medical institution management, today I'd like to discuss the impact of the COVID-19 pandemic on management once the pandemic is under control. Management in the post-COVID-19 future is generally being discussed from two perspectives which have been directly and significantly affected by the pandemic.

One of them is the nature of remote work and offices. Just last week, it was reported that the advertising agency Dentsu will sell its headquarters building. The other perspective is digital transformation. Including the fact that this conference is being held via Zoom, I don't think anybody could have foreseen the current situation a year ago.

While it is clear that these are the two significant effects of the COVID-19 pandemic, are we overlooking other effects? I read through various research reports in hopes of learning from the history of infectious diseases but demographic change was the only commonality they had. Therefore, I

came to the conclusion that it was necessary to examine the effects of the pandemic on management not in terms of its direct effects but by going back and looking at the root causes of the global spread of COVID-19. I reached this conclusion because I found it intriguing that changes which influenced human history have successively occurred just within the past 10 years.

Let us list the irreversible changes that have been taking place simultaneously and identify the commonalities. One of the changes is geopolitical risks. While the turmoil in Middle East may sound like something happening in faraway countries, it is a familiar issue in Europe. Refugees have poured into Europe from the power vacuum areas in Iraq and Syria; this refugee influx even triggered Brexit. The second irreversible change is systemic financial crises. Recent financial crises have spread widely in a short period due to the globalization of markets. The most recent example is the financial crisis of 2007-08. As for current concerns, stock prices and cryptocurrencies have been experiencing an abnormal rise. The third one is climate change. While the record-breaking snowfall in various regions is a much-talked-about topic right now, it was only last summer that Kumamoto was hit by record-breaking rainfall and heavy floods. Record-breaking extreme weather events have become annual events. Finally, the fourth change is the pandemic.

The commonality of these four structural changes is that they all had precursors. Geopolitical risks began to increase since the September 11 attacks of 2001. However, only few people remember that the same building, the World Trade Center, was bombed in 1993 as well. The financial crisis of 2007-08 also had a precursor. Ten years prior to this crisis which was caused by defaulted subprime mortgages, the Long-Term Capital Management practically collapsed due to the effects of the Asian financial crisis. The precursor of COVID-19 is the 2002 SARS outbreak which was caused by the SARS-associated coronavirus; the current pandemic has been caused by a novel coronavirus. Climate change is a global issue caused by global warming.

It can be assumed that the loss of a buffer triggered a process in which each change developed from a precursor into an explosive change.

As for geopolitical risks, the U.S. had been functioning as a buffer by filling military vacuum areas as a superpower that polices the world. However, the U.S. abandoned many of those vacuum areas due

to the country's policy changes and declining economic/military power. Those areas have been left alone as a vacuum, causing the rise of geopolitical risks. Financial crises had been prevented by market transparency which served as a buffer. However, financial products that dispersed risks in a complicated manner began to be mass-marketed due to advanced financial technologies. Under such circumstances, not even the market players were aware of who was exposed to risks or the level of exposure; this triggered the recent financial crises. The pandemic had two triggers. One of them is the decrease of forest areas as forest land had been separating humans and animals, the host of the novel coronavirus. The second trigger is the explosive increase in the number of international travelers. For example, the number of Chinese outbound travelers increased more than 10 times compared to that at the time of the SARS outbreak. Climate change has been caused by the decrease in the total area of tropical rainforests, which absorb greenhouse gases.

Two common principles are involved in the loss of buffers. The first one is economic globalization. Incorporated into global supply chains, countries around the world have begun to participate in the global economy. Conversely, the number of primary sector workers in the world has fallen by 5 points, or 103.3 million workers, in the past ten years. Structural changes in industries have caused urbanization and the decrease of forest areas.

The second principle is digital technology advancements. A smartphone today has the same capability as that of an old supercomputer. Social media played a significant role in the rise of the Islamic State while computer capabilities and advanced communication technologies make it possible to build global supply chains and capital markets.

Based on what I have described so far, I believe there are four main key management challenges that must be addressed.

The first challenge is to shift to sustainable management. Corporate activities have a big impact on global environmental changes. While conventional CSR activities have been regarded as philanthropic activities that are not directly related to business, corporate bodies are now expected to revise their activities by incorporating the environmental and social impact of their main businesses into their strategies in order to minimize the negative effects and produce positive effects.

The second challenge is to build a resilient supply chain. On the premise that supply chains spread across the world may be disrupted by natural disasters or geopolitical risks, we must create supply chains with redundancies built into them.

The third challenge is to provide value through an ecosystem. From the perspective of using global resources effectively, as information sharing by digital technologies has become easier, it is now possible to provide value to clients through collaboration with other entities as opposed to possessing all management resources within the organization.

The fourth challenge is to build a learning organization. No one knows the right answer in times of change. Accordingly, an organization can develop sources of competitive advantage by reducing the cost of failure and accumulating organizational knowledge through continuous experimentation.