Adoption of Abiraterone and Enzalutamide by Urologists

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OBJECTIVE To investigate the adoption of abiraterone and enzalutamide by urologists. Abiraterone and enzalutamide are oral therapies approved for the treatment of metastatic castration-resistant prostate cancer, a disease most commonly treated by medical oncologists.

METHODS Using the Medicare Part D Public Use Files from 2013 to 2016, we identified total abiraterone and enzalutamide prescriptions 2013-2016 and urologists who prescribed moderate to high volumes of these drugs. We then characterized the urologist practices of those urologists according to practice context (eg, single-specialty group) using data from the Centers for Medicare and Medicaid Services, and the geographic distribution of those providers.

RESULTS We found abiraterone prescriptions increased from 71,423 in 2013 to a peak of 100,371 in 2015 and enzalutamide prescriptions continued to increase from 29,572 in 2013 to 100,980 in 2016. Prescriptions by urologists increased between 2013 and 2016 while prescriptions by other specialties plateaued. The number of moderate-high prescribing urologists increased from 98 (abiraterone) and 22 (enzalutamide) in 2013, to 301 (abiraterone) and 671 (enzalutamide) by 2016 with 1063 unique urologists prescribing moderate-high volumes of either drug between 2013 and 2016. Among urologists who prescribe androgen deprivation therapy, 5% were moderate-high prescribers of abiraterone and 12% of enzalutamide in 2016. The majority of moderate-high prescribing urologists were in single-specialty groups (70%).

CONCLUSION Urologists are increasingly prescribing oral therapies for metastatic castration-resistant prostate cancer. Understanding the distribution of urologists specializing in castration-resistant prostate cancer therapeutics will help guide future interventions to optimize the care for this important patient population. UROLOGY 131: 176–183, 2019. © 2019 Elsevier Inc.

Urologists are the first point of contact for patients in the diagnosis and management of prostate cancer, including the detection of recurrent disease. If a patient recurs after treatment, urologists also commonly initiate systemic androgen deprivation therapy (ADT) in the form of injectable gonadotropin-releasing hormone analogs. Progression to castration-resistant disease generally had required chemotherapy, including docetaxel or mitoxantrone. Because they lack expertise in delivering chemotherapy and managing its associated toxicities, urologists traditionally referred patients with castration-resistant prostate cancer to medical oncologists.

The introduction of well-tolerated targeted oral agents for castration-resistant prostate cancer has the potential to affect these practice patterns. Abiraterone and enzalutamide are 2 drugs approved for metastatic castration-resistant prostate cancer based on clinical trials demonstrating a survival benefit.[1-4] Both drugs are well tolerated compared with chemotherapeutic agents, making them more attractive to deliver by urologists. Indeed, some experts have advocated for urologists to continue treating their patients through end of life.[5-7] By providing care across the lifespan of the disease, urologists may capitalize on their longstanding relationship with the patient in a delivery model that is convenient and reduces care fragmentation. However, implicit in this relationship is the responsibility for managing toxicities and late complications (eg, early recognition of cord compression or pathologic fractures), as well as attention to end-of-life care for a disease that is invariably lethal. The American Urological Association, the leading professional society, has facilitated movement of urologists into this space through educational workshops and dissemination of clinical care guidelines.[8]

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The extent to which urologists have broadened their scope of practice to include men with castration-resistant prostate cancer is unknown. Understanding this potential sea change in practice is important to ensure that educational efforts (eg, dissemination of newly identified adverse reactions) and new trial opportunities are appropriately focused. For this reason, we used national Medicare data to assess national trends in prescribing patterns of abiraterone or enzalutamide by urologists. We further explored associations between practice context and adoption to better understand the continued expansion of urologists into this space.

METHODS

Data Sources

The Medicare Part D Prescriber Public Use File is a publicly available database for prescriptions filled through Medicare Part D. The file includes details about the providers prescribing oral therapies, such as address and specialty. All providers are included in the aggregated totals in the file, but to protect patient confidentiality, the file describes the number of patients and prescriptions for only those providers who prescribe more than 10 prescriptions for a medication.

