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NEWS RELEASE

Johnson & Johnson's Phase 3 prostate cancer study shows ERLEADA® (apalutamide) before and after surgery significantly reduces risk of metastasis or death, breaking a decades-long treatment paradigm

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- Patients were nine times more likely to have little to no cancer remaining in the prostate after surgery, with a 20% reduction in the risk of developing metastasis or death
- Data selected to open the plenary presentation at ASCO 2026 and published in The New England Journal of Medicine

CHICAGO, May 31, 2026 /PRNewswire/ -- Johnson & Johnson (NYSE:JNJ) today announced results from the final analysis of the Phase 3 PROTEUS study showing the investigational use of apalutamide plus hormone therapy (androgen deprivation therapy, ADT), given for six months before and after prostate cancer surgery, significantly improved key short- and long-term clinical outcomes for patients with high-risk localized or locally advanced disease. The trial met both primary endpoints. Patients treated with apalutamide plus hormone therapy were nine times more likely to have little to no cancer remaining at the time of surgery compared with hormone therapy alone (8.9 percent vs. 1.0 percent; pathologic complete response/minimal residual disease). The combination also reduced the risk of developing metastasis or death by 20 percent and extended the time before patients required subsequent therapy to more than six years. These findings will be presented in a plenary session at the 2026 American Society of Clinical Oncology (ASCO) Annual Meeting (Oral Abstract #LBA1) and **published** simultaneously in The New England Journal of Medicine.[1,2]

The unmet need with standard treatments for patients with high-risk localized prostate cancer

Surgery to remove the prostate (radical prostatectomy) is one of the standard treatments for patients with high-risk localized or locally advanced disease, alongside radiation therapy.[3,4] Yet nearly half of patients who undergo curative-intent surgery will see their cancer return, requiring additional treatment and moving beyond the point where cure is possible.[5,6,7] Additional therapies are often used only after the cancer has spread, missing a critical window to intervene earlier and improve long-term outcomes.[8]

Apalutamide blocks androgen hormones from binding to their receptor, which can help slow prostate cancer progression. It is currently approved for use in advanced prostate cancer, including cases where the disease has spread (metastatic castration-sensitive) or is no longer responding to certain hormone therapies (non-metastatic castration-resistant prostate cancer).[9]

Expert perspectives on the perioperative use of ERLEADA® plus hormone therapy six months before and after prostate cancer surgery

"Reducing the risk of prostate cancer recurrence and death with improved initial treatment regimens has been a longstanding unmet need for patients with localized high-risk prostate cancer," said Mary-Ellen Taplin,* M.D., FASCO, medical oncologist at Dana-Farber Cancer Institute and Harvard Medical School, and principal investigator. "The PROTEUS trial demonstrates that adding preoperative apalutamide to androgen deprivation therapy and surgery reduced the risk of metastases or death by 20 percent. This result is most impactful as it may reduce the need for subsequent therapies and related side effects, while also increasing potential cure rates. This approach, which combines systemic therapy with surgery, is already standard in other aggressive cancers and now has proven benefit in patients with this disease."

"For decades, surgery has been the standard approach for many patients with high-risk localized or locally advanced prostate cancer, but these data suggest it may not be enough on its own," said Adam Kibel,† M.D., urologic surgeon and chair of the Department of Urology at Mass General Brigham. "Earlier integration of apalutamide has the potential to reshape how prostate cancer is treated by building on curative-intent surgical treatment and improving outcomes for these patients."

Detailed PROTEUS study results

PROTEUS is a Phase 3 study evaluating apalutamide, an androgen receptor pathway inhibitor, combined with hormone therapy before and after surgery in patients with newly diagnosed high-risk localized or locally advanced prostate cancer (n=2109). The dual primary endpoints were the amount of cancer remaining at surgery (pathologic complete response/minimal residual disease, pCR/MRD) and how long patients lived without the cancer spreading (metastasis-free survival, MFS), both assessed by blinded independent central review.[1]

