

Comparing Costs of New Drugs in Prostate Cancer

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A new model that compares costs and outcomes of drugs used in the treatment of castrate-resistant prostate cancer has concluded that generic docetaxel and abiraterone (*Zytiga*) offer better value than cabazitaxel (*Jevtana*) and sipuleucel-T (*Provenge*).

The finding was reported by Helmy Guirgis, MD, PhD, visiting clinical professor from the University of California, Irvine, at the 2013 Genitourinary Cancers Symposium in Orlando, Florida.

Unlike the elaborate and time-consuming cost-effectiveness models designed by medical economists and specialized oncologists, the proposed simplified system uses survival data, which is calculated in days, Dr. Guirgis explained. It takes only a few minutes and is "friendly to use," so could be used as an initial step to screen cost/outcome of costly anticancer drugs, he said. It is worth emphasizing that all 4 drugs presented in this study prolonged overall survival, he told *Medscape Medical News*.

Developing the Model

To develop the model, Dr. Guirgis used the average wholesale price in the United States for an entire treatment course of the evaluated drug, and divided this by the median overall survival gain (in days) over that seen with control as reported at the first disclosure of phase 3 clinical trials.

In the initial phase of the study, Dr. Guirgis surveyed 45 newly approved and commonly used anticancer drugs. The median cost of treatment was \$36,354, and the median cost of survival per day (cost/survival) was \$318.

However, 3 of the drugs are very expensive, said Dr. Guirgis. "The most expensive drug for the entire treatment course was sipuleucel-T, with a total cost of \$93,000. However, sipuleucel-T prolonged survival by 123 days, at a cost/survival of \$757."

The most expensive cost/survival was demonstrated by the combination of erlotinib (*Tarceva*) and gemcitabine in the treatment of pancreatic cancer, he noted. The cost of 6-month treatment was \$25,584 and the survival gain was 15 days, at a cost/survival of \$1706. Also expensive was the use of bevacizumab in the treatment of colorectal cancer, but here the cost/survival was dependent on the number of cycles used, and whether it was used to progression or postprogression, he added.

Apart from these 3 agents, the remaining 42 drugs in the analysis all had a cost/survival below \$1000.

How the Drugs Compare

Using the model as described above, Dr. Guirgis calculated the following values:

- Generic docetaxel (10 cycles) plus ancillary costs come to \$14,839 and provides an overall survival gain of 72 days over control therapy, giving a cost/survival figure of 206.

- Abiraterone plus prednisolone for 6 months used in patients who have progressed on docetaxel (as in the COUGAR I trial) cost \$30,000, and survival gain was 117 days, giving a cost/survival figure of 256. Increasing the duration of treatment to 9 to 12 months increased the cost/survival and decreased scores.
- Cabazitaxel at 25 mg/kg (every 3 weeks, used as second line) costs \$34,350 and provides a survival gain of 73 days, giving a cost/survival figure of 477.
- Sipuleucel-T (3 doses) costs \$93,000 and provides a survival gain of 123 days, giving a cost/survival figure of 757.

In addition, Dr. Guirgis calculated percentage scores that took into account adverse events and any improvements in quality of life that have been reported with these agents. In calculating these percentage scores, the \$1000 cost/survival figure was selected for "quick reference and convenient comparison," Dr. Guirgis explained.

The score for generic docetaxel with ancillary treatment was 83%, compared with 40% for cabazitaxel, 74% for abiraterone, and 24% for sipuleucel-T.

These figures show that generic docetaxel and abiraterone provide "good value," whereas the other 2 drug options are more expensive and offer less value, Dr. Guirgis concluded.

Not the Same Patient Populations

Approached for comment on this abstract, Bruce J. Roth, MD, professor of medicine in the division of oncology at the Washington University School of Medicine in St. Louis, Missouri, told *Medscape Medical News* that these drugs are not all approved for the same use, so this analysis is "a little bit of apples and oranges."

"I appreciate this effort to try to compare the costs, but these are not 4 treatment options that you would use in the same patient population," Dr. Roth pointed out.

For example, cabazitaxel is approved only for use after progression on docetaxel, he said. "You are going to get less bang for your buck as you go down the road.... You are not going to get the same impact from the second chemotherapy as you would from the first," he said. There are no data for first-line cabazitaxel, so in this analysis, there "could be an artificial elevation of a benefit from docetaxel" because of the different patient populations that are being treated, he said.

In addition, sipuleucel-T is approved for use in patients who are asymptomatic or mildly symptomatic. Most physicians would not give docetaxel to this patient population, so again, these are 2 treatments that are used in 2 different patient populations, he said.

In response, Dr. Guirgis agreed with these comments, but argued that this "does not negate or decrease the value of this work." In COUGAR II, abiraterone was used as first-line treatment. The drug increased overall survival by 156 days, at a cost/survival of \$192. The data also hold for enzalutamide (*Xtandi*), which was recently approved by the US Food and Drug Administration, he said.

"We need to collect data on how much you pay for 1 added day of survival," he said, "and we need to share these data with physicians, patients, and governments."

Dr. Guirgis has disclosed no relevant financial relationships.

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