We enumerated the number of prescriptions for abiraterone and enzalutamide by provider and the number of patients associated with these prescriptions annually between 2013 and 2016. We sorted prescribing providers into 1 of 3 groups (low, moderate, and high). "Low prescribers" prescribed either drug at least once but wrote for ≤10 prescriptions. Both "high prescribers" and "moderate prescribers" wrote for >10 individual prescriptions of abiraterone or enzalutamide in a year: "high prescribers" to >10 patients per year and "moderate prescribers" to ≤10 patients per year. Specialty information and practice location are available for "high" and "moderate" prescribers.

The Public Use File also includes total drug cost, which is reported as the sum of the amounts paid by the Part D drug plan, the patient, the government through subsidies, and third-party payers. These payments are inclusive of the cost of the medication itself, dispensing fees, sales tax, and administration fees.

Scope of Practice

Recognizing not all urologists care for men with prostate cancer, we used a 20% sample of fee-for-service Medicare beneficiaries to identify urologists who treat men with advanced prostate cancer and provide perspective for trends in abiraterone and enzalutamide prescribing patterns observed. We identified those urologists billing an evaluation and management code for at least 1 patient with a primary diagnosis of prostate cancer (ICD-9 185 or ICD-10 C61) and prescribing androgen deprivation to their patients, defined as at least 2 of the CPT codes for any of the depot injections of leuprolide, goserelin, degarelix or triptorelin to the same patient within a 365-day period.

Urologist Practice Organization

Urologists practice in widely variable practice types, ranging from solo practices to large multispecialty groups of over 100 physicians. To demonstrate the trends in scope of practice for different types of urologic groups, we characterized the clinical practice context among urologists in national Medicare claims and those whose identity was available in the Medicare Part D Prescriber Public Use File (ie, "moderate" and "high" users of enzalutamide or abiraterone). For this purpose, we used data from the Centers for Medicare and Medicaid Services provided in the Medicare Data on Provider Practice and Specialty file. Urologists were assigned to their group practice for each year based on tax-identification number, using previously established methods.[9] We further characterized practices based on their constitution and size and sorted them into groups: a group with 1-2 urologists total was considered a *solo* practice, a *single-specialty* group consisted of more than 2 urologists with more than 50% of the physicians in the group being urologists, and for those practices with less than 50% of the physicians in the group identified as urologists, either a *specialty* group if there were no primary care providers, or *multispecialty* if there was at least 1 primary care provider such as internal medicine, family practice, and geriatrics. Those practices that did not include a urologist were categorized as Other and not included in the final analysis.

Statistical Analysis

Aggregated totals of the use of abiraterone and enzalutamide for each year and cost for each treatment were extracted. Using the aggregated totals, we were able to determine the average time patients were on abiraterone or enzalutamide by dividing the total number of prescriptions by the total number of patients treated in a given year since each prescription is for 1 month of therapy under Medicare Part D.[10] Moderate and high prescribers of the 2 oral therapies were differentiated from the low prescribers and then categorized by specialty.

We calculated the proportion of urologists prescribing moderate- to high volumes of abiraterone and enzalutamide among those urologists who treat patients with ADT. We also calculated the proportion of moderate-high prescribing urologists in different practice contexts.

To visualize the geographic distribution of urologists prescribing moderate-high volumes of abiraterone and enzalutamide, we plotted the moderate-high prescribers on a map of the United States.

All analyses were performed using SAS 9.4 software. The maps were generated using Tableau 2018.1.3. This study was determined "Not Regulated" by the University of Michigan Internal Review Board since the research did not interact with nor obtain identifiable private information about human subjects.

RESULTS

Figure 1 illustrates the number of patients treated with abiraterone or enzalutamide and the number of total providers prescribing these therapies through Medicare Part D by year. The number of patients treated with abiraterone rose from 14,187 in 2013 to 17,044 in 2014 before declining to 16,247 by 2016. In contrast, the number of patients treated with enzalutamide increased throughout the study time period, increasing from 7326 in 2013 (half the number of patients prescribed abiraterone in the same year), to 17,789 patients by 2016 (Table 1). These patients received a total of 71,423 prescriptions for abiraterone in 2013 and 96,756 prescriptions in 2016. In contrast, prescriptions for enzalutamide increased throughout the years studied from 29,572 in 2013 to 100,980 in 2016. Overall, this translated into patients receiving 5.0-6.0 months of abiraterone and 4.0-5.7 months of enzalutamide with an average cost