At a median follow-up of 61.7 months, apalutamide plus hormone therapy met both primary endpoints. The rate of pCR/MRD was 8.9 percent with apalutamide plus hormone therapy versus 1.0 percent with hormone therapy alone (odds ratio [OR], 10.17; 95 percent confidence interval [CI], 5.27-19.64; p<0.0001). Apalutamide plus hormone therapy also demonstrated a statistically significant 20 percent reduction in the risk of metastasis or death (hazard ratio [HR], 0.80; 95 percent CI, 0.67-0.96; p=0.02), with five-year rates of 78.2 percent versus 73.5 percent, respectively. Similar metastasis-free survival results were observed in investigator assessments (HR, 0.74; 95 percent CI, 0.62-0.87; p=0.0004).[1]

Key secondary endpoints also showed statistically significant and clinically relevant improvement, reinforcing the benefit of the combination across multiple measures of disease control. Notably, patients receiving one year of apalutamide plus hormone therapy before and after surgery went more than six years before needing subsequent therapy, compared to approximately three and a half years with hormone therapy alone (74.2 vs. 41.5 months; HR, 0.65; 95 percent CI, 0.57-0.73; p<0.0001). Most patients also recovered adequate testosterone levels within 8.1 months. Additional benefits included a 29 percent reduction in the risk of disease recurrence or death (event-free survival; HR, 0.71; 95 percent CI, 0.63-0.80; p<0.0001) and improvements in time to distant metastasis (HR, 0.68; 95 percent CI, 0.55-0.83; p=0.0002). Improvements were also seen in MRD as assessed by residual cancer burden rates (30.6 percent vs. 11.7 percent; OR, 3.36; 95 percent CI, 2.67-4.23; nominal p<0.0001), further supporting the depth of response.[1]

The safety profile of apalutamide plus hormone therapy was consistent with previous studies. The most common adverse events among patients receiving apalutamide included hot flush (63.4 percent), urinary incontinence (50.2 percent) and erectile dysfunction (41.6 percent). Grade 3 or 4 adverse events occurred in 39.6 percent of patients treated with apalutamide plus hormone therapy, compared to 31.0 percent of those receiving hormone therapy alone. Discontinuations due to adverse events occurred in 7.4 percent and 2.7 percent of patients, respectively. Adverse events of special interest were generally comparable between treatment arms, with a higher incidence of skin rash observed with apalutamide. Rates of deaths were similar between treatment arms. In the apalutamide arm, deaths were more often unrelated to prostate cancer, while in the placebo arm, deaths were more frequently associated with disease progression or metastasis.[1]

"These findings point to a new potential way of treating patients with high-risk localized or locally advanced prostate cancer," said Yusri Elsayed, M.D., M.H.Sc., Ph.D., Global Therapeutic Area Head, Oncology, Johnson & Johnson. "Apalutamide has already shown an overall survival benefit in advanced disease. Now we're seeing its impact when used earlier, alongside surgery. As the first therapy in its class to show benefit in this setting, these data reinforce apalutamide's differentiated profile and the need to move beyond a surgery–only approach to treating earlier and improving long–term outcomes."

Ongoing study of ERLEADA® in this setting

Apalutamide plus hormone therapy has not yet been approved by regulatory authorities in this setting. Additional analyses from the PROTEUS study, including ongoing evaluations against current standards of care such as surgery alone, are underway to further contextualize these findings and inform future treatment approaches.

About the PROTEUS study

PROTEUS (**NCT03767244**) is a randomized, double-blind, placebo-controlled Phase 3 study evaluating apalutamide in combination with androgen deprivation therapy (ADT) in patients with high-risk localized or locally advanced prostate cancer who are candidates for radical prostatectomy. Approximately 2,000 patients were enrolled and randomized to receive apalutamide or placebo, each in combination with ADT, administered before and after radical prostatectomy with pelvic lymph node dissection. Patients with distant metastatic disease, as determined by conventional imaging, were excluded from the study.[10]

Apalutamide was administered orally at 240 mg once daily. All study participants underwent protocol-defined surgery and were followed for long-term outcomes, including recurrence and progression. The dual primary endpoints of the study are pathologic complete response (pCR) and metastasis-free survival (MFS), with pCR assessed by blinded independent central pathology review and MFS assessed by blinded independent central radiology review.[10]

