

To: Assignment Editors, Managing Editors and Reporters  
(For Immediate Release)

## **Is Chemotherapy necessary for all breast cancer patients?**

### **The ‘Breast Cancer Gene Test Financial Assistance Programme’ launched by HKBCF helps those women who are in need**

(Hong Kong, 19 August, 2022) Breast cancer is the most common cancer among women in Hong Kong. The number of new breast cancer cases continues to rise annually<sup>1</sup>. According to statistics, the median age of breast cancer patients is 58<sup>2</sup>, meaning that many patients are diagnosed with breast cancer when they are still in employment. Breast cancer patients not only have to experience the side effects resulting from their cancer treatment, but may also suffer from the emotional distress caused by treatment failure. Most of the cancer patients are worried about chemotherapy, which might cause side effects and discomfort. Also, they may have doubts about the efficacy of chemotherapy.

Recently, a biomarker has been discovered to assess patients’ risk of breast cancer recurrence and predict the effect of chemotherapy on a disease outcome.<sup>3</sup>

‘Many cancer patients would think of ‘chemotherapy’ when they were first diagnosed with breast cancer. In fact, chemotherapy is only one of the treatment options for breast cancer and it is not necessary for all breast cancer patients. The Breast Cancer Gene Test allows physicians to tailor the most appropriate treatment plan to patients effectively after surgery.’ said **Dr. Wai-Ka HUNG, Chairman of the Breast Health Centre Advisory Committee and Specialist in General Surgery.**

The test could help identify patients who are likely to benefit from chemotherapy<sup>4</sup> by analysing the expression of a panel of 21 genes from the breast tumour specimen using

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<sup>1</sup> Leading Cancer Sites in Hong Kong in 2019. Hong Kong Cancer Registry, Hospital Authority, from <https://www3.ha.org.hk/cancereg/>

<sup>2</sup> Female Breast Cancer in 2019. Hong Kong Cancer Registry, Hospital Authority. (n.d.), from [https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast\\_2019.pdf](https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast_2019.pdf)

<sup>3</sup> Geyer et al. npj Breast Cancer 2018.

<sup>4</sup> Sparano et al. N Engl J Med. 2018.

a technique called RT-PCR<sup>5</sup>. Recently, the Hong Kong Breast Cancer Foundation has launched the 'Breast Cancer Gene Test Financial Assistance Programme' to provide financial assistance to eligible patients to do the test.

### **Downward trend in the age profiles of breast cancer patients**

According to the Hong Kong Cancer Registry, there were 4,761 women newly diagnosed with breast cancer in 2019 (an increase of three times compared to 1993, with 1152 cases)<sup>6</sup>. Of which, about 70% of the cases were stage I and stage II<sup>7</sup>, HR+ breast cancer<sup>8</sup>. 'In general, hormone receptors could be classified as estrogen receptor (ER) and progesterone receptor (PR). These receptors could pick up signals from estrogen and progesterone telling the cells to divide and grow.'<sup>9</sup> said Dr. Hung.

Of note, there is a downward trend in the age profiles of breast cancer patients. According to the statistics collected by Hospital Authority, in Hong Kong, the median age of female breast cancer patients is 58, and the breast cancer risk for females is 1 in 14<sup>10</sup>.

'In the past, the public perception of breast cancer was "the elder the person is, the higher the risk she has for breast cancer". Young patients hence may not be aware of the symptoms of breast cancer as they are too busy at work.' said Dr. HUNG.

The first step in treatment planning is to determine the stage of the cancer. According to Dr. HUNG, in the past, the stage of the cancer and patient's prognosis were determined by the size of the tumour, the number of lymph nodes involved and the degree of metastatic involvement. As the scientists know more and more about the biological characteristics of breast cancer, there is a breakthrough in cancer staging<sup>11</sup>.

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<sup>5</sup> Paik et al. *N Engl J Med*. 2004

<sup>6</sup> Leading Cancer Sites in Hong Kong in 2019. Hong Kong Cancer Registry, Hospital Authority, from [https://www3.ha.org.hk/cancereg/pdf/top10/rank\\_2019.pdf](https://www3.ha.org.hk/cancereg/pdf/top10/rank_2019.pdf)

<sup>7</sup> Female Breast Cancer in 2019. Hong Kong Cancer Registry, Hospital Authority. (n.d.), from [https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast\\_2019.pdf/](https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast_2019.pdf/)

<sup>8</sup> Hong Kong Breast Cancer Foundation, from <https://www.hkbcf.org/upload/category/653/self/6149354d5120a.pdf>