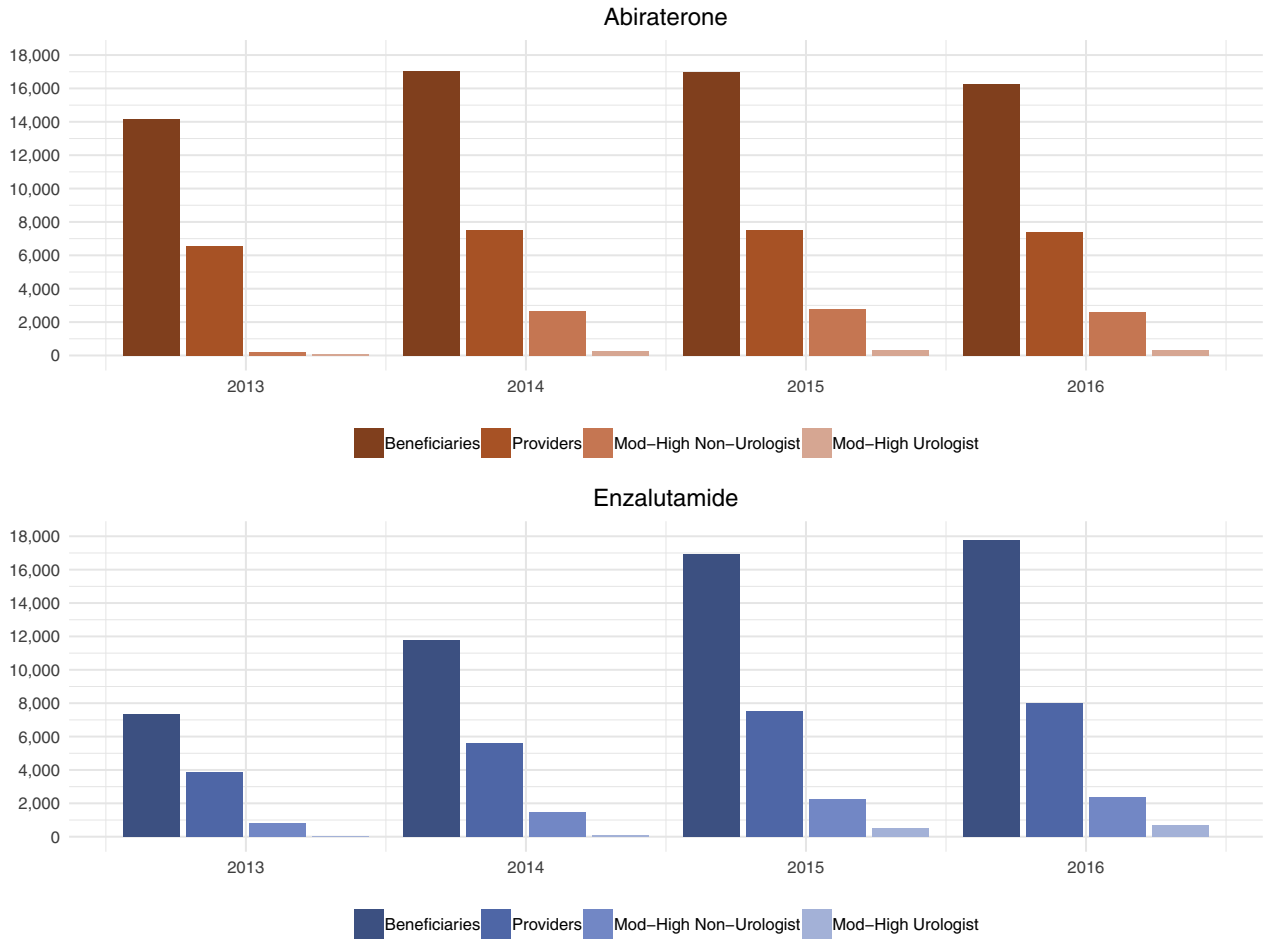

Figure 1. Frequency of beneficiaries treated and providers prescribing abiraterone or enzalutamide in Medicare Part D. The bars indicate the frequency of patients prescribed abiraterone (orange) and enzalutamide (blue) each year and the frequency of providers writing prescriptions for the treatments, including those urologists and nonurologists who were moderate-high prescribers. (Color version available online.)

of $50,657 per patient for a course of abiraterone and $51,018 per patient for a course of enzalutamide in 2016 (Table 1).

