

INTRODUCTION

In Peru, breast cancer causes the loss of more than 29 thousand years of healthy life in the population. The impact on patients’ quality of life is related to the stage of the disease at the diagnosis and the access to complete and effective treatments.

Only 13% of patients have access to early treatment due to constrained health resources, increasing the burden of the disease, as well as treatment costs. In addition, there is a significant lag in the adoption of innovative treatments that allow better clinical results for patients in the public health system.

Hence, savings obtained from early diagnosis could be used to improve treatments, by implementing modern and effective treatments. Therefore, the health provider could avoid incurring high future costs and achieve a greater quality of life for the population.

OBJECTIVES

To quantify the cost-effectiveness of early treatments for HER2+ breast cancer in Peru

a more aggressive type of the disease with a higher risk of recurrence which affects

**18% of Peruvian women with breast cancer**

and explore the cost-effectiveness of the use of innovative treatments for HER2+ breast cancer in Peru.

COST ESTIMATION METHOD

A comparative analysis was performed to calculate incremental cost-effectiveness ratios (ICERs) for each disease stage according to WHO-CHOICE guidelines:

Costs

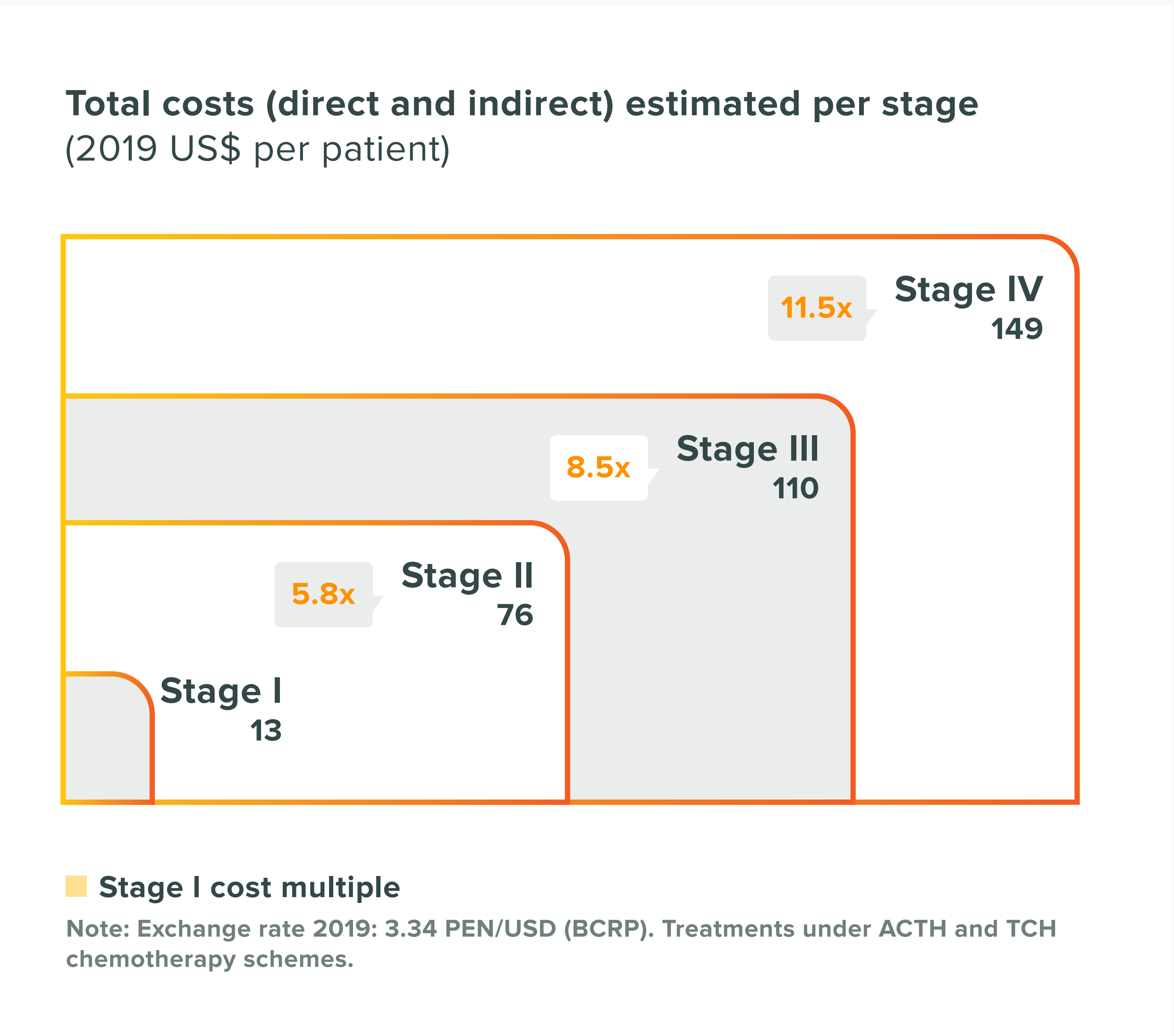
Peruvian health system cost parameters were estimated to address direct (treatment) and indirect costs (loss of productive life generated by the ineffectiveness of the disease and treatment) for the average duration of treatment in each stage. Clinical guidelines from Instituto Nacional de Enfermedades Neoplásicas (INEN) were consulted to identify resource utilization and unit costs.