<sup>9</sup> Hormonal therapy. Breast Cancer | Hong Kong Breast Cancer Foundation, from [https://www.hkbcf.org/en/breast\\_cancer/main/89](https://www.hkbcf.org/en/breast_cancer/main/89)

<sup>10</sup> Female Breast Cancer in 2019. Hong Kong Cancer Registry, Hospital Authority. (n.d.), from [https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast\\_2019.pdf](https://www3.ha.org.hk/cancereg/pdf/factsheet/2019/breast_2019.pdf)

<sup>11</sup> Hortobagyi et al. *AJCC Cancer Staging Manual*. 8<sup>th</sup> ed. <https://cancerstaging.org/references-tools/deskreferences/Pages/Breast-Cancer-Staging.aspx>

‘Apart from the three parameters mentioned above, doctors would now also take into consideration of tumour type i.e. hormone-positive (HR+), human epidermal growth factor receptor 2 –positive (HER2+) or triple negative (TN) when determining the stage of breast cancer.’ said Dr. HUNG.

Surgery plays an important role in breast cancer treatment, especially for early-stage breast cancer patients. According to Dr. HUNG, if there is no sign of metastasis, doctors would determine whether neoadjuvant therapy is needed before total mastectomy or breast-conserving surgery<sup>12</sup>, depending on the tumour size. However, adjuvant therapy e.g. chemotherapy is still required after surgery. It has been clinically observed that HER2+ and TN breast cancers have a very fast growth rate and recurrent rate, therefore, patients with HER2+ and TN breast cancer would need to be put on chemotherapy to minimise the chance of cancer recurrence.

### **Many patients with HR+ breast cancer does not benefit from chemotherapy**

Is it necessary to put patients with HR+ breast cancer on chemotherapy after surgery? According to Dr. HUNG, chemotherapy kills or inhibits the growth of cancer cells in the body. It reduces the chance of cancer recurrence and the risk of metastasis<sup>13</sup>.

‘Since there may still be some residual cancer cells left in patient’s body after surgery, chemotherapy could kill those residual cancer cells that could not be eliminated by surgery.’ Said Dr. HUNG.

However, according to a recent research, most of the patients with HR+ breast cancer could not gain extra benefit from chemotherapy. On average, there are less than two breast cancer patients could benefit from chemotherapy in every 10 patients<sup>14</sup>. Most patients are worried that the long-term and short-term side effects caused by chemotherapy would affect their quality of life<sup>15,16,17</sup>.

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<sup>12</sup> HK Breast Cancer Foundation. Surgical Treatment. Available at: [https://www.hkbcf.org/en/breast\\_cancer/main/93/](https://www.hkbcf.org/en/breast_cancer/main/93/)

<sup>13</sup> HK Breast Cancer Foundation. Chemotherapy Treatment. Available at: [https://www.hkbcf.org/zh/breast\\_cancer/main/92/](https://www.hkbcf.org/zh/breast_cancer/main/92/)

<sup>14</sup> EBCTCG. *Lancet*. 20121. Sparano et al. *N Engl J Med*. 2015.;

<sup>15</sup> Friese et al. *Cancer*. 2017.

<sup>16</sup> Groenvold. *Dan Med Bull*. 2010

<sup>17</sup> Kuderer et al. *Cancer*. 2006.

'In the past, since there was not much information about the biomarkers and the types of breast cancer, doctor would usually put the patients on chemotherapy after breast cancer surgery. As the technology advances, we now understand that different types of breast cancer would affect patients' prognosis and pose different risks of recurrence to patients. We can determine whether or not the patient can benefit from chemotherapy using an assessment tool. For example, if the patient's risk of cancer recurrence is low, prescribing hormone therapy alone would be sufficient for the patient; If the patient's risk of cancer recurrence is high, chemotherapy in combination with hormone therapy are required.' said Dr. HUNG.

The Breast Cancer Gene Test could identify patients who are likely to benefit from chemotherapy by analysing the expression of a panel of 21 genes from the breast tumour specimen<sup>18</sup>. According to Dr. HUNG, the test would provide the following information to doctors, which could help developing treatment plans for patients<sup>19</sup>:

- Risk of cancer recurrence
- Risk factors for cancer recurrence
- % of chemotherapy benefit

A research<sup>20,21</sup>, as cited by Dr. HUNG, using the Breast Cancer Gene Test to determine the benefit of chemotherapy for around 10,000 patients of six different countries / regions with early-stage, axillary node–negative, HR+ breast cancer, has the following findings:

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<sup>18</sup> Sparano et al. *N Engl J Med*. 2018

