

# Budget Impact Analysis of the Introduction of a Prognostic Prostate Genomic Biomarker Cancer Test in the Management of Localized Prostate Cancer Patients for Greece

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## Introduction and Objectives

The objective of the study is the assessment of the economic impact of the adoption of a novel prognostic prostate cancer genomic test providing a clinical cell-cycle risk (CCR) score in the Greek healthcare system concerning localized low-risk prostate cancer.

## Methods

A budget impact model was developed using Microsoft Excel 2017 to estimate the costs of the novel prostate cancer test adoption in the Greek healthcare system for the low-risk prostate cancer patients versus not adoption. The model included population, clinical and cost parameters, which were extracted from the literature. The reimbursement cost of the prognostic prostate genomic biomarker cancer test was estimated at 2,380 Euros.

The incidence of prostate cancer in Greece is approximately 6,600 new cases for 2020. For our analysis, we made an assumption that the incidence is equal each year (2021-2025) with 2020 as base year (table 1). Furthermore, strategies implemented as well as the complications of each strategy are presented in table 2. In order to include the management of complications and clinical progression/recurrence in our analysis, an expert panel was recruited as was considered necessary to involve physicians, who provide expertise inputs regarding the current Greek clinical practice. Finally, a one-way sensitivity analysis via tornado diagram was constructed to assess the impact of parameter changes on the outputs.

Table 1. Incidence of prostate cancer, Greece, 2021-2025

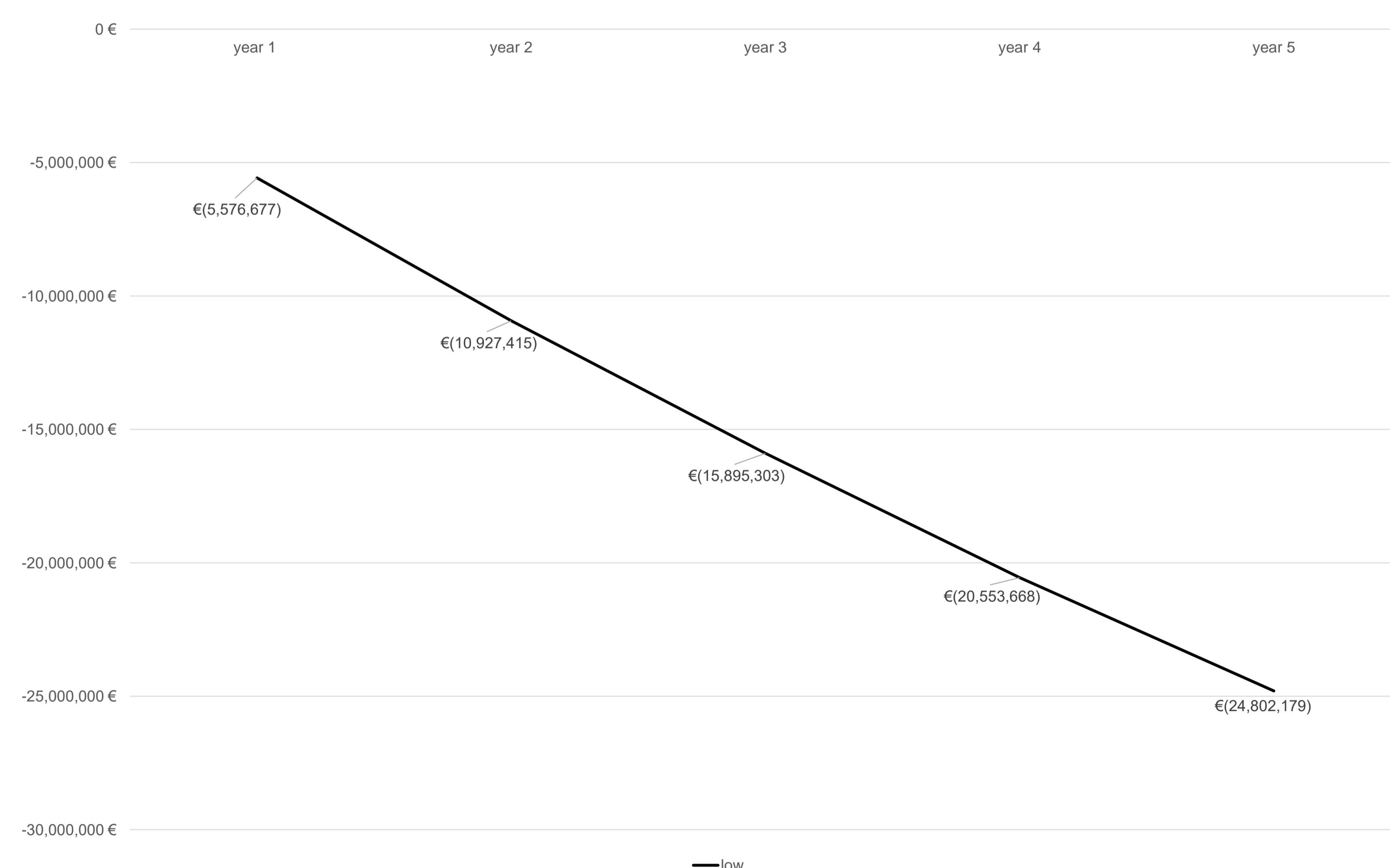
Risk-group	2020	2021	2022	2023	2024	2025
Low-risk	2,514	2,514	2,514	2,514	2,514	2,514
<b>Total new cases of prostate cancer</b>	<b>6,617</b>	<b>6,617</b>	<b>6,617</b>	<b>6,617</b>	<b>6,617</b>	<b>6,617</b>