Effectiveness

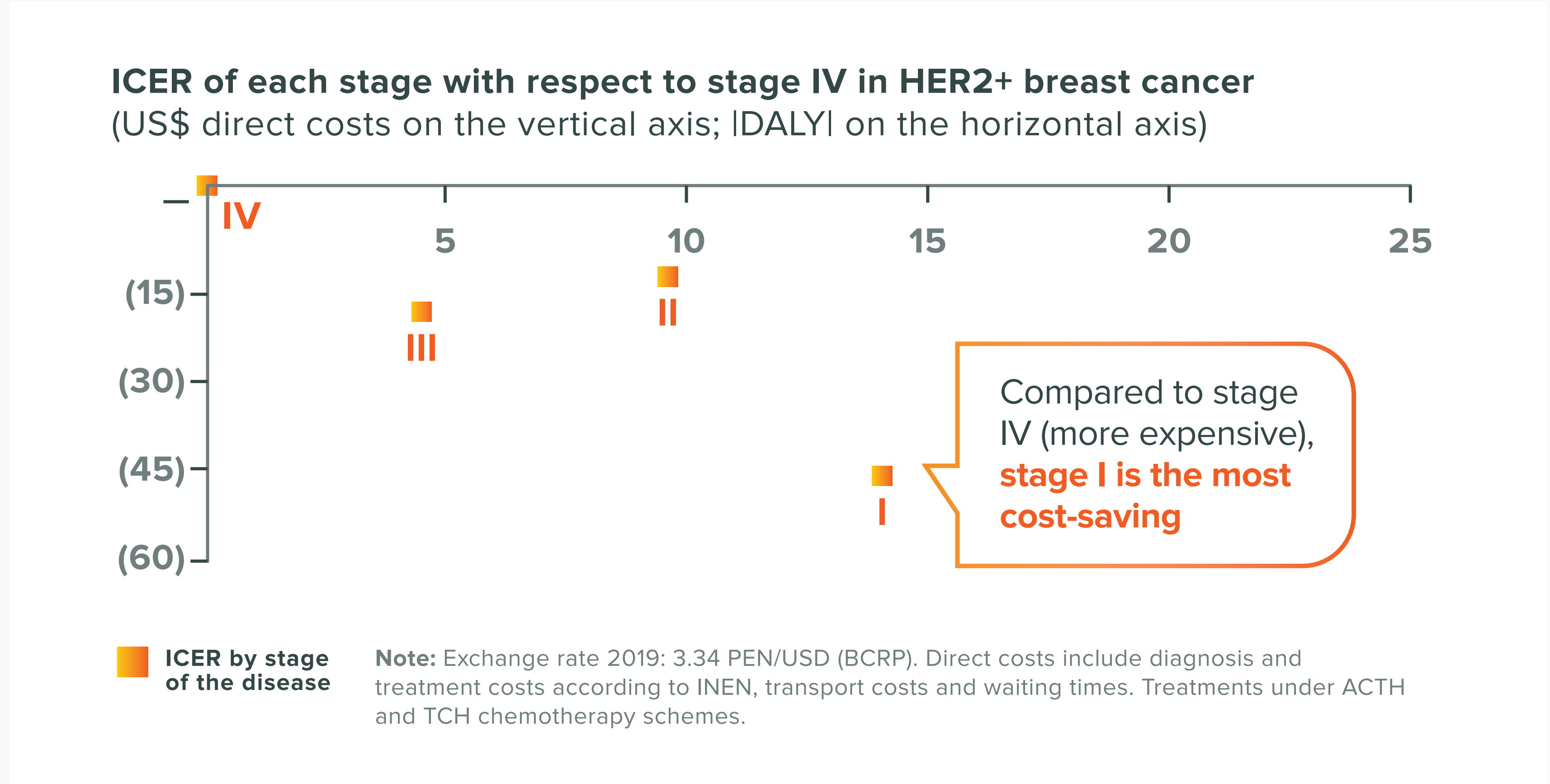
Estimates were based on observational relevant clinical studies and modelled using a transition probability matrix. The results of the efficacy outcomes were standardized as DALY to obtain a single measure of effectiveness.