Figure 1 and Table 1 also show the frequency of urologists and nonurologists prescribing moderate- to high-volumes of abiraterone and enzalutamide each year, illustrating the majority of providers writing prescriptions for these therapies prescribed a low-volume of therapies (10 or fewer prescriptions each year). Throughout the study timeframe, nonurologists were the majority moderate and high prescribers of abiraterone and enzalutamide. However, the increase in number of urologists who became moderate-high prescribers of abiraterone was substantially higher than the increase among nonurologists. The number of urologists who were moderate-high prescribers of abiraterone increased by 307% from 98 to 301 between 2013 and 2016, as opposed to increasing by 30% for nonurologists (2032-2632). The number of urologists that were moderate-high prescribers of enzalutamide increased by >3000% from 22 to 671 between 2013 and 2016, as opposed to nonurologist prescribers which increased by 301% during the same timeframe (786-2366; Table 1) In total, 1063 unique urologists were moderate-high prescribers of either abiraterone or enzalutamide between 2013 and 2016.

To better understand the numbers of urologists prescribing abiraterone and enzalutamide in moderate-high volumes, presumably for patients with castration-resistant disease already receiving ADT, we described the proportion of moderate-high prescribers in the setting of total urologists treating patients for prostate cancer with ADT. The number of urologists treating patients with prostate cancer with ADT through gonadotropin-releasing hormone analog injectables remained relatively stable throughout the study period, ranging from 5337 to 5848, with a mean of 5653 urologists. Therefore, we estimated that in 2016, 5% of urologists who administered ADT to their patients were moderate to high prescribers of abiraterone and 12% were moderate to high prescribers of enzalutamide.

We then characterized the context in which these urologists practiced to determine which practice contexts (eg, solo practice, single-specialty, and multispecialty) were most responsible for the increase in use of these therapies. Most moderate-high prescribing urologists were in single-specialty groups (67%-68%), 17%-18% in solo practices, and 14%-15% in multispecialty groups (Table 2). There were few moderate-high prescribing urologists in specialty groups (1%-2%), which are groups with fewer than 50% urologists and no primary care physicians.

Figure 2 illustrates where moderate-high prescribing urologists practice in the United States and the increase in number of practices adopting these therapies between 2013 and 2016. In general, the moderate-high prescribing urologists tend to be located in the eastern and coastal regions of the United States.

Table 1. Medicare Part D Public Use File — abiraterone and enzalutamide

	2013	2014	2015	2016	Total
Abiraterone					
Beneficiaries	14,187	17,044	16,963	16,247	-
Claims	71,423	98,469	100,371	96,756	367,019
Prescribers	6563	7528	7512	7397	-
Low users	4523	5398	4398	4464	-
Urologist — moderate	95	278	301	289	-
Urologist — high	3	11	11	12	-
Nonurologist — moderate	1925	2536	2669	2490	-
Nonurologist — high	107	138	133	142	-
Cost	$469,537,430	$707,097,865	$790,008,643	$823,026,651	$2,789,670,589
Cost/beneficiary	$33,096	$41,487	$46,572	$50,657	-
Cost/claim	$6574	$7181	$7871	$8506	-
Claims/beneficiary	5	5.8	5.9	6	-
Enzalutamide					
Beneficiaries	7326	11,800	16,911	17,789	-
Claims	29,572	53,980	90,112	100,980	274,644
Prescribers	3879	5582	7495	7977	-
Low users	3071	4774	4780	4940	-
Urologist — moderate	21	82	464	651	-
Urologist — high	1	5	16	20	-
Nonurologist — moderate	742	1371	2102	2228	-
Nonurologist — high	44	94	133	138	-
Cost	$231,402,020	$447,311,084	$790,628,577	$907,560,035	$2,376,901,716
Cost/beneficiary	$31,586	$37,908	$46,752	$51,018	-
Cost/claim	$7825	$8287	$8774	$8988	-
Claims/beneficiary	4	4.6	5.3	5.7	-

Moderate prescribers prescribed >10 prescriptions in a year for abiraterone or enzalutamide but to 10 or fewer beneficiaries total. High prescribers prescribed abiraterone or enzalutamide to greater than 10 beneficiaries total in the year. The total column only includes totals for the number of claims and cost since number of prescribers and beneficiaries can overlap year to year.