About High-Risk Localized or Locally Advanced Prostate Cancer

Approximately 330,000 people are diagnosed with prostate cancer each year in the U.S.[11] Up to 40 percent of patients will be classified as high-risk.[12] Despite advancements in treatment, disease recurrence remains substantial in patients with high-risk localized or locally advanced prostate cancer; up to 50 percent of patients within five years of surgery experience recurrence and carry a significant risk of disease progression and death.[5,6] It's estimated that more than 36,000 patients will succumb to prostate cancer in 2026, which reinforces the importance of choosing the best possible therapy early for patients with advanced prostate cancer.[8,12]

About ERLEADA®

ERLEADA® (apalutamide) is an androgen receptor inhibitor indicated for the treatment of patients with non-metastatic castration-resistant prostate cancer (nmCRPC) and for the treatment of patients with metastatic castration-sensitive prostate cancer (mCSPC). ERLEADA® **received** U.S. Food and Drug Administration (FDA) approval for nmCRPC in February 2018 and **received** U.S. FDA approval for mCSPC in September 2019. To date, more than 340,000 patients worldwide have been treated with ERLEADA®.[9] Additional studies are ongoing to

evaluate ERLEADA® in earlier stages of prostate cancer, including high-risk localized and locally advanced disease.

The legal manufacturer for ERLEADA® is Janssen Biotech, Inc. For more information, visit **www.ERLEADAHCP.com**.

INDICATIONS

ERLEADA® (apalutamide) is an androgen receptor inhibitor indicated for the treatment of patients with:

- Metastatic castration-sensitive prostate cancer (mCSPC)
- Non-metastatic castration-resistant prostate cancer (nmCRPC)

ERLEADA® IMPORTANT SAFETY INFORMATION[9]

WARNINGS AND PRECAUTIONS

Cerebrovascular and Ischemic Cardiovascular Events, including events leading to death, occurred in patients receiving ERLEADA. Monitor for signs and symptoms of ischemic heart disease and cerebrovascular disorders. Optimize management of cardiovascular risk factors, such as hypertension, diabetes, or dyslipidemia. Consider discontinuation of ERLEADA for Grade 3 and 4 events.

In a randomized study (SPARTAN) of patients with nmCRPC, ischemic cardiovascular events occurred in 3.7% of patients treated with ERLEADA and 2% of patients treated with placebo. In a randomized study (TITAN) in patients with mCSPC, ischemic cardiovascular events occurred in 4.4% of patients treated with ERLEADA and 1.5% of patients treated with placebo. Across the SPARTAN and TITAN studies, 4 patients (0.3%) treated with ERLEADA and 2 patients (0.2%) treated with placebo died from an ischemic cardiovascular event. Patients with history of unstable angina, myocardial infarction, congestive heart failure, stroke, or transient ischemic attack within 6 months of randomization were excluded from the SPARTAN and TITAN studies.

In the SPARTAN study, cerebrovascular events occurred in 2.5% of patients treated with ERLEADA and 1% of patients treated with placebo. In the TITAN study, cerebrovascular events occurred in 1.9% of patients treated with ERLEADA and 2.1% of patients treated with placebo. Across the SPARTAN and TITAN studies, 3 patients (0.2%) treated with ERLEADA and 2 patients (0.2%) treated with placebo died from a cerebrovascular event.

Fractures occurred in patients receiving ERLEADA. Evaluate patients for fracture risk. Monitor and manage patients at risk for fractures according to established treatment guidelines and consider use of bone-targeted agents.

In a randomized study (SPARTAN) of patients with nmCRPC, fractures occurred in 12% of patients treated with

ERLEADA and in 7% of patients treated with placebo. In a randomized study (TITAN) of patients with mCSPC, fractures occurred in 9% of patients treated with ERLEADA and in 6% of patients treated with placebo.

Falls occurred in patients receiving ERLEADA with increased frequency in the elderly. Evaluate patients for fall risk.

In a randomized study (SPARTAN), falls occurred in 16% of patients treated with ERLEADA compared with 9% of patients treated with placebo. Falls were not associated with loss of consciousness or seizure.

