

NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Health Technology Appraisal

¹⁷⁷Lu vipivotide tetraxetan for treating PSMA-positive hormone-relapsed metastatic prostate cancer after 2 or more therapies

Final scope

Draft remit/appraisal objective

To appraise the clinical and cost effectiveness of ¹⁷⁷Lu vipivotide tetraxetan within its marketing authorisation for treating previously treated prostate-specific membrane antigen (PSMA) positive, hormone-relapsed metastatic prostate cancer.

Background

Prostate cancer is a condition in which tumours develop in the prostate, a gland in the male reproductive system. The exact cause is unknown but environmental and genetic factors are associated with an increased risk of developing prostate cancer.^{1,2}

The incidence of prostate cancer increases with age and is higher in people of black African family origin and people with a family history of the condition.¹ In England between April 2018 and April 2019, around 52,580 people were diagnosed with prostate cancer and in 2018 10,068 died from the condition.^{3,4} Around 13% had metastatic disease, that is disease that has spread to other parts of the body (for example, the bones).⁴

Prostate cancers can highly express a transmembrane protein called prostate-specific membrane antigen (PSMA). PSMA expression is further increased in poorly differentiated, metastatic, and hormone-refractory prostate cancers.⁵

NICE clinical guideline 131 recommends androgen deprivation therapy (luteinising hormone-releasing hormone agonist therapy, bicalutamide or bilateral orchidectomy) for people whose prostate cancer is sensitive to such hormonal therapy. Docetaxel can be added to luteinising hormone-releasing hormone agonist therapy. Enzalutamide with androgen deprivation therapy is recommended for treating hormone-sensitive metastatic prostate cancer (TA712). Apalutamide with androgen deprivation therapy is recommended for treating hormone-sensitive metastatic prostate cancer (TA741).

Hormone-relapsed prostate cancer (also known as hormone-resistant, hormone-refractory, and castration-resistant) refers to prostate cancer which has progressed on androgen deprivation therapy. Darolutamide with androgen deprivation therapy is recommended for treating hormone-relapsed non-metastatic prostate cancer (TA660). Apalutamide with androgen deprivation therapy is recommended for treating high-risk hormone-relapsed non-metastatic prostate cancer (TA740). Similarly, enzalutamide is recommended for treating high-risk hormone-relapsed non-metastatic prostate cancer (TA580). Abiraterone in combination with prednisone or prednisolone is recommended for treating metastatic hormone-relapsed prostate cancer in people who have no or mild symptoms after androgen deprivation therapy has failed, and before chemotherapy is indicated (TA387). Similarly, enzalutamide is

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Issue Date: September 2022

Page 1 of 6

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recommended for treating metastatic hormone-relapsed prostate cancer in people who have no or mild symptoms after androgen deprivation therapy has failed, and before chemotherapy is indicated (TA377).

NICE guideline 131 and TA101 recommends chemotherapy (docetaxel) as a treatment option for people with metastatic hormone-relapsed prostate cancer if their Karnofsky performance-status score is 60% or more.

Abiraterone in combination with prednisone or prednisolone and enzalutamide are also recommended for metastatic hormone-relapsed prostate cancer if it has progressed on a docetaxel-containing chemotherapy regimen (TA259 and TA316 respectively).

Radium-223 dichloride is recommended for treating hormone-relapsed prostate cancer with bone metastases in people who already had a docetaxel, or for whom docetaxel is contraindicated or unsuitable (TA412).

Cabazitaxel in combination with prednisone or prednisolone is recommended as an option for treating metastatic hormone-relapsed prostate cancer in people whose disease has progressed during or after docetaxel therapy (TA391).

The technology

¹⁷⁷Lu vipivotide tetraxetan (Pluvicto, Advanced Accelerator Applications) is a human PSMA targeted ligand that is conjugated to the beta-emitting radioisotope lutetium (¹⁷⁷Lu). It is delivered by intravenous infusion. It works by releasing an energetic beta particle to precisely deliver radiation to kill prostate cancer cells. ¹⁷⁷Lu vipivotide tetraxetan can be administered by intravenous infusion or injection.

¹⁷⁷Lu vipivotide tetraxetan has a marketing authorisation and is indicated for ‘the treatment of adult patients with prostate-specific membrane antigen (PSMA)-positive metastatic castration-resistant prostate cancer (mCRPC) who have been treated with androgen receptor pathway inhibition and taxane-based chemotherapy or who are not medically suitable for taxanes.’

Intervention(s)	Lutetium-177 prostate-specific membrane antigen-617 (¹⁷⁷ Lu vipivotide tetraxetan)
Population(s)	Adults with prostate-specific membrane antigen (PSMA) positive, hormone-relapsed metastatic prostate cancer who have previously had an androgen receptor pathway inhibitor and taxane based chemotherapy, or those who have had an androgen receptor pathway inhibitor but for whom taxanes are not suitable

