

Supplementary Results:

Factor Affecting Working-Age Adults' Preference on Cancer Experimental Drug

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- A discrete choice experiment (DCE) was conducted among working-age adults aged between 18-64 years in Hong Kong to find out their preference for cancer experimental drug. Experimental drug is defined as off-label use of existing drug for cancer treatment in this study.
- Background information about experimental drug for cancer, descriptions for a hypothetical scenario where experimental drug may be needed for one of their family members, and 6 pairwise choice tasks with hypothetical alternatives were shown to each respondent for them to choose their preferred drug options for the hypothetical family members. The attributes of choice set were developed from literatures on cancer treatment¹⁻⁹, including
 - 1) Overall survival [3 months more than standard treatment, 6 months, 9 months, 12 months]
 - 2) Chance of adverse event (that may affect daily activities and require medical intervention) [10%, 25%, 40%, 55%]
 - 3) Mode of drug administration [oral, injection, cannula]
 - 4) Total out-of-pocket payment for the drug after insurance coverage (percentage of total price) [HK\$50K (10%), HK\$200K (40%), HK\$350K (70%), HK\$500K (100%)]
 - 5) Availability of relevant guideline for off-label use of the drug [available, not available]
- 435 respondents completed the survey between November and December 2022. 56.3% were female and 38.1% aged between 25-39. Half of them were married (51.3%). Majority of them had secondary or above education level (94.5%), and 70.3% had full-time job. 50.9% were having personal monthly income of HK\$20,000 or above.
- Among 435 valid responses from a sample that is matched to age- and sex-distribution of Hong Kong population, there were 9.7% (n=42) respondents who would refuse experimental drug irrespective of the stated attributes (i.e. refuse all

the experimental drug alternatives shown to them), which could be because the respondents do not accept experimental drugs (i.e., off-label use of the drugs) for cancer treatments at all. On the other hand, 49.0% respondents who refused at least one of the experimental drug alternatives in the six choice sets. This indicated that some combinations of the attribute levels in the choice sets did not meet their preferences, which have been taken into account in the analysis for preferences for the attributes that are shown below. It was also found that respondents younger than 35 years were more likely to refuse all or any of the experimental drug options.

- Compared with 3 months of additional survival time with reference to standard treatment, our results showed that the respondents were over 7 times likely to accept the experimental drug if it can result in an additional of 12 months of overall survival. The respondents would be around 3 times and 2 times likely to accept the drug if the additional overall survival is 9 months and 6 months, respectively.
- Adverse events associated with the drugs that may affect daily activities and require medical interventions also substantially influence respondents' acceptance. Compared with 55% chance of having such adverse events, the respondents were over 4 times and 2 times likely to accept the drug if the chance is 10% and 25%, respectively. No significant differences in preferences were found between 55% and 40% chance of adverse events.
- Apart from effectiveness and adverse events of the drugs, mode of administration of the drug is another important factor. The respondents were marginally more likely (around 20% more) to accept oral-intake drugs than the drugs given through injection for the hypothetical family member. The respondents were 38% less likely to choose to use cannula (a tube inserted into vein and left there for 6 months) than injection.
- Availability of relevant guidelines for off-label use of the drugs were used as one of the attributes in the DCE. No significant differences in preferences were found between drugs with and without relevant guidelines.
- The out-of-pocket payment for experimental drugs also influences respondents' acceptance. The findings showed that every HK\$100,000 decrease in out-of-pocket payment for one session of experimental drug treatment would lead to 48% increase on average in acceptance likelihood of the drugs, indicating that sufficient insurance reimbursement for experimental drugs could significantly improve the acceptance rate.

- Overall, the DCE results showed that the longer overall survival (12 months more than standard treatment) is the key factor affecting the willingness to accept experimental drugs, followed by fewer adverse events (10% chances), mode of administration (oral intake), and available guidelines for off-label use. Higher reimbursement rate of the insurance could considerably improve the acceptance rate of the drugs.

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