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Professor Dae Ho Lee has been researching and treating Korean cancer patients for more than 20 years and advises the current government on healthcare policy. He breaks down the benefits of MoonCare to cancer patients, the challenges facing the healthcare system, and offers some potential solutions that could be adopted in the future.

Why have you decided to dedicate your life to the fight against cancer?

I began my career as a medical oncologist 20 years ago. The reason I chose medical oncology was that my father passed away due to cancer when I was only 15 years old. Sometimes my fellows ask me why I chose lung cancer in particular. When I first started, many research papers in oncology were being published and new treatment options were being developed. However, there were still few treatments apart from chemotherapy for lung cancer. Moreover, at that time, chemotherapy did not lead to better survival outcomes or a better quality of life for patients suffering from the condition. Consequently, I decided to focus on this area.

After selecting lung cancer as my main focus, I was fortunate that interesting drugs for the treatment of lung cancer began to appear, which lead to a rapid improvement in patient outcomes.

Most of these therapies were targeting agents. I strongly believed these agents may represent a game changer for lung-cancer and decided to dedicate my career to the development of these targeted therapies. However, by 2010, the conclusion was reached that molecular-based targeting agents have limitations in treating cancer, especially lung cancer. Since then, immunotherapy and precision medicine have emerged as much more promising treatment approaches. There are now many ongoing clinical trials in this field that show improved efficacy and safety in the treatment of different types of cancer, including lung cancer. The main issue with these kinds of therapies is their prohibitive price tag. To illustrate my point with an example, CAR-T treatments cost over USD 400,000.

How can the public health care system provide these breakthrough treatments to patients who need them the most?

The current Korean health care system simply cannot afford to pay for these kinds of treatments. However, the Korean government is developing action plans. For these plans to come to fruition, two key stakeholders need to be involved: pharmaceutical companies and patient focus groups. Both seek to reap the rewards of these drugs, but obviously, have conflicting interests. At the moment, Korea has a universal healthcare system with only one reimbursement system. All Koreans and foreign residents in Korea must pay a premium to support this system. Consequently, the budget is limited and must be used effectively.

Regrettably, there is a limitation to the kinds of treatments that can be funded for cancer patients. That being said, as the cost of some innovative treatments falls over time, they may begin to be covered by the state. Nevertheless, today’s cancer patients cannot wait for that to happen. There is thus a conflict between the healthy who must pay for the system, and the sick in dire need of innovative, but expensive treatments. The majority of Koreans already tend to resist any rise in healthcare premiums. This year it was increased by 3.5 percent to adjust for the lack of change over the last 20 years. To puts things into perspective, this corresponds, on average, to only USD 3 per month, less than the price of a cup of coffee. However, Koreans disapprove of such as small change. On the other hand, patients and their families have a different perspective and think the government should provide cancer care regardless of the cost.

What is your opinion on the effectiveness of the Korean cancer plan?

Recently the Korean government initiated its MoonCare policy. The aim of MoonCare is for the healthcare system to support the treatment of all kinds of diseases. In Korea, reimbursement happens in two steps. The first is drug approval. Off label use of drugs is not completely illegal but discouraged through the pricing system designed to disincentivize their use because hospitals may lose large sums of money when physicians prescribe them. Patients pay 100 percent of the price for off-label drugs. However, if patients claim this back using our health insurance, they will be reimbursed, and the same value will be taken away from the amount given to the hospital for the use of an approved drug. Therefore, the hospital loses 100 percent of the money for off-label drugs. If the hospital abides by the government's rule, it will earn 5 percent of its revenue from the patient and the government will constitute the remaining 95 percent. This consequentially exerts financial pressure on the clinical decisions of physicians.

MoonCare is designed to fix this issue by decreasing the number of non-reimbursable drugs. When deciding whether a drug should be reimbursed, the government considers many factors, for example clinical effectiveness, cost-effectiveness, and social benefit. Prior to MoonCare, if the clinical effectiveness of a drug was proven but not its cost-effectiveness, the drug was not reimbursed. MoonCare changes this situation by allowing drugs to be approved only on the basis of clinical effectiveness. This is a welcome development that will increase patients' access to effective innovative therapies. However, the plan only considers drugs already approved and available on the market but not yet covered by the National Health Insurance, thus excluding newly approved drugs. Currently, there is no plan to expand coverage to newly approved drugs. I think this is reasonable as the government simply cannot afford to pay for all new drugs.

Do you think this system is sustainable in the long term?

In Korea, life expectancy has increased rapidly over the last few decades. The proportion of people over 60 is now among the highest in the developed world: life expectancy for women is now approaching 90. At the same time, the Korean birth rate is very low, less than 1.0 per 1000 of the population, falling below the replacement rate of 1.2. As a result, the proportion of young people is decreasing. This creates a huge burden on the state which must provide pensions and healthcare to an increasing number of elderly people through the taxation of a shrinking working population. Moreover, this situation has the capacity to create inter-generational tensions within society.

Doctors are also concerned about this situation. One potential solution is to limit public financing for treatments of chronic illnesses. Without introducing such a measure, it has been forecast that

the system could implode by 2060. Thus, there must be a thorough rethink of the system and subsequent reforms to ensure it runs more efficiently. Notwithstanding that, I believe it is still one of the best systems in the world.

To ensure sustainability, we need to adopt several strategies. One is the limitation of reimbursement to some diseases. Another is the allocation of healthcare deposits to specific treatment areas while simultaneously increasing the impact. The cost-effectiveness for each treatment area, drug, or treatment modality must also be evaluated. Government officials have started reflecting on these issues, but this is not yet supported by society. In my opinion, most Koreans fail to recognize the dire situation of the healthcare system.

As researchers, we can help design a more cost-efficient system by developing technologies such as next-generation sequencing, biomarker testing and AI. This new technology can help identify the groups of people who will most benefit from a specific treatment. Korea is very advanced in these fields, which makes progress very promising.

What would you like your legacy to be in the fight against cancer?

When I was a young researcher, my dream was to develop a magical drug that could cure cancer. Throughout the years, I realized that dream is impossible. My current concern is about treating patients to the best of my abilities so they can live longer and more fulfilling lives. During the last decade, I also realized that preserving societal infrastructure is an important aspect to consider. The system cannot survive by prolonging the survival of patients at any cost.

One way I would like to leave a mark is by increasing access to high-quality cancer treatments by influencing government policies. A big issue in Korea is that patients usually travel to the capital to receive high-quality treatment. Since Korea is a small country, people in provincial areas can travel to Seoul in 3 hours or less. However, I am not convinced that treating patients in large, high-volume hospitals translates to high-quality care. For example, in my practice, I can sometimes see 60 patients within three hours, which is an insufficient amount of time to provide personalized care. We must renovate the hospital system by reallocating hospital resources so that provincial hospitals deliver standard care, while top-tier hospitals in Seoul are focused on developing and delivering new drugs, devices and treatments standards in order to improve the efficacy and cost-effectiveness of cancer treatments. At the moment, they are more focused on their bottom line rather than social responsibility.

In order to overhaul the hospital system, I am participating in a committee to advise the government. In my opinion, the government should adopt incremental regulations to incentivize hospitals in this direction.

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