

Cost assessment of metastatic and non-metastatic castration-resistant prostate cancer patient-management in Spain PCN78

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INTRODUCTION

- Over 85% of patients with castration-resistant prostate cancer (CRPC) will develop metastatic disease, predominantly in bone.¹
- The management of patients with non-metastatic CRPC with rising prostate-specific antigen (PSA), is aimed at delaying or preventing bone metastases which are associated with considerable morbidity.
- Once bone metastases develop, the principal management goals are to prevent the associated bone complications, known as skeletal-related events (pathologic fracture, spinal cord compression or radiation or surgery to bone), and improve patient-reported outcomes such as pain and health-related quality of life.²
- Skeletal-related events suffered by patients with bone metastases are known to represent a great economic impact on European healthcare systems,³ but little information exists regarding other healthcare related costs caused by bone metastases in Spain.

OBJECTIVE

- To compare the annual management costs in Spain of patients with CRPC at high risk of developing bone metastases versus the annual management costs during the first, second and subsequent years after bone metastases development.

METHODS

- An expert panel of 5 urologists and 3 oncologists from Spanish health centres were asked to estimate the average annual resource use in the management of non-metastatic CRPC patients and in the first, second and subsequent years after developing bone metastases.

Table 1. Unit costs⁴

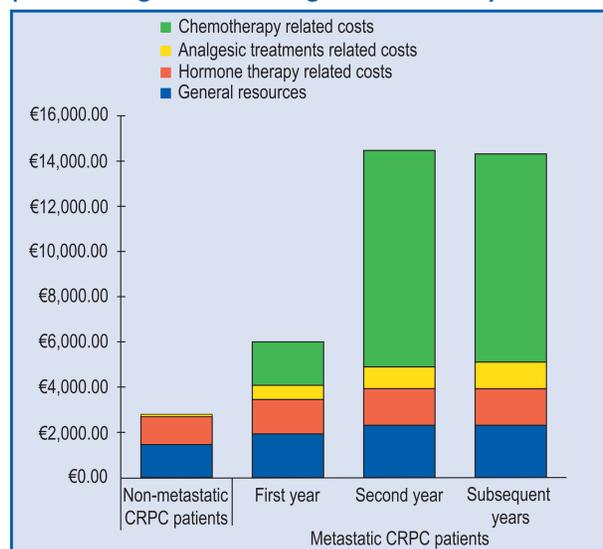
| Resources | | € 2013 | |
|------------------------------------|--|------------------------------------|---------|
| Visits and consultations | Urology | 72.90 | |
| | Oncology | 113.26 | |
| | Pain unit | 134.78 | |
| | Radiotherapy | 107.70 | |
| | Hematology | 331.16 | |
| | Emergency room | 145.62 | |
| | Day hospital | 331.16 | |
| | Hospital stays | Urology | 498.28 |
| Oncology | | 393.17 | |
| Pain unit | | 805.56 | |
| Palliative care unit | | 276.93 | |
| Monitoring and diagnostic tests | | Bone densitometry | 63.84 |
| | | Computerised tomography (CT) | 123.56 |
| | | Gammagraphy | 186.53 |
| | | Nuclear Magnetic Resonance (NMR) | 138.25 |
| | | Positron Emission Tomography (PET) | 1016.61 |
| | | Electrocardiogram (ECG) | 19.39 |
| | | Abdominal ultrasound | 65.52 |
| | Cystoscopy | 528.10 | |
| | Abdominal X-ray | 26.75 | |
| | Uroflowmetry | 128.75 | |
| | Prostate-Specific Antigen (PSA) test | 21.38 | |
| Testosterone analysis | 16.97 | | |
| Alkaline phosphatase activity test | 10.00 | | |
| Blood test | 10.62 | | |
| Blood culture | 22.18 | | |
| Urine culture | 11.94 | | |
| Stool culture | 29.00 | | |
| Urine test | 4.25 | | |
| Sediment in urine | 4.86 | | |
| Surgery | Transurethral resection of the prostate | 2984.17 | |
| | Nephrostomy | 1128.64 | |
| | Orchiectomy | 1023.76 | |
| | Cystostomy | 1826.90 | |
| | Others procedures and patient management costs | Blood transfusion | 169.78 |
| Blood platelet transfusion | | 208.28 | |
| Drug infusions | | 191.47 | |
| Hepatopathology | | 188.36 | |
| Management of renal failure | | 3759.86 | |

- Following the Delphi technique, participants completed a self-administered questionnaire. Individual answers were merged in an anonymous manner and the derived results discussed during a live meeting where consensus was reached.
- Hospital resources were stratified into four major categories: general resources, hormone therapy, analgesic treatment and chemotherapy.
- Skeletal-related events were excluded from the analysis as Spanish resource use and cost-related data on prevention and treatment of these complications have recently been published.^{5,6}
- Unit costs (€ 2013) for each identified resource were obtained from national cost-databases^{4,7} (Table 1). NB. Although drug costs were also considered, they are not listed here.