Comparators	<ul style="list-style-type: none"> • Cabazitaxel • Docetaxel (for people who have had docetaxel in combination with ADT previously) • Radium-223 dichloride (for people with bone metastases) • Best supportive care <p>The different positions that these comparators could be used in the treatment pathway will be considered in the appraisal.</p>
Outcomes	<p>The outcome measures to be considered include:</p> <ul style="list-style-type: none"> • progression free survival • overall survival • time to a first symptomatic skeletal event • adverse effects of treatment • health-related quality of life.
Economic analysis	<p>The reference case stipulates that the cost effectiveness of treatments should be expressed in terms of incremental cost per quality-adjusted life year.</p> <p>The reference case stipulates that the time horizon for estimating clinical and cost effectiveness should be sufficiently long to reflect any differences in costs or outcomes between the technologies being compared.</p> <p>Costs will be considered from an NHS and Personal Social Services perspective. Diagnostic costs associated with ¹⁷⁷Lu vipivotide tetraxetan will be included.</p> <p>The availability of any commercial arrangements for the intervention, comparator and subsequent treatment technologies will be taken into account. The availability of any managed access arrangement for the intervention will be taken into account.</p>
Other considerations	<p>Guidance will only be issued in accordance with the marketing authorisation. Where the wording of the therapeutic indication does not include specific treatment combinations, guidance will be issued only in the context of the evidence that has underpinned the marketing authorisation granted by the regulator.</p>
Related NICE recommendations and NICE Pathways	<p>Related Technology Appraisals:</p> <p>Apalutamide with androgen deprivation therapy for treating hormone-sensitive metastatic prostate cancer (2021) NICE technology appraisal guidance 741</p>

	<p>Apalutamide for treating non-metastatic hormone-sensitive prostate cancer (2021) NICE technology appraisal guidance 740</p> <p>Abiraterone for treating newly diagnosed high-risk metastatic hormone-naive prostate cancer (2021) NICE technology appraisal guidance 721</p> <p>Enzalutamide with androgen deprivation therapy for untreated metastatic hormone-sensitive prostate cancer (2021) NICE technology appraisal guidance 712</p> <p>Darolutamide with androgen deprivation therapy for treating hormone-relapsed non-metastatic prostate cancer (2020) NICE technology appraisals guidance 660</p> <p>Enzalutamide for hormone-relapsed non-metastatic prostate cancer (2019) NICE technology appraisal guidance 580</p> <p>Radium-223 dichloride for treating hormone-relapsed prostate cancer with bone metastases (2016) NICE technology appraisal guidance 412</p> <p>Cabazitaxel for hormone-relapsed metastatic prostate cancer treated with docetaxel (2016) NICE technology appraisal guidance 391</p> <p>Abiraterone for treating metastatic hormone-relapsed prostate cancer before chemotherapy is indicated (Last updated 2016) NICE technology appraisal guidance 387</p> <p>Enzalutamide for treating metastatic hormone-relapsed prostate cancer before chemotherapy is indicated (2016) NICE technology appraisal guidance 377</p> <p>Abiraterone for castration-resistant metastatic prostate cancer previously treated with a docetaxel-containing regimen (Last updated 2016) NICE technology appraisal guidance 259</p> <p>Enzalutamide for metastatic hormone-relapsed prostate cancer previously treated with a docetaxel-containing regimen (2014) NICE technology appraisal guidance 316</p> <p>Docetaxel for the treatment of hormone-refractory metastatic prostate cancer (2006) NICE technology appraisal guidance 101</p> <p>Appraisals in development (including suspended appraisals)</p> <p>Niraparib for previously treated hormone-relapsed metastatic prostate cancer with DNA-repair anomalies [ID3782]. NICE medical technologies guidance. Suspended</p>
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	<p>Apalutamide with abiraterone acetate and prednisone for treating metastatic hormone-relapsed prostate cancer. NICE technology appraisal guidance ID 1480. Publication date: TBC</p> <p>Nivolumab in combination for treating hormone-relapsed metastatic prostate cancer after chemotherapy NICE technology appraisal guidance ID 1621. Publication date: TBC</p> <p>Olaparib for previously treated, hormone-relapsed metastatic prostate cancer with homologous recombination repair gene mutations NICE technology appraisal guidance ID 1640. Publication date: TBC</p> <p>Related Guidelines:</p> <p>Prostate cancer: diagnosis and management (2019) NICE guideline 131</p> <p>Hormone-sensitive metastatic prostate cancer: docetaxel. (2016) NICE evidence summary 50</p> <p>Prostate cancer (2019) NICE pathway</p>
<p>Related National Policy</p>	<p>Department of Health (2009) Cancer commissioning guidance</p> <p>The NHS Long Term Plan, 2019. NHS Long Term Plan</p> <p>NHS England (2018/2019) NHS manual for prescribed specialist services (2018/2019)</p> <p>NHS England (2016) Clinical Commissioning Policy Statement: Docetaxel in combination with androgen deprivation therapy for the treatment of hormone naïve metastatic prostate cancer.</p>

References

1. Cancer Research UK (2020) [Prostate cancer risks and causes](#). Accessed April 2021.
2. Macmillan Cancer Support (2018) [Potential causes of prostate cancer](#). Accessed May 2021.
3. Cancer Research UK (2018) [Prostate cancer mortality statistics](#). Accessed April 2021.

4. National Prostate Cancer Audit (2021) [Annual Report 2020](#). Accessed May 2021
5. Bouchelouche K, Choyke PL, Capala J. Prostate specific membrane antigen- a target for imaging and therapy with radionuclides. *Discov Med*. 2010 Jan;9(44):55-61.