

Peer Review File

Article information: <https://dx.doi.org/10.21037/pcm-21-26>

Review Comments

Comment 1: The English language of the paper needs extensive editing after revisions of the paper. In the title, the full name of FUSCC should be provided. I suggest the authors to reconsider this title, for example, experiences from FUSCC.

Reply 1: The English language has been carefully revised by language experts. And we feel sorry that these modifications are so widespread that it is unable to enumerate all of them here or mark them in the manuscript. The title of the manuscript was changed into “Precision Cancer Medicine in China: The Fudan University Shanghai Cancer Center (FUSCC) Experience (Page 1, line 1-2).

Changes in the text: (Page 1, line 1-2) The revised title “Precision Cancer Medicine in China: The Fudan University Shanghai Cancer Center (FUSCC) Experience”.

Comment 2: The abstract part is not informative. Please consider to briefly explain why FUSCC experiences deserve to be shared, the unique clinical and research experiences and unique contributions from FUSCC, and lessons from FUSCC, and in the final sentence, please have some insights on China’s Precision Cancer Medicine, i.e., unaddressed issues and possible strategies.

Reply 2: The abstract has been expanded to be more informative. In the new abstract, we briefly concluded the pioneering position of FUSCC in the oncology research in China. At the end, we added some comments on the current development of precision cancer medicine in China and proposed corresponding strategies (Page 1, line 2-22).

Changes in the text:

(Page 1, line 2-22) Cancer has been a major cause of death in China. Among oncologists, the concept of precision cancer medicine has been universally acknowledged. Precision cancer medicine aims to match patients to their optimum therapies. As one of the pioneers in the practice of precision cancer medicine in China, Fudan University Shanghai Cancer Center (FUSCC) has accumulated abundant practical experience that might benefit our peers and patients. Additionally, as the leading cancer center in eastern China and one of the top health providers for cancer patients across the whole country, FUSCC has been trying to generalize precision cancer medicine, continuing its mission to elevate the overall level of cancer treatment in China. Considering the discrepancy between the Chinese population and others, research on precision cancer medicine must focus on our compatriots. The closed-loop system of precision cancer medicine requires inclusive and timely translation of scientific discoveries into clinical applications. Precision cancer medicine is not merely limited to genomics but can include comprehensive management of cancer patients from all aspects. Finally, some perspectives on the future development of precision cancer medicine in FUSCC are proposed. The system of precision cancer medicine in China has not been fully established. The prognoses of Chinese patients are not satisfactory compared with those in developed countries. We hope that our efforts in constructing communication platforms, providing precision cancer medicine tools and launching large-scale clinical trials can promote the development of precision cancer medicine in China and benefit more patients.

Comment 3: In the part of introduction, the authors may consider to have some criticisms on the current status of cancer management practice, which would make the current topic necessary. A brief review on the strengths of Precision Cancer Medicine is also needed.

Reply 3: Criticisms on the less-precise practices (represented by

chemotherapy) in current management of cancer patients are proposed (Page 3, line 9-17). As for the brief review on strengths of precision cancer medicine, we take the development of ERBB2-targeting therapies in breast cancer as an example (Page 4, line 2-14).

Changes in the text:

(Page 3, line 9-17) Clinicians have been seeking treatments to cure cancer for centuries. However, therapies for cancer may not only benefit patients but also result in concerning side effects. Chemotherapy, which still outperforms all other systematic medications in the management of cancer, is a representative treatment. As a less precise therapy, chemotherapy has demonstrated its efficacy but also produces unfavorable toxicity. Currently, clinicians are pursuing chemotherapy-free management for cancer patients to improve the therapeutic effect while reducing adverse events. Nevertheless, the lack of a thorough understanding of cancer and disjointedness between research and industry are still restricting this aspiration.

(Page 4, line 2-14) Broad application of precision cancer medicine has demonstrated its clinical value in improving survival and reducing untoward effects. Taking breast cancer as an example, ERBB2 (erb-b2 receptor tyrosine kinase 2) is one of the major genes amplified in breast cancer, which indicates an unfavored prognosis (9, 10). Before the development of monoclonal antibodies, patients with ERBB2 amplifications could only receive chemotherapy for systemic treatment, and the outcome was rather poor. Currently, with the establishment of a diagnostic system combining immunohistochemistry (IHC) and fluorescence in situ hybridization (FISH), these patients can be identified and benefit from targeted therapy such as Herceptin (11, 12). With further research, more treatments targeting ERBB2, such as tyrosine kinase inhibitors (TKIs) and antibody-drug conjugates (ADCs), have been developed (13), which can further improve the prognosis of patients. Similar findings have also been reported in other malignancies, thus benefiting more patients (14-16).

Comment 4: In the main text, in addition to the creative work by the FUSCC, the authors may consider to discuss the challenges in practicing Precision Cancer Medicine in China and suggest possible strategies to solve these issues. These comments could deepen the importance of research work done by the FUSCC.

Reply 4: Challenges encountered by the practice of precision cancer medicine in China is added (Page 10, line 19 - Page 11, line 1). And corresponding plans to help our Chinese peers and to boost precision cancer medicine in China are also proposed (Page 11, line 3-10).

Changes in the text:

(Page 10, line 19 - Page 11, line 1) In China, the practice of precision cancer medicine still faces some setbacks. Although precision cancer medicine is a future trend, not all clinicians have realized the tremendous hit that it will cause to the current management system. Meanwhile, with no systemic theories for reference, some entities diverged in the research and application of precision cancer medicine, causing colossal waste. Additionally, the disparity in health care levels among different regions and institutions is another major predicament. In top cancer centers such as FUSCC, where precision cancer medicine resources are more abundant, the prognoses of patients have approximately equaled international advanced standards. However, in some districts or regional hospitals, precision care is less accessible due to restrictions in testing equipment, and sometimes, even standard treatment guidelines are not sufficiently followed.

(Page 11, line 3-10) Collective efforts must be made to advance precision cancer medicine across the country. We will create platforms on which clinicians can communicate their practices and experiences, such as promoting the operation of the journal Precision Cancer Medicine, holding symposiums, and organizing visiting programs. In addition, we aim to provide public gene diagnostic tools and evidence-based guidelines to standardize the

practice of precision cancer medicine. Finally, we hope to launch more large-scale multicenter studies to put precision cancer medicine into practice and cure more cancer patients.