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Health-state costs of high-risk non-muscle invasive bladder cancer in Portugal

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Introduction

- Bladder cancer ranks among the 10 most common cancers worldwide. In Portugal, bladder cancer is the 6th most common cancer, ranking 4th in men [1].
- High-risk non-muscle invasive bladder cancer (HR-NMIBC) imposes a considerable burden on healthcare systems and patients, due to its high recurrence rates, intensive surveillance and interventions.
- In Portugal, evidence on HR-NMIBC costs remains very limited.

Objective

- Estimate the costs associated with HR-NMIBC health states in Portugal.

Methods

- Cost analysis from a societal perspective.
- The target population is adults with HR-NMIBC followed at National Health Service hospitals.
- Health states included treatment and follow-up with BCG, radical cystectomy (RC), metastatic disease and end-of-life.
- Costs included:
  - (a) Direct medical costs, such as drug acquisition and administration, outpatient medical and non-medical visits, unplanned specialist urgent visits, emergency room admissions, hospitalizations, and medical exams.
  - (b) Direct non-medical costs, such as non-emergency transportation.
  - (c) Indirect costs related to absenteeism, estimated using the human capital approach.
- HCRU was assessed by an expert panel of seven urologists and oncologists in May 2026.
- Costs for each health state were estimated using unit costs (**Table 1**) obtained from official Portuguese sources and expressed in euros (€) for the year 2026 [3-7].

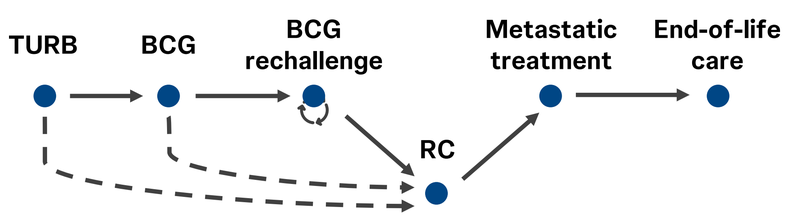
Table 1. Unit HCR costs

HCRU	Unit cost
Medical / multidisciplinary appointments	€ 45 / € 52
Non-medical appointments (e.g. nurse)	€ 25
Homecare assistance/day	€ 43
Emergency room/non-planned visit	€ 115
Blood exams	€ 49
Urinalysis (Type II)	€ 4
Urine culture	€ 11
Urinary biomarkers (TERT, FGFR3, KRAS)	€ 230
Urine cytology	€ 25
Renal or bladder ultrasound	€ 26
CT scan	€ 80
CT urography	€ 160
Bladder MRI	€ 250
Other MRI	€ 134
PET scan	€ 705
Bone scintigraphy	€ 109
Electrocardiogram	€ 7
Echocardiogram	€ 53
Nephrostomy	€ 6,710
Palliative colostomy	€ 7,172
Cystoscopy	€ 70
Non-emergency/emergency transport	€ 32 / € 33
Systemic chemotherapy administration	€ 21
Intravesical drug instillation	€ 28
Inpatient stay for Integrated Continuing Care	€ 115/day
Terminal care inpatient stay	€ 3,546
Nursing home stay	€ 115/day
Transurethral resection of BC (TURB)	€ 3,136
Radical cystectomy (RC)	€ 22,780
Ileal conduit urinary diversion	€ 21,460
Orthotopic neobladder	€ 30,177
Urostomy bag/catheter	€ 2/unit
Hospitalization for malignant disease	€ 3,214
Post-cystectomy complications (range)	€ 1,855-6,827

