Presenting author: Valéry Risson | valery.risson@novartis.com

EE337

Cost-Effectiveness of [^{177}Lu]Lu-PSMA-617 in Patients With Progressive Metastatic Castration-Resistant Prostate Cancer

James Brockbank,[1] Hannah Hancock,[1] Ankur Khare,[2] Parth Joshi,[2] Valéry Risson[3]

[1]RTI Health Solutions, Manchester, United Kingdom; [2]Novartis Healthcare Private Limited, Hyderabad, India; [3]Novartis Pharma AG, Basel, Switzerland

KEY FINDINGS & CONCLUSIONS

- ^{177}Lu-PSMA-617 demonstrated substantial incremental QALY gains versus both cabazitaxel and SOC, and incremental costs at list price that resulted in ICERs above UK willingness-to-pay thresholds.
- ^{177}Lu-PSMA-617 is an innovative treatment that can improve survival outcomes alongside more tolerable side effects, and it represents a clinically significant advancement in the management of mCRPC patients with high medical unmet need.

This study is sponsored by Novartis Pharma AG, Basel, Switzerland
Poster presented at ISPOR Europe; 17-20 November 2024; Barcelona, Spain

INTRODUCTION

- Prostate cancer (PC) is the second most frequently diagnosed cancer in men, leading to approximately 397,000 annual deaths worldwide.[1]
- Most PC patients develop metastatic castration-resistant PC (mCRPC) with bone metastasis leading to symptomatic skeletal events (SSEs) associated with worsening quality of life, morbidity, and survival.[2]
- Patients with mCRPC who progress following first-line docetaxel, are not medically suitable for docetaxel, or have previously been treated with docetaxel for non-metastatic PC have limited remaining treatment options.
- [^{177}Lu]Lu-PSMA-617 (^{177}Lu-PSMA-617), a prostate-specific membrane antigen (PSMA)–targeted radioligand therapy, is a new treatment option for patients with progressive PSMA-positive mCRPC.
  - The phase 3 VISION trial showed that ^{177}Lu-PSMA-617 plus standard of care (SOC) significantly prolonged imaging-based radiographic progression-free survival (rPFS), overall survival (OS), time-to-first SSE, and time to worsening of health-related quality of life versus SOC.[3]
- The cost-effectiveness of ^{177}Lu-PSMA-617 compared with cabazitaxel and SOC was evaluated from the United Kingdom (UK) healthcare payer perspective.

METHODS

- A partitioned survival model was developed with 3 health states (progression free, progressed, and dead) to estimate costs and quality-adjusted life-years (QALYs) over a lifetime horizon (10 years) using a weekly cycle length.
  - Health-state occupancy was governed by rPFS and OS curves.
  - SSEs and treatment-emergent adverse events (AEs) were modelled, independent of health state.
- Patients (mean age = 70 years) received treatment with ^{177}Lu-PSMA-617 (up to 6 doses), cabazitaxel (up to 10 doses), or SOC; upon disease progression they could receive subsequent lines of anticancer therapy and supportive care.
- The VISION trial[3] was the primary source of efficacy and safety data for ^{177}Lu-PSMA-617 and SOC.
  - Various standard parametric and flexible models were fit to the observed rPFS, OS, and time-to-first SSE data to extrapolate over the model time horizon.
  - The base-case survival models were selected based on an assessment of visual fit and statistical fit to the trial data and a comparison of long-term extrapolations to external data and survival predictions elicited from clinical experts (Figure 1).
- Efficacy and safety data for cabazitaxel were informed by several sources.
  - A network meta-analysis, comprising 6 randomised controlled trials,[3-8] was performed to assess the relative efficacy of rPFS and OS; the rPFS fixed-effects hazard ratio was used in the base-case analysis (Figure 1).
  - Due to limitations with intertrial heterogeneity and the TheraP trial[9] not being powered to robustly investigate OS, an OS Kaplan-Meier curve for cabazitaxel derived from a real-world database analysis in the UK was used in the base-case analysis (Figure 1).
  - Safety data were taken from the CARD trial[4]; due to the similarity in SSE incidence to the VISION trial, time-to-first SSE was modelled to be the same as ^{177}Lu-PSMA-617.
- Treatment-specific health-state utility values applied in the base case were derived from EQ-5D-5L data collected in the VISION trial[3] and taken from NICE TA391[10] for cabazitaxel (post-progression only).
- Costs were captured for a diagnostic test for PSMA-screening, drug acquisition and administration, AE and SSE management, healthcare visits and disease monitoring, and terminal care.
  - Unit costs were sourced from standard UK sources with a 2020/2021 cost-year.