RESULTS

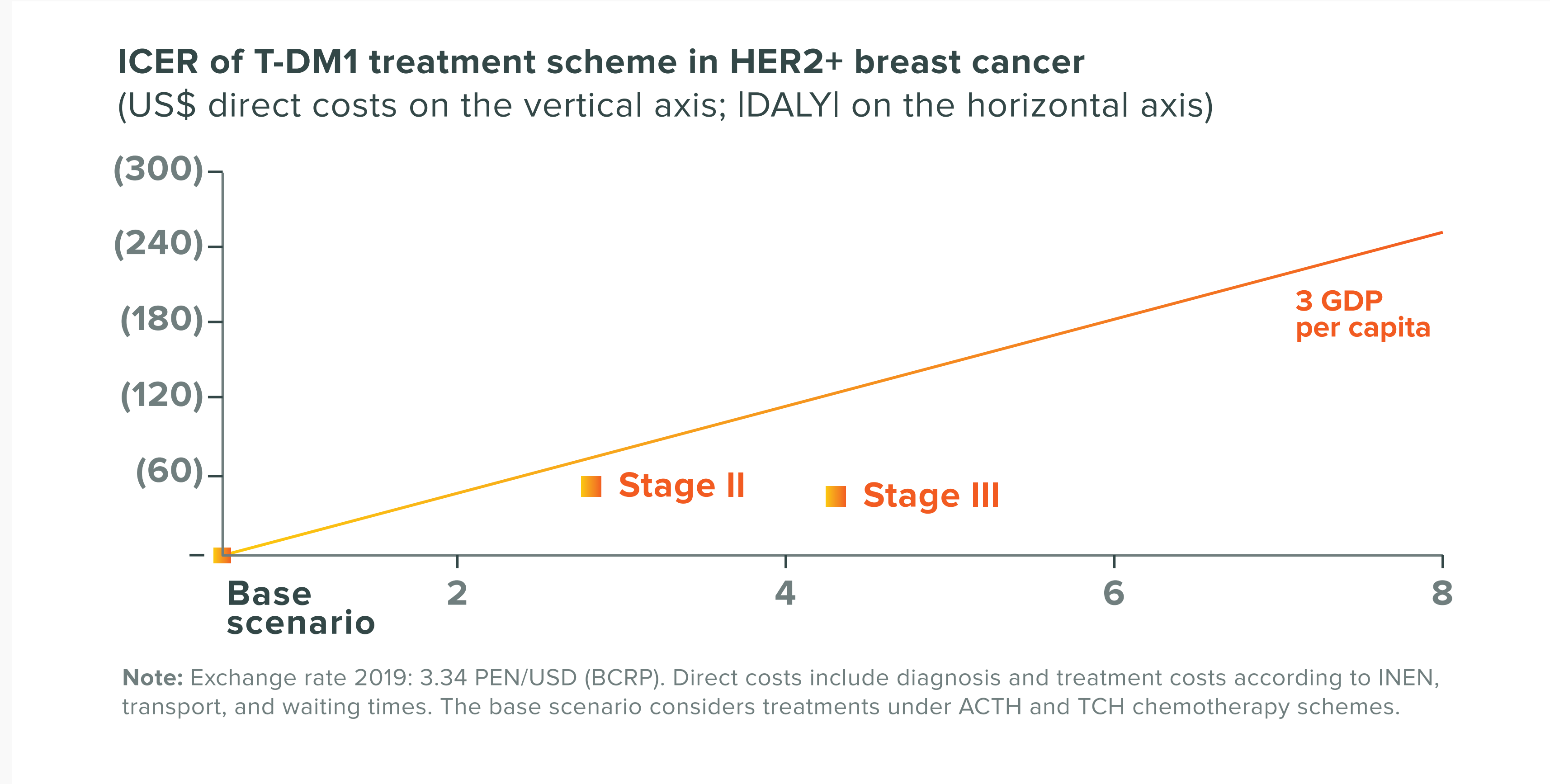
**1** Early detection enables considerably less expensive and more effective treatment than in the more advanced stages, even considering only the direct costs of treatments.



**2** The costs associated with the most advanced stage of HER2+ breast cancer (IV) would be up to 11 times higher than the costs of the earliest stage (I). Thus, it is estimated that an increase of 8 percentage points in the early treatment access of the patients would generate an aggregate saving of US\$10 million in direct costs per year —46% of the budget executed by the Peruvian government in 2019 for breast cancer treatment— and generates more than 780 DALY averted in patients.



**3** The inclusion of innovative treatments (T-DM1) in stages II and III would cost \$18,750 per DALY averted in a scenario of greater early detection considering an increase of 8 percentage points in the early treatment access of the patients. Therefore, it would be cost-effective in HER2+ patients of stages II and III, under the thresholds defined by WHO-CHOICE guidelines. It is estimated that its inclusion in these stages would cost approximately US\$7 million and would generate a gain of more than 400 additional healthy years of life.



**4** The results show that the savings generated by the early detection of breast cancer (US\$10 million) would allow financing more effective treatment schemes in stages II and III (US\$7 million) and with this, generate a total profit of 1,180 healthy years of life.

CONCLUSIONS

A greater emphasis on early treatment would contribute to improving the quality of life of patients and would reduce the costs incurred by the government. In addition, the results emphasize the importance of evaluating innovative schemes in the treatment of breast cancer that have shown better clinical results in patients even in the context of high deficiencies and limitations of the public health system. Although these schemes imply a higher cost compared to current schemes, their inclusion would improve the effectiveness of treatments for patients, and it is affordable through the savings of early treatment schemes.

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