Results

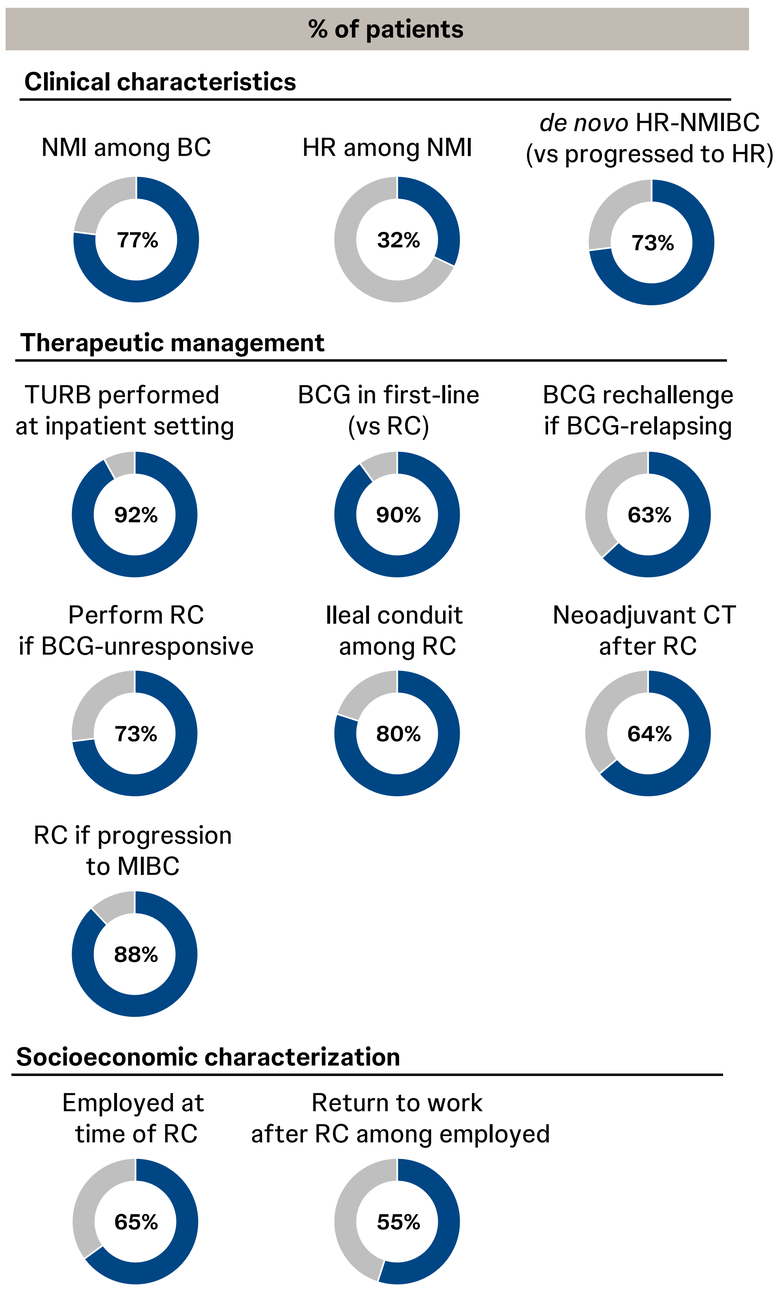
- Simplified treatment pathway of patients with HR-NMIBC diagnosis is represented in **Figure 1**.