DISCUSSION

Between 2013 and 2016, use of abiraterone and enzalutamide increased, with prescriptions for enzalutamide increasing at a faster rate than those for abiraterone. By 2016, enzalutamide had surpassed abiraterone as the most commonly prescribed secondary oral androgen inhibitor. Even though the majority of prescriptions for abiraterone and enzalutamide were written by low prescribing urologists (≤10 prescriptions each year) and nonurologists, urologists who were moderate-high volume prescribers of abiraterone and enzalutamide increased substantially between 2013 and 2016. By 2016, almost 1 of 8 urologists who treated patients with ADT prescribed moderate- to high-volumes of abiraterone or enzalutamide. Those urologists in single-specialty urologic groups appeared to be driving much of the increased prescriptions of both abiraterone and enzalutamide between 2013 and 2016.

Previous work has demonstrated that urologists have been quick to adopt and expand the use of systemic therapies for patients with prostate cancer, mostly through the use of ADT by way of injectable gonadotropin releasing hormone analogs.[9] Urologists have also historically expressed interest in delivering and being reimbursed for chemotherapy,[5] and are more likely to administer sipuleucel-T than medical oncologists.[11] Given urologists' previous rapid uptake in administering systemic ADT, their expressed desire to broaden the treatment they can offer their patients, and the encouragement and support being offered by their professional organization to do so,[8] it is not surprising that urologists have been increasingly adopting use of abiraterone and enzalutamide for patients with advanced prostate cancer.

Since this study was conducted the indications for abiraterone and enzalutamide have continued to expand, further supporting the importance of understanding the extent of urologists' desired involvement in advanced prostate cancer care. Specifically, abiraterone is now approved for use in the metastatic castration-sensitive setting,[12,13] and enzalutamide is approved for use in the nonmetastatic castration-resistant setting.[14] In addition, apalutamide and darolutamide are oral therapies similar to enzalutamide that have each demonstrated improvement of metastasis-free survival in the nonmetastatic castration-resistant setting, similar to enzalutamide.[15] These new indications hinge on additional factors such as prostate-specific antigen (PSA) doubling times, and the extent of metastatic disease. Providers offering these therapies will be tasked with having an informed discussion about the risks and benefits of different oral therapies in additional disease settings and risks and benefits of other treatment options not traditionally offered by urologists, such as docetaxel in patients with a new diagnosis of metastatic high-volume castration-sensitive disease.

Some patients and urologists may be encouraged and relieved by the prospect of urologists maintaining their active role in treating the cancer as it advances as it may present an opportunity to improve continuity of care provided to these patients and also to expand access to

Table 2. Medicare Part D Public Use File — urologist use of abiraterone and enzalutamide by practice type

Abiraterone	2013			2014			2015		
	Total (n = 98)	Moderate (n = 95)	High (n = 3)	Total (n = 289)	Moderate (n = 278)	High (n = 11)	Total (n = 312)	Moderate (n = 301)	High (n = 11)
Solo	15	15	0	42	42	0	50	50	0
Single-specialty	72	70	2	198	188	10	208	198	10
Specialty	0	0	0	5	5	0	6	6	0
Multispecialty	11	10	1	44	43	1	48	47	1

Enzalutamide	2013			2014			2015		
	Total (n = 22)	Moderate (n = 21)	High (n = 1)	Total (n = 87)	Moderate (n = 82)	High (n = 5)	Total (n = 479)	Moderate (n = 463)	High (n = 16)
Solo	4	4	0	13	13	0	83	83	0
Single-specialty	14	13	1	63	60	3	326	311	15
Specialty	0	0	0	1	1	0	4	4	0
Multispecialty	4	4	0	10	8	2	66	65	1