Seizure occurred in patients receiving ERLEADA. Permanently discontinue ERLEADA in patients who develop a seizure during treatment. It is unknown whether anti-epileptic medications will prevent seizures with ERLEADA. Advise patients of the risk of developing a seizure while receiving ERLEADA and of engaging in any activity where sudden loss of consciousness could cause harm to themselves or others.

In two randomized studies (SPARTAN and TITAN), five patients (0.4%) treated with ERLEADA and one patient treated with placebo (0.1%) experienced a seizure. Seizure occurred from 159 to 650 days after initiation of ERLEADA. Patients with a history of seizure or, predisposing factors for seizure, or receiving drugs known to decrease the seizure threshold or to induce seizure were excluded. There is no clinical experience in re-administering ERLEADA to patients who experienced a seizure.

Severe Cutaneous Adverse Reactions — Fatal and life-threatening cases of severe cutaneous adverse reactions (SCARs), including Stevens–Johnson syndrome/toxic epidermal necrolysis (SJS/TEN), and drug reaction with eosinophilia and systemic symptoms (DRESS) occurred in patients receiving ERLEADA.

Monitor patients for the development of SCARs. Advise patients of the signs and symptoms of SCARs (eg, a prodrome of fever, flu-like symptoms, mucosal lesions, progressive skin rash, or lymphadenopathy). If a SCAR is suspected, interrupt ERLEADA until the etiology of the reaction has been determined. Consultation with a dermatologist is recommended. If a SCAR is confirmed, or for other Grade 4 skin reactions, permanently discontinue ERLEADA [see Dosage and Administration (2.2)].

Interstitial Lung Disease (ILD)/Pneumonitis — Fatal and life-threatening interstitial lung disease (ILD) or pneumonitis can occur in patients treated with ERLEADA.

Post-marketing cases of ILD/pneumonitis, including fatal cases, occurred in patients treated with ERLEADA. Across clinical trials (TITAN and SPARTAN, n=1327), 0.8% of patients treated with ERLEADA experienced ILD/pneumonitis, including 0.2% who experienced Grade 3 events [see Adverse Reactions (6.1, 6.2)].

Monitor patients for new or worsening symptoms indicative of ILD/pneumonitis (eg, dyspnea, cough, fever).

Immediately withhold ERLEADA if ILD/pneumonitis is suspected.

Permanently discontinue ERLEADA in patients with severe ILD/pneumonitis or if no other potential causes of ILD/pneumonitis are identified [see Dosage and Administration (2.2)].

Embryo-Fetal Toxicity — The safety and efficacy of ERLEADA have not been established in females. Based on findings from animals and its mechanism of action, ERLEADA can cause fetal harm and loss of pregnancy when administered to a pregnant female. Advise males with female partners of reproductive potential to use effective contraception during treatment and for 3 months after the last dose of ERLEADA [see Use in Specific Populations (8.1, 8.3)].

ADVERSE REACTIONS

The most common adverse reactions (≥10%) that occurred more frequently in the ERLEADA-treated patients (≥2% over placebo) from the randomized placebo-controlled clinical trials (TITAN and SPARTAN) were fatigue, arthralgia, rash, decreased appetite, fall, weight decreased, hypertension, hot flush, diarrhea, and fracture.

Laboratory Abnormalities — All Grades (Grade 3-4)

- Hematology — In the TITAN study: white blood cell decreased ERLEADA 27% (0.4%), placebo 19% (0.6%). In the SPARTAN study: anemia ERLEADA 70% (0.4%), placebo 64% (0.5%); leukopenia ERLEADA 47% (0.3%), placebo 29% (0%); lymphopenia ERLEADA 41% (1.8%), placebo 21% (1.6%)
- Chemistry — In the TITAN study: hypertriglyceridemia ERLEADA 17% (2.5%), placebo 12% (2.3%). In the SPARTAN study: hypercholesterolemia ERLEADA 76% (0.1%), placebo 46% (0%); hyperglycemia ERLEADA 70% (2%), placebo 59% (1.0%); hypertriglyceridemia ERLEADA 67% (1.6%), placebo 49% (0.8%); hyperkalemia ERLEADA 32% (1.9%), placebo 22% (0.5%)

Rash — In 2 randomized studies (SPARTAN and TITAN), rash was most commonly described as macular or maculopapular. Adverse reactions of rash were 26% with ERLEADA vs 8% with placebo. Grade 3 rashes (defined as covering >30% body surface area [BSA]) were reported with ERLEADA treatment (6%) vs placebo (0.5%).