Figure 1. Simplified treatment pathway of HR-NMIBC patients



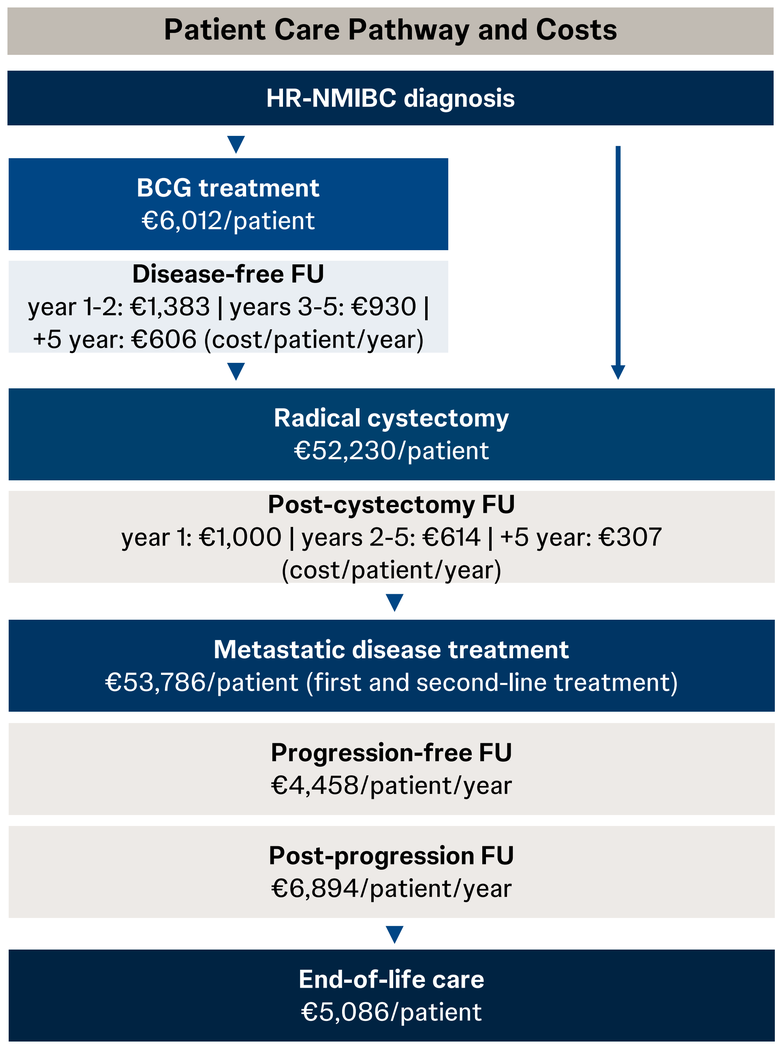
- Characteristics of patients and bladder cancer management are described in **Figure 2**.
- Mean age at the time of diagnosis was 66 years, and 75% of patients were male.

Figure 2. Patients' characteristics and BC management



- Costs by health state across HR-NMIBC pathway are detailed in **Figure 3**.
- Mean cost of BCG treatment (induction, maintenance and management of treatment-related complications) was estimated considering discontinuation rates of 35% after first year and 64% after second year, as per expert panel feedback.
- Disease-free surveillance costs tend to be reduced over the years, given lower frequency of medical and non-medical visits, and medical exams.
- Mean cost of RC includes the surgical procedure, treatment-related complications, neo- and adjuvant chemotherapy, urostomy bags and catheters and productivity losses - surgical procedure accounts for 44% of the total costs.
- The time off-work for employed patients accounts for 11% of the total costs of RC.
- 45% of employed patients who underwent RC require early retirement, with an estimated cost of €19,255/patient (37% of RC costs).

Figure 3. Costs by health state across HR-NMIBC pathway



Conclusions

- Radical cystectomy and metastatic disease treatment and follow-up are the two dominant cost drivers in HR-NMIBC management, accounting for the majority of per-patient costs.
- The substantial cost gap between early-stage management (BCG/surveillance) and advanced disease (cystectomy/metastatic treatment) underscores the economic value of strategies that delay or prevent disease progression.
- There are limited treatment options before RC – Despite High BCG discontinuation rates in first and second year, rechallenge with BCG is widespread.
- These findings, based on expert panel consensus given the scarcity of real-world Portuguese data, provide a foundation for future cost-of-illness modelling and economic evaluations of HR-NMIBC management strategies.
- Results support the need for further research using real-world/registry data to validate and refine these expert-based cost estimates.
- Understanding the economic burden of HR-NMIBC can inform resource allocation, budget impact assessments, and health policy decisions in Portugal.

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