Moderate prescribers prescribed >10 prescriptions in a year for abiraterone or enzalutamide but to 10 or fewer beneficiaries total. High prescribers prescribed abiraterone or enzalutamide to greater than 10 beneficiaries total in the year. Solo (1-2 physicians total); Single-specialty (>2 physicians and ≥50% urologists); Specialty (< 50% urologists and no primary care provider); Multispecialty (< 50% urologists and >1 primary care provider such as internal medicine, family practice, and geriatrics). Practice type for urologists who were prescribers in 2016 was not available, so only practice types for those urologists prescribing these drugs in 2013-2015 are shown here.

patients in parts of the country where oncology providers are scarce. As urologists increasingly expand their scope of practice into this area, there are several important aspects of care they will need to focus on to be successful. Monitoring and addressing toxicities of these oral therapies, both medical and financial, can be addressed at frequent visits and potentially with close coordination with the patient's primary care provider. Both abiraterone and enzalutamide are oral specialty medications that are only filled through specific specialty pharmacies and commonly associated with high out of pocket expenses. Practices that prescribe these medications frequently are involved with initiating prior authorizations and facilitating financial assistance for patients (eg, copay coupons, assistance with free drug program forms, and foundation funding), which could potentially be the case for those urologic practices that move into this space and increasingly move from being non- or low prescribers to moderate-high prescribers. Furthermore, all patients with castration-resistant disease will eventually succumb to their cancer and require discussions surrounding goals of care and aggressive end-of-life management. Many patients may choose to forego treatment in certain situations and opt for palliative care depending on their willingness to accept the risks of therapy, including the financial risk to their family for these oral therapies. Urologist involvement in more of these discussions may present an important opportunity for them to become an active part of a patient's disease course for which they had not previously been involved.[16-20]

There were several limitations to this analysis that were mostly related to the database restrictions. First, providers who prescribe 10 or fewer prescriptions for a certain medication are not included in the detailed Medicare Part D Public Use File to protect patient confidentiality. We found the majority of prescribers of abiraterone and enzalutamide were low volume, so there are likely to be more urologists prescribing abiraterone and enzalutamide during the years studied that we did not capture in our moderate-high volume totals. Furthermore, beneficiary count information is not included for those providers who prescribed more than 10 prescriptions but to fewer than 11 beneficiaries, but we were still able to use aggregated totals to calculate the average number of months patients were on a medication and the average cost per patient. Second, since the public use file reports on data aggregated at the patient level, we conducted our analysis at the provider level and were unable to look at patient factors that may influence prescribing of these therapies, including quality metrics of patients prescribed these medications by different specialists and in the different practice types. Finally, it is important to note that the Medicare Part D plans only encompass two-thirds of the patients receiving care through Medicare and mostly accounts for patients over 65. Nevertheless, it is likely that the patterns of treatment by providers we observed would likely apply to prostate cancer patients who are younger, or have other forms of health insurance.

CONCLUSION

Urologists are prescribing oral therapies for advanced prostate cancer at increasing rates each year and mostly in larger single-specialty practices. Understanding the distribution of urologists specializing in these advanced prostate cancer therapeutics will help guide future interventions aimed at optimizing the value of care provided to patients, something that will increase in importance as more oral therapies are approved (eg, apalutamide and darolutamide) and become approved earlier in the disease course of patients. The increase in urologists providing care to patients in the later stages of their disease course may