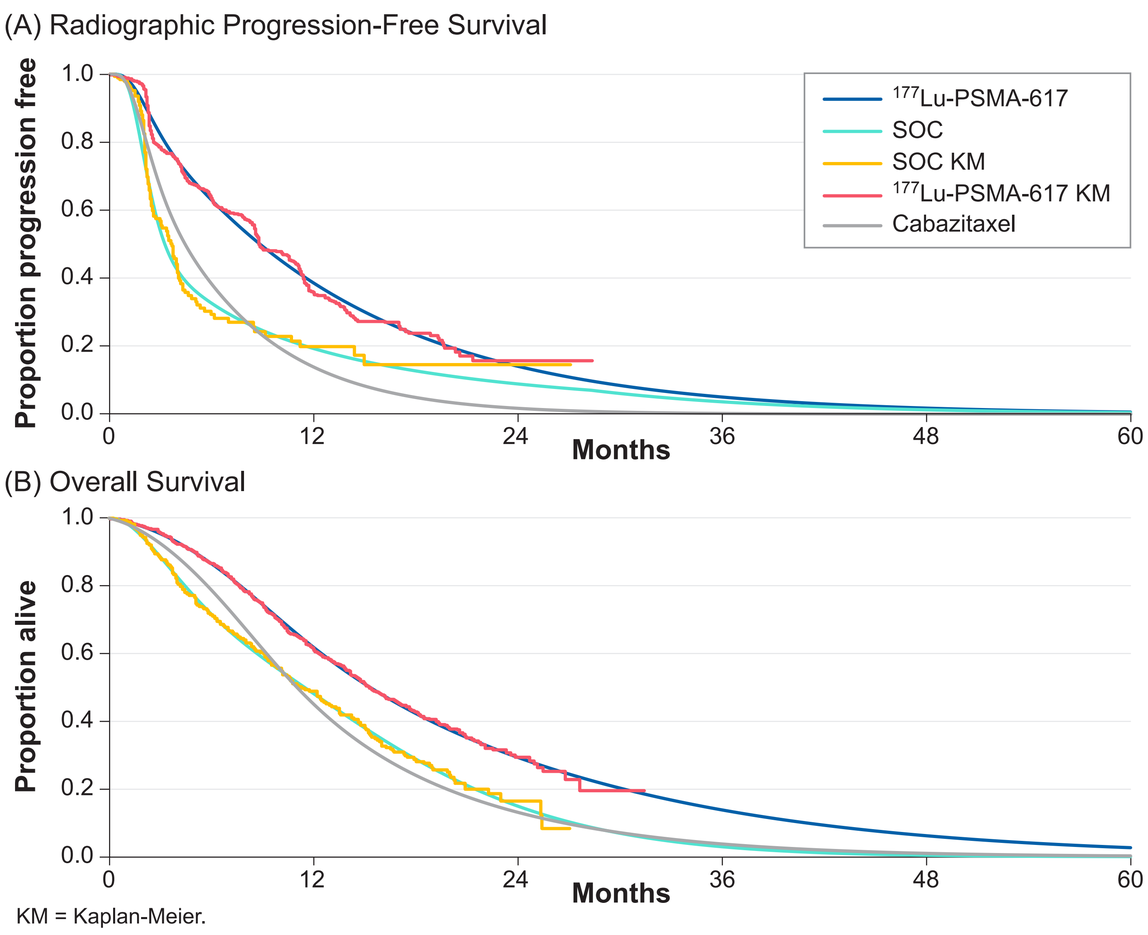
RESULTS

- The base-case deterministic results for pairwise comparisons are presented in Table 1.
- The base-case probabilistic results were similar; the cost-effectiveness planes are presented in Figure 2.
- One-way sensitivity and scenario analysis showed that the incremental cost-effectiveness ratios (ICERs) were most sensitive to methods used to model OS, the use of treatment-independent utilities, ^{177}Lu-PSMA-617 treatment exposure, and the application of concomitant treatments alongside ^{177}Lu-PSMA-617 (comparison with SOC only).

