

**Aakash Desai, MD,  
MPH**  
Division of Medical  
Oncology, Mayo Clinic,  
Rochester, Minnesota.

## Avoiding Checkmate—Playing Chess With Cancer

**“Mom,** I want to be like Vishwanathan Anand!” I exclaimed, as I saw him defeat the then champion to win the 2000 World Chess Championship. Vishwanathan Anand, a renowned Indian chess grandmaster and 5-time world chess champion, was the reason I took to chess as a child. Of course, as my destiny would have it, I trained to become an oncologist and not a chess master. But little did I know, the rules of chess and oncology have multiple similarities.

Recently, I had a sudden flashback to my childhood chess-playing days when I saw a 39-year-old woman with metastatic ER<sup>+</sup>, ERBB2<sup>-</sup> breast cancer in clinic. Unfortunately, by the time we met, she had progressed through multiple lines of therapy (palbociclib and letrozole; next, exemestane and everolimus; and then capecitabine).

The Sicilian defense, the best scoring and statistically successful opening move against the White opening in chess, is akin to first-line treatment options for our defense against cancer, which are often selected based on a probabilistic advantage over others. While chess players study the probability of checkmating their opponent, oncologists work with the likelihood of stalemate (stable disease or progression-free survival), avoiding checkmate (hazard ratio of death), and most favorably, actually checkmating the opponent (cure). For my patient, the Sicilian defense was unsuccessful.

“What’s next, doctor?” she asked in a fearful tone. “We could try more chemotherapy, another pill drug, or a clinical trial drug that targets one of your cancer’s mutations,” I replied. As we embarked on a journey of shared decision-making, I realized we needed to strategize. It became apparent that a decision to employ chemotherapy (with eribulin or vinorelbine) or abemaciclib now would exclude her from clinical trial participation (for *ESR1*-mutated breast cancer with abemaciclib and lasofoxifene: [NCT04432454](#)) in the future. As it turns out, we had to think 2 steps ahead to work toward staving off this cancer opponent. Also, cancer had started our clock, and we needed to act—a situation with which I was all too familiar, albeit in a different setting and with much lower stakes.

Chess is often touted as the ultimate strategy game. It teaches life lessons on prioritization and strategy, on decision-making and time management (for games played with time clocks), on learning from failures, and most importantly, on weighing options and making sacrifices.

As oncologists, our decision-making must always be strategic. Even for patients in whom there is no evidence of active disease, we are often asked to predict our next moves. Chess requires similar continual forethought several steps ahead. If you make this move, what will be the

opponent’s countermove? What are all of the possible countermoves? Of all of those possible countermoves, what are all of my potential countermoves? Chess constantly teaches one to think in terms of action, reaction, and consequence. In oncology, as in chess, we are often forced to do the same for patients, trying to use different pieces on the board to avoid the dreaded “C” word.

A great chess player has a deep awareness of each piece’s role on the board. A bishop has different abilities from those of a knight, and its powers are expanded or limited by a board’s pawn structure. Similarly, one cannot become a great oncologist without awareness of when to use the multiple available treatment options for patients with cancer. In addition to relying on the strengths of multiple oncology team members, using surgery, radiation therapy, and drug therapy enable an oncologist to maximize the effect of each move they decide to make.

Playing chess teaches you to recognize patterns: the tempting bishop sacrifice that led you into a trap, the queen swap that looked favorable but prevented you from castling. You play, you learn. Oncology is similar; you should never forget when your patient had severe stomatitis after receiving a heavy dose of capecitabine. The next time you plan to treat a patient with capecitabine, the lessons you learned with the prior patient will influence your decisions to more firmly alert the patient to stop the oral therapy prior to developing severe mucositis or skin toxic effects.

The annals of chess grandmasters are replete with stories of those who obsessively studied their losses. It is often said that these earlier losses become part of the mental makeup for a later victory. This cannot be emphasized enough for oncology.

While the ultimate goal of chess is getting to the endgame, it is also important to not lose focus on the present. It is easy to chart a course to the endgame, but it can be challenging to stay on it: this “forest for the trees” approach to designing treatment plans for patients for first-line and subsequent treatments. Getting them through these is vital, requiring constant focus and reaffirmations to ourselves and patients.

The pregame pep talk my chess coach often gave was “Your goal is to make one move at a time, always focusing on that move, avoiding checkmate. When you play against some of these best players in the country, a stalemate is still a victory!” Little did I know that, as an oncologist, I would have a similar mantra: to help patients make more moves, avoiding checkmate, and hoping for a stalemate against my greatest ever opponent—Cancer.

### Corresponding

**Author:** Aakash Desai, MD, MPH, Division of Medical Oncology, Mayo Clinic, 200 First St NW, Rochester, MN 55902 ([desai.aakash@mayo.edu](mailto:desai.aakash@mayo.edu)).

**Published Online:** October 6, 2022.  
[doi:10.1001/jamaoncol.2022.4422](https://doi.org/10.1001/jamaoncol.2022.4422)

**Conflict of Interest Disclosures:** None reported.

**Additional Contributions:** The author would like to acknowledge Dr Charles Loprinzi, Dr David Steensma, Dr Vincent Rajkumar, Dr Ariela Marshall, Dr Colt Williams, and Dr Tufia Haddad for reviewing

the previous versions of this manuscript. They received no compensation for their contributions.