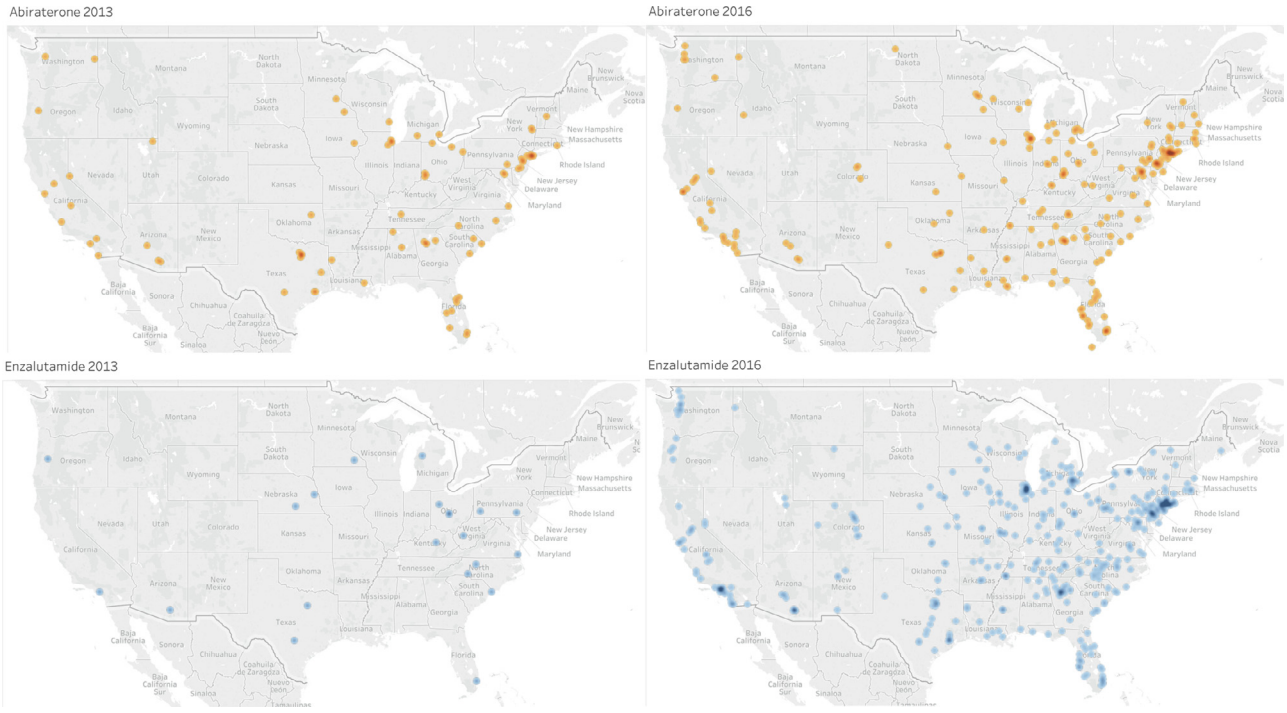

Figure 2. Geographic distribution of urologists who are moderate-high prescribers of abiraterone and enzalutamide.

Geographic distribution of urologists who are moderate-high prescribers of abiraterone (top panels) in 2013 and 2016 and moderate-high prescribers of enzalutamide (bottom panels) in 2013 and 2016, demonstrating the increase in urologists prescribing these therapies. Moderate prescribers prescribed >10 prescriptions in a year for abiraterone or enzalutamide but to 10 or fewer beneficiaries total. High prescribers prescribed abiraterone or enzalutamide to greater than 10 beneficiaries total in the year. (Color version available online.)

provide an important opportunity for urologic practices to partner with patients' primary care providers, social workers, and palliative care to become more involved in patients' care through monitoring of toxicities, financial counseling, and end-of-life care. However, it is important that all providers treating patients with these drugs, regardless of specialty or oncology fellowship training, understand the indications for their use, and are able to have an informed discussion with patients about all available therapies and their toxicities so that the treatment chosen for patients best aligns with their values and preferences.

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EDITORIAL COMMENT

The management of patients with prostate cancer, in contrast to that of most other neoplasms is somewhat unique in that care of patients is typically overseen to a variable degree by a variety of different clinicians including urologists, radiation, and medical oncologists over a disease course that may extend over many years.

Over the past 5-10 years, a number of important therapeutic developments in metastatic castration-resistant prostate cancer have led to a more complex clinical management landscape. Several recent clinical trials have provided evidence that earlier use of next-generation androgen receptor targeted agents such as abiraterone, enzalutamide, apalutamide, and likely darolutamide in the hormone sensitive and PSA only castration resistant setting improve overall survival and metastases free survival respectively.

In the current report which covers the period between 2013 and 2016 the investigators find that the number of urologists prescribing both enzalutamide and abiraterone increased over time and that the number of moderate-high prescribers (≥10 prescriptions/year) increased, with the bulk of these being members of single-specialty groups. They also note that the majority of urologists who prescribe these agents are low volume prescribers (at least 1 but ≤10/year).