Table 1. Deterministic Base-Case Results

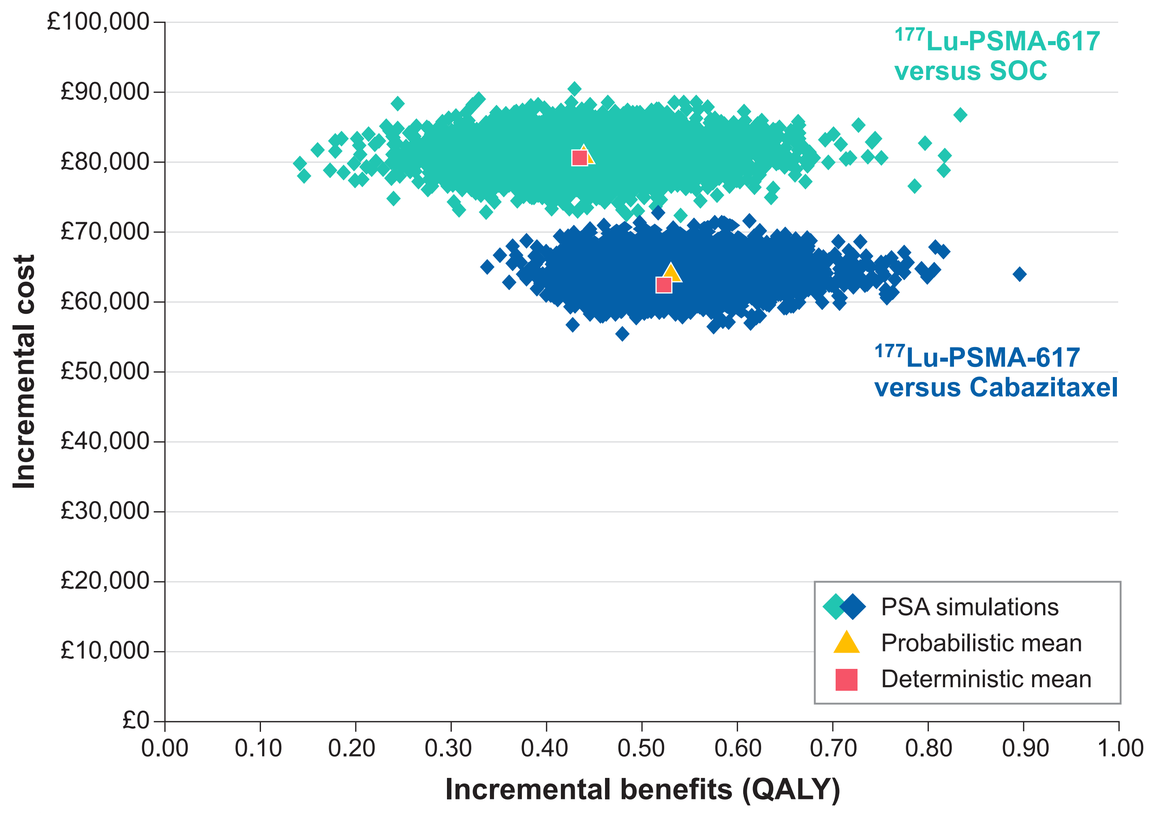
Treatment	Total cost (£)	Total QALYs	Incremental cost (£)	Incremental QALYs	ICER (£/QALY)
^{177}Lu-PSMA-617	110,010	1.15	–	–	–
Cabazitaxel	47,366	0.62	62,644	0.52	119,852
SOC	29,326	0.71	80,684	0.43	185,572

Figure 1. Base-Case Survival Models



KM = Kaplan-Meier.

Figure 2. Cost-Effectiveness Plane



PSA = probabilistic sensitivity analysis.

References

1. Bray R, et al. CA Cancer J Cln. 2024;74(3):229-63.
2. Broder M, et al. Support Care Cancer. 2015 Jan;23(1):237-47.
3. Sartor O, et al. N Engl J Med. 2021 Sep 16;385(12):1091-1103.
4. de Wit R, et al. N Engl J Med. 2019 Dec 26;381(26):2506-18.
5. de Bono JS, et al. Lancet. 2010 Oct 2;376(9747):1147-54.
6. Fizazi K, et al. Lancet Oncol. 2012 Oct;13(10):983-92.
7. Loriot Y, et al. Cancer. 2017 Jan 1;123(2):253-62.
8. Sun Y, et al. Int J Urol. 2016;23:404-11.
9. Hofman M, et al. Lancet. 2021;397(10276):797-804.
10. NICE. TA391. 2020.

Conflict of Interest

VR, AK, and PJ are paid employees of Novartis. JB and HH are employees of RTI Health Solutions and were paid consultants to Novartis in connection with the development of this poster.

Author Contributions

Study conceptualisation and methodology: JB, HH, and VR. Non-clinical data collection and analysis: JB and HH. Writing of the original draft: JB. Review and editing: HH, VR, AK, and PJ. All authors contributed to the poster and approved the submitted version.

Contact Information

James Brockbank, MSc
Director, Health Economics
RTI Health Solutions
Email: jbrockbank@rti.org

Scan the QR code to view the full version of the poster