Each year more than 220,000 men will be diagnosed with prostate cancer in the United States. Many of these individuals will see their disease progress to metastatic castration-resistant prostate cancer (mCRPC).1 The management of mCRPC has significantly changed in recent years as advances in understanding the disease have opened new avenues for therapeutic development. As a result, appropriate treatment selection and sequencing are crucial to maximizing patient outcomes. A study was conducted to determine whether online simulation-based educational interventions can address underlying clinical practice gaps and improve clinical decisions of oncologists in the management of mCRPC.

METHODS

A cohort of US-practicing oncologists who participated in an online simulation-based educational intervention was evaluated.2 The intervention consisted of 2 cases (Figure 1) that:

- Were presented on an interactive, virtual, simulation-based learning platform incorporating a sophisticated decision engine that dynamically analyzes more than 12 billion possible diagnostic and treatment decisions, and

- Included an electronic health record with present and past history/physical exam.

During the course of the simulation, oncologists ordered appropriate tests to:

- Establish a diagnosis,

- Assess severity of the disease, and

- Order appropriate treatments.

Learners were able to assess each patient and choose from an extensive database of diagnostic and treatment possibilities matching the scope and depth of actual practice. Instantaneous clinical guidance was provided after analysis by the decision engine of open-ended responses at each decision point. The guidance was based on evidence-based and guideline-based recommendations as well as faculty and drug database feedback.

Participant decisions at every point in the case were collected after clinical guidance and compared with each user's preguidance decisions, using a 2-tailed paired t-test to provide P-value for assessing the impact of simulation-based education on the clinical decisions made by participants. The activity reached on 2/25/2014, data were collected through 9/12/2014.

RESULTS

The assessment sample consisted of 125 oncologists who made clinical decisions within the simulation and proceeded to the concluding debrief section. Analysis of specific, ordered by oncologists identified common regimen choices by learners in both cases (Figure 4 and 5). Although not shown, the most commonly cited reason for regimen selection for each case was "better toxicity profile." In addition, as a result of clinical guidance provided through simulation, significant improvements were observed in several areas of management of patients with mCRPC. Specifically:

- 15% increase in the selection of an evidence-based regimen in the first-line setting (Figure 2).
- 15% to 25% improvement in guideline management of bone-metastases (Figures 3 and 5)
- 18% improvement in evidence-based treatment selection for individuals whose disease progressed while receiving first-line therapy (Figure 1)

CONCLUSIONS

This study showed improvements in clinical decisions of oncologists in selecting evidence-based and guideline-based therapeutic regimens for patients with mCRPC with and without symptomatic bone disease. It is evident that simulation-based instruction may be useful in improving oncologists’ performance in the management of mCRPC. However, it is worth noting that in both patient cases, only about 50% of oncologists made appropriate treatment decisions after clinical guidance, which suggests that patients with mCRPC may be receiving suboptimal management. Thus, additional education is needed to enable all oncologists to select the most appropriate treatment regimen for individuals with mCRPC based on patient- and tumor-specific factors, so as to continue to improve the quality of care these patients receive in community practice.

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