<sup>19</sup> Sparano et al. *N Engl J Med*. 2018

<sup>20</sup> Sparano et al. *N Engl J Med*. 2018

<sup>21</sup> Paik et al. *J Clin Oncol*. 2006

Figure 1: Results of risk of recurrence

Risk of recurrence	
Score: 0-25	There will be <b>no benefit</b> from chemotherapy
Score: 26-100	There will be <b>substantial benefit</b> from chemotherapy

Another research<sup>22</sup>, as cited by Dr. HUNG, concerning around 5,000 patients with one to three positive axillary lymph nodes, HR+, early-stage breast cancer, has the following findings:

For post-menopausal, lymph node-negative<sup>23,24,25,26</sup> or positive patients<sup>27,28</sup> who are over 50 years old with a risk of recurrence of 25 or below, there will be no benefit from chemotherapy; for those with a risk of recurrence of 26 or above, there will be substantial benefit from chemotherapy.

For pre-menopausal patients who are aged below 50, with lymph node-negative breast cancer<sup>29,30,31,32</sup> and a risk of recurrence between 16 and 25, there may be some benefits from chemotherapy; for those with lymph node-positive<sup>33,34</sup> breast cancer and a risk of recurrence between 0 and 13, there will be approximately 2.3% chemotherapy benefit; and for those with a risk of recurrence between 14 and 25, there will be approximately 2.8% chemotherapy benefit. (please refer to figure 2 for details)

<sup>22</sup> Kalinsky et al, *New Engl J Med* 2021

<sup>23</sup> Sparano et al, *N Engl J Med*, 2018

<sup>24</sup> Paik et al, *J Clin Oncol*, 2006

<sup>25</sup> Sparano et al, *N Engl J Med* 2019.

<sup>26</sup> Sparano and Paik, *J Clin Oncol*, 2008

<sup>27</sup> Kalinsky et al, *SABCS 2020 GS3-00*

<sup>28</sup> Albain et al *Lancet* 2010

<sup>29</sup> Sparano et al, *N Engl J Med*, 2018

<sup>30</sup> Paik et al, *J Clin Oncol*, 2006

<sup>31</sup> Sparano and Paik, *J Clin Oncol*, 2008

<sup>32</sup> Sparano et al, *N Engl J Med* 2019.

<sup>33</sup> Kalinsky et al, *SABCS 2020 GS3-00*

<sup>34</sup> Albain et al *Lancet* 2010

*Figure 2: Using the Breast Cancer Gene Test to assess whether a premenopausal patient with HR+ breast cancer could benefit from chemotherapy*

	Risk of recurrence Score: 0-25			Risk of recurrence Score: 26-100
Lymph node- negative	Score: 0-15  There will be no benefit from chemotherapy	Score: 16-20  There will be 1.6% chemotherapy benefit	Score:21-25  There will be 6.5% chemotherapy benefit	There will be substantial benefit from chemotherapy
Lymph node- positive	Score: 0-13  There will be approximately 2.3% chemotherapy benefit	Score: 14-26  There will be approximately 2.8% chemotherapy benefit		There will be substantial benefit from chemotherapy

Dr. HUNG reminded that different assessment tools would provide different recommendations in regards to cancer staging and diagnosis. Patients should consult their doctors if they have any questions concerning different assessment tools.

### **The ‘Breast Cancer Gene Test Financial Assistance Programme’ launched by Hong Kong Breast Cancer Foundation**

The Hong Kong Breast Cancer Foundation has launched the ‘Breast Cancer Gene Test Financial Assistance Programme’<sup>35</sup> to help alleviate the financial burden for patients

<sup>35</sup> Oncotype DX® breast recurrent SCORE Financial Assistance Programme. Patient Support | Hong Kong Breast Cancer Foundation . (n.d.), from [https://www.hkbcf.org/en/patient\\_support/main/461](https://www.hkbcf.org/en/patient_support/main/461)

residing in Hong Kong who have recently received breast tumour surgery in the public hospitals managed by the Hospital Authority. Eligible patients could receive the test to identify the risk of recurrence to find out whether or not they can benefit from chemotherapy.

**Ms. Sharon Cheng, Member of Hong Kong Breast Cancer Foundation Advisory Council** added that eligible applicants have to fulfil all criteria below: (please refer to figure 3 for details)

Clinical requirements

- Hormone receptor- positive and
- HER2-negative and
- node-negative or node-positive (1-3 lymph nodes)

*Figure 3: financial assessment criteria:*

<b>Average Monthly Individual Income in the past 12 months</b>	<b>Amount of Financial Assistance</b>
HK\$18,400 or below / Comprehensive Social Security Assistance (CSSA)	Full

For details regarding the programme, please visit:

[https://www.hkbcf.org/en/patient\\_support/main/461](https://www.hkbcf.org/en/patient_support/main/461)

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