What are the implications of this observation? It is clear that more urologists, especially those members of single specialty groups are gaining experience in the management of these agents and with emerging data for their applications earlier in the disease course are well positioned to manage their patients. While seamless management of patients with advanced prostate cancer is an excellent goal, a note of caution is warranted. As our understanding of the disease biology increases, the complexity involved in making optimal management decisions is rapidly changing. The evolving role of genomics, management of drug toxicity especially in men on multiple medications, appreciation of drug crossresistance, and the changing therapeutic landscape requires more of clinicians than simply understanding how to administer one of these drugs.

Many of the patients appropriate for these agents are perhaps in the clinical state increasingly referred to as "oligometastatic." While there is no defined standard of care, we will be increasingly challenged to determine optimal use and interpretation of next-generation imaging and making management decisions which will have significant impact on our patients.

All of the myriad of issues noted above require that clinicians managing these patients through this part of the disease continuum have the background, training, and skills commensurate with the task. As the authors note in their conclusions and as expressed by many leaders in uro-oncology, irrespective of the clinician's specialty, our patients are optimally served by whomever has the appropriate training, skills, and dedication to maintain competency in the management of patients with this complex disease.

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EDITORIAL COMMENT

The treatment options for metastatic prostate cancer have increased dramatically over the past decade, including novel hormonal therapies, chemotherapies, and radiopharmaceuticals. The administration of myelosuppressive chemotherapies has generally been supervised by medical oncologists in the United States. The oversight of oral agents such as abiraterone + prednisone (abi) and enzalutamide (enza) has been less well defined. This issue of the *Gold Journal* describes the increasing role of urologists in prescribing these agents. By searching Medicare prescription databases, the authors describe the number of moderate to high urologist prescribers for either abi or enza or both have increased substantially between 2013 and 2016.

How should we react to the increasing role of urologists in prescribing systemic therapies for advanced prostate cancer? The authors present several positive aspects of this trend, most notably, the longitudinal involvement of urologists in their patient's care. However, we wish to raise several concerns from a medical oncology viewpoint.

First, are urologists trained to guide castration resistant patients through the myriad options, including systemic therapies that often require extensive training so common in medical oncology fellowships? Distinctions between "high-volume" vs "low-volume," disease, appropriate use of both emerging, and novel diagnostic and molecular/genomic entities to help guide therapy, de novo vs recurrent disease are complex, and even the general medical oncologist may best understand them only after treating a large patient population with castration-resistant metastatic disease.

Second, do urologists adhere to best practices for prescribing and monitoring these medications? Abi requires concomitant prednisone, and typical monitoring includes frequent assessments of blood pressure, potassium, and liver function tests, with careful dose modifications or treatment holds as needed. In response to abi-induced hypertension, physicians might increase prednisone or prescribe a mineralocorticoid receptor antagonist. Baseline antihypertensive medications often require ongoing dose adjustments. Prednisone may require additional management of underlying diabetes mellitus and dose escalations when patients experience more stressful medical conditions.

Enzalutamide poses an additional set of adverse event monitoring not generally managed by urology. It is a significant inducer of CYP3A4 metabolism. Patients are frequently receiving direct oral anticoagulants or transdermal fentanyl, both substantially affected by the addition of enza. This requires decisions on usage of substitute drugs, which in turn requires a detailed knowledge of indications for anticoagulation and pain management.

Third, are urologists adhering to other best practices for advanced cancer patients? Management should include bone-protective agents in the castration-resistant setting, genetic counseling, and concurrent palliative care with cancer therapies, all of which are now established in guidelines.

Finally, are urologists prepared to adopt the substantial burden of insurance prior authorizations and patient-assistance fund applications for these extremely expensive medications? Medical oncology practices face such issues for these and other cancer therapies, often requiring dedicated staff.

Future research should address these concerns; meanwhile, urologists should involve a medical oncologist (ideally a genitourinary specialist) in the management of these complex therapies and "not go it alone." Through such a collaborative effort, patients will be positioned to receive the best, safest, and most comprehensive cancer care possible.

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