The onset of rash occurred at a median of 83 days. Rash resolved in 78% of patients within a median of 78 days from onset of rash. Rash was commonly managed with oral antihistamines and topical corticosteroids, and 19% of patients received systemic corticosteroids. Dose reduction or dose interruption occurred in 14% and 28% of patients, respectively. Of the patients who had dose interruption, 59% experienced recurrence of rash upon reintroduction of ERLEADA.

Hypothyroidism — In 2 randomized studies (SPARTAN and TITAN), hypothyroidism was reported for 8% of patients treated with ERLEADA and 1.5% of patients treated with placebo based on assessments of thyroid-stimulating hormone (TSH) every 4 months. Elevated TSH occurred in 25% of patients treated with ERLEADA and 7% of patients treated with placebo. The median onset was at the first scheduled assessment. There were no Grade 3 or 4 adverse reactions. Thyroid replacement therapy, when clinically indicated, should be initiated or dose adjusted.

DRUG INTERACTIONS

Effect of Other Drugs on ERLEADA

ERLEADA Strong CYP2C8 or CYP3A4 Inhibitors

Reduce the ERLEADA dose as recommended for adverse reactions [see Dosage and Administration (2.2)]. Co-administration of a strong CYP2C8 or CYP3A4 inhibitor is predicted to increase the steady–state exposure of the active moieties (sum of unbound apalutamide plus the potency–adjusted unbound N-desmethyl-apalutamide).

Effect of ERLEADA on Other Drugs

Substrates of CYP3A4, CYP2C9, CYP2C19, P-gp, BCRP, or OATP1B1

Refer to the Prescribing Information for these substrates. Consider alternative agents when possible or evaluate for loss of activity of the substrate if concomitant use cannot be avoided.

- Apalutamide is a strong inducer of CYP3A4 and CYP2C19, a weak inducer of CYP2C9, and an inducer of P-gp, BCRP, and OATP1B1. Apalutamide decreases exposure of substrates of CYP3A4, CYP2C19, CYP2C9, P-gp, BCRP, or OATP1B [see Clinical Pharmacology (12.3)], which may decrease the effectiveness of these substrates.

USE IN SPECIFIC POPULATIONS

The recommended ERLEADA dosage in patients with (Child-Pugh C) is lower than the recommended dosage in patients with normal hepatic function. No dosage modification is recommended for patients with mild (Child-Pugh A) or moderate (Child-Pugh B) hepatic impairment.

Please see full **Prescribing Information** for ERLEADA.

About Johnson & Johnson

At Johnson & Johnson, we believe health is everything. Our strength in healthcare innovation empowers us to build a world where complex diseases are prevented, treated, and cured, where treatments are smarter and less invasive, and solutions are personal. Through our expertise in Innovative Medicine and MedTech, we are uniquely positioned to innovate across the full spectrum of healthcare solutions today to deliver the breakthroughs of tomorrow and profoundly impact health for humanity. Learn more at **https://www.jnj.com/** or at **www.innovativemedicine.jnj.com**. Follow us at **@JNJInnovMed**.

