

Artificial Education

Cancer is a field that requires continuous education. Nearly all the treatments I use today for my patients with prostate, bladder, or kidney cancer did not exist when I trained. These advances are not limited to therapy; new diagnostics are reshaping how we subclassify tumors and patients through more precise molecular, genetic, and imaging profiles. Now we are incorporating a very different advance into our practices: artificial intelligence. AI has already radically changed how we learn and make decisions, with some unanticipated consequences.

In the past, I learned about medical advances through the presentation of clinical research. Oncology meetings like the ASCO Annual Meeting and ESMO Congress, and in my case genitourinary cancer-specific conferences, are a nexus for sharing the latest clinical data through presentations and interactions with colleagues. These annual occurrences have long been a staple on my calendar. At Duke, where I practice, I share clinic space with other GU medical oncologists and urologists. We also have multidisciplinary patient conferences (aka tumor boards), grand rounds, and provider meetings to share experiences collectively with our nurses and advanced practice providers. In addition, we have clinically focused journals like *Clinical Advances in Hematology & Oncology*, which are useful to broaden our knowledge and expand perspectives. When specific questions arise, I've used tools such as NCCN guidelines, continuing medical education resources such as UpToDate, and online CME programs to find specific answers. All these resources have in common a human element. Whether they are conducted in person, online, or in print, information is presented by credentialed professionals. Does that really matter? I think so.

Knowing what information is based on is foundational for credibility. We start presentations by disclosing who we are and any potential conflicts of interest or influences on our opinions. We reference the sources of data that we present or rely on and acknowledge their limitations. Although I admit that these exercises sometimes feel perfunctory or tedious, they are the basis of our credibility, which is our most important asset. But what about AI?

AI has suddenly become a ubiquitous presence in our lives, displacing many of our usual habits of learning. I know that many of my younger colleagues, who have great current knowledge but are still building their clinical experiences in cancer care, have used AI to answer specific questions because it is so accessible and able to respond quickly to almost any query. Pulling up other websites or searching guidelines or articles is not nearly

as convenient, and ease of access is relevant when time is our most precious commodity. But getting an answer from AI is the easy part; trusting it is another matter. There are no "bylines" because the responses are computer-generated.

References are typically not included unless requested, and when they are, a careful cross-check may reveal one or more invented sources. As a result, the ease with which AI can be misused in clinical practice is concerning. So, what can we humans do to keep pace with this almost instant access to information?

A couple of years ago, a colleague of mine at Duke started a little group text chat he nicknamed *GURus*. At first, this was a social channel among our GU medical oncology faculty for sharing news, personal updates, and humor. But over time, we have increasingly used our channel as an informal real-time case review across our clinics, asking for advice and wisdom around some challenging clinical decisions. Because someone is almost always not in clinic, people can usually get a response within minutes. But unlike AI, these are colleagues whom we know; they can ask clarifying questions and request more information, and they aren't afraid to express their limitations. Sometimes answers are clear-cut, whereas in other cases, decisions can be framed in terms of risk-benefit analyses or patient preferences. Sometimes we have differences of opinion that will bring to light the personality traits of "early adopters" vs those of more conservative types. Finally, sometimes we differ in terms of what we see as a clinically meaningful benefit. All of this is to say that the interpretation of data is subjective, and subjectivity still requires a human element. Maintaining some forum for clinical case discourse is vital to our practice.

No doubt AI will continue to evolve rapidly, and I am sure that this letter will soon sound antiquated. Machine learning will turn into machine teaching, and we will appreciate the clarity and completeness of an artificial educational resource. But the human aspect of practicing oncology will not go away. Like assessing the fitness of a patient by noting how quickly they stand up and move when I enter a room, nonverbal qualitative assessments cannot be captured by the current large language models of AI. At least for now, I still have something to teach.

Sincerely,



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