RESULTS

- The total annual management-related cost for a non-metastatic CRPC patients was €2,691.57. After bone metastases development the annual management cost per patient (excluding prevention of/treatment of skeletal-related events) was estimated to be €6,000.37 in the first year, €14,468.35 in the second year and €14,313.87 for subsequent years (Figure 1).

Figure 1. Total annual costs per patient (excluding SRE management costs)



CRPC, castration-resistant prostate cancer; SRE, skeletal-related event

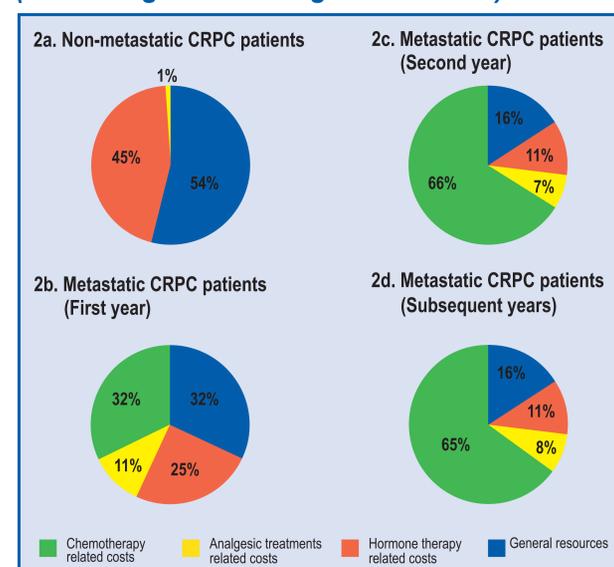
Table 2. Total annual cost per patient (€) (excluding SRE management costs)

| | Non-metastatic CRPC patients | Metastatic CRPC patients | | |
|---------------------------------|------------------------------|--------------------------|------------------|------------------|
| | | First year | Second year | Subsequent years |
| General resources | 1,454.82 | 1,927.46 | 2,308.22 | 2,308.22 |
| Visits and consultations | 285.24 | 798.56 | 960.55 | 960.55 |
| Hospital admission | 74.74 | 154.93 | 360.73 | 360.73 |
| Diagnostic and monitoring tests | 897.30 | 829.97 | 781.24 | 781.24 |
| Surgery | 123.30 | 143.95 | 205.64 | 205.64 |
| Other | 0.05 | 0.05 | 0.06 | 0.06 |
| Hormone therapy | 1,222.06 | 1,517.81 | 1,622.14 | 1,619.34 |
| Drug cost | 978.51 | 946.67 | 948.13 | 948.13 |
| AE management cost | 243.55 | 571.15 | 674.01 | 671.21 |
| Analgesic treatments | 14.69 | 632.87 | 960.12 | 1,174.82 |
| Drug cost | 11.10 | 597.29 | 915.16 | 1,031.20 |
| Pre-medication costs | 3.59 | 35.58 | 44.96 | 143.62 |
| Chemotherapy | 0.00 | 1,922.23 | 9,577.87 | 9,211.49 |
| Drug cost | 0.00 | 1,892.21 | 9,485.41 | 9,143.92 |
| AE management cost | 0.00 | 24.48 | 84.57 | 60.93 |
| Pre-medication costs | 0.00 | 5.53 | 7.89 | 6.65 |
| Total | 2,691.57 | 6,000.37 | 14,468.35 | 14,313.87 |

AE, adverse events; CRPC, castration-resistant prostate cancer; SRE, skeletal-related event

- In metastatic patients, analgesic costs increased from €597.29 in the first year to €915.16 and €1,031.20 for the second and subsequent years. Adverse event management costs (due to both hormone- and chemotherapy) increased from €595.63 in the first year after bone metastasis development to €758.58 in the second year and €732.14 for subsequent years (Table 2).
- In non-metastatic CRPC patients total costs were mainly driven by general resources (particularly monitoring tests and patient visits) and hormone therapy drug costs, constituting 54.0% and 45.4% of total costs, respectively. Per current treatment practice, no chemotherapy was administered to these patients (Figure 2).
- After bone metastases development, chemotherapy drug cost was the key cost driver accounting for 32.2%, 66.2% and 64.4% of total costs, during the first, second and subsequent years, respectively (Figure 2).

Figure 2. Health-care resources considered (excluding SRE management costs)



CRPC, castration-resistant prostate cancer; SRE, skeletal-related event

CONCLUSIONS

- CRPC patients with bone metastases had higher management costs than non-metastatic patients especially after the first year of treatment, mainly due to chemotherapy drug costs and pain management-related costs. Thus, delaying or preventing bone metastases might result in cost savings.

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ACKNOWLEDGEMENTS

This study was funded by Amgen S.A. Medical writing and editorial support were provided by Emma Thomas and Sarah Petrig of Amgen (Europe) GmbH.