Cautions Concerning Forward-Looking Statements

This press release contains "forward-looking statements" as defined in the Private Securities Litigation Reform Act of 1995 regarding product development and the potential benefits and treatment impact of ERLEADA® (apalutamide). The reader is cautioned not to rely on these forward-looking statements. These statements are based on current expectations of future events. If underlying assumptions prove inaccurate or known or unknown risks or uncertainties materialize, actual results could vary materially from the expectations and projections of Johnson & Johnson. Risks and uncertainties include, but are not limited to: challenges and uncertainties inherent in product research and development, including the uncertainty of clinical success and of obtaining regulatory approvals; uncertainty of commercial success; manufacturing difficulties and delays; competition, including technological advances, new products and patents attained by competitors; challenges to patents; product efficacy or safety concerns resulting in product recalls or regulatory action; changes in behavior and spending patterns of purchasers of health care products and services; changes to applicable laws and regulations, including global health care reforms; and trends toward health care cost containment. A further list and descriptions of these risks, uncertainties and other factors can be found in Johnson & Johnson's most recent Annual Report on Form 10-K, including in the sections captioned "Cautionary Note Regarding Forward-Looking Statements" and "Item 1A. Risk Factors," and in Johnson & Johnson's subsequent Quarterly Reports on Form 10-Q and other filings with the Securities and Exchange Commission. Copies of these filings are available online at **www.sec.gov**, **www.jnj.com**, **www.investor.jnj.com** or on request from Johnson & Johnson. Johnson & Johnson does not undertake to update any forward-looking statement as a result of new information or future events or developments.

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*Dr. Taplin has provided consulting, advisory, and speaking services to Johnson & Johnson; she has not been paid

for any media work.

†Dr. Kibel has provided consulting, advisory, and speaking services to Johnson & Johnson; he has not been paid for any media work.

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[1] Taplin, M. et. al. Perioperative (neoadjuvant and adjuvant) apalutamide (APA) + androgen deprivation therapy (ADT) vs placebo (PBO) + ADT with radical prostatectomy (RP) in high-risk localized or locally advanced prostate cancer (HR LPC/LAPC): Final analysis of the PROTEUS phase 3 study. Presented at: 2026 American Society of Clinical Oncology (ASCO); May 31, 2026; Chicago.

[2] Taplin ME, Gleave M, Shore ND, et al. Perioperative Apalutamide in High-Risk Localized Prostate Cancer. N Engl J Med. 2026. doi:10.1056/NEJMoa2603878.

[3] Young HH. The early diagnosis and radical cure of carcinoma of the prostate. Being a study of 40 cases and presentation of a radical operation which was carried out in four cases. 1905. J Urol. 2002;168:914-21. doi:10.1016/s0022-5347(05)64542-9

[4] Cooley LF, Shore ND. Historic progression of prostatectomy techniques and associated outcomes. Transl Androl Urol. 2025;14:493-495. doi: 10.21037/tau-2025-3

[5] Eiber M, et al. PHAROS, a real-world multi-country European study on patients with high-risk localised and locally advanced prostate cancer receiving radical treatment. J Clin Oncol. 2024;42:5024. DOI: 10.1200/JCO.2024.42.16_suppl.502

[6] Stattin P, et al. Population-based study of disease trajectory after radical treatment for high-risk prostate cancer. BJU Int. 2024;134:96-102. **doi.org/10.1111/bju.16362**

[7] National Comprehensive Cancer Network. NCCN clinical practice guidelines in oncology: prostate cancer. Version 5.2026. Accessed May 2026. **https://www.nccn.org**.

[8] American Cancer Society. Initial treatment of prostate cancer, by stage and risk group. Accessed May 2026. **https://www.cancer.org/cancer/types/prostate-cancer/treating/by-stage.html**

[9] ERLEADA® U.S. Prescribing Information. Horsham, PA: Janssen Biotech, Inc.

[10] ClinicalTrials.gov. A Study of Apalutamide in Participants With High-Risk, Localized or Locally Advanced Prostate

Cancer Who Are Candidates for Radical Prostatectomy (PROTEUS). Available at: **https://clinicaltrials.gov/ct2/show/NCT04077463**. Accessed May 2026.

[11] American Cancer Society. Key statistics for prostate cancer. Accessed May 2026. **https://www.cancer.org/cancer/types/prostate-cancer/about/key-statistics.html**

[12] Napodano G, Ferro M, Sanseverino R. High-risk prostate cancer: A very challenging disease in the field of uro-oncology. Diagnostics (Basel). 202126;11(3):400. doi:10.3390/diagnostics11030400

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