Table 2. Parameters included in the model

Strategies	Low risk-group strategy, % patients	Complications included in the analysis
Active surveillance (AS)	<b>Low-risk, Current scenario based on Greek experts</b>	<b>Related to biopsy (AS)</b> Hemospermia, Rectal bleeding, Prostatitis, Fever > 38°C, Urinary retention
	AS: 5% RP: 75% RT: 20%	<b>Related to prostatectomy (RP)</b> Urine incontinence, Obstructive uropathy, Bladder stone, Infection due to surgery, Acute kidney failure, Urinary bleeding, Urinary/gastrointestinal fistula
Prostatectomy (RP)	<b>Low-risk, new scenario based on literature (2)</b>	<b>Related to radiotherapy (RT)</b> Urine incontinence, Obstructive uropathy, Proctitis, Cystitis, Kidney failure, Gastrointestinal bleeding, Urinary bleeding, Infection due to radiation, Urinary/gastrointestinal fistula
Radiotherapy (RT)	AS: 92.89% RP: 5.61% RT: 1.5%	

AS: Active surveillance, RP: Prostatectomy, RT: Radiotherapy

Graph 1. The cumulative impact of genomic tumor testing incorporation in health system of Greece



\*Assuming 100% uptake rate of GCP test of new cases of localized prostate cancer for 5 years (Low risk patients)

## Conclusions

The CCR score highlights a significant contribution to the improvement of the treatment of localized prostate cancer in Greece. It is therefore found that in addition to the clinical value through the personalized approach and the avoidance of the invasive procedure and related complications for the majority of patients in the low-risk group, this genomic test highlights an economic value for the payer which makes it an affordable technology for the country's health system. Based on the results, the incorporation of this genomic testing into clinical practice is cost-saving strategy, ideally for low-risk patients for Greece.

**References:** 1) International Agency for Research on Cancer; 2) Lin W Daniel, et al, 2018

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## Results

In the base-case analysis, the genomic CCR score was the dominant strategy. Per low-risk patient, savings attributable to the new scenario amount to approximately 1,700€, with the total costs per patient and for 5 years found to be 5.200€ while current clinical practice costs estimated at 6,900€ (table 3). Total savings for all patients were calculated approximately at 25 million € for the third payer while it should be noted that even in the first year of adoption the savings were found to be 5.5 million € (graph 1).

In regards to the cost per patient, the cumulative cost for low-risk patient is lower for all 5 years scenario with CCR score testing (table 3).

Totally, the genomic testing yields savings for low-risk prostate cancer patients (graph 1) while sensitivity analysis showed that the results remain robust for low-risk patients (graph 2).

Table 3. Total cumulative cost per patient between scenarios, by risk-group

Strategies	Risk-group	Year 1	Year 2	Year 3	Year 4	Year 5
<b>Current clinical practice</b>	Low-risk	5,484.17 €	5,846.01 €	6,193.50 €	6,540.62 €	6,891.27 €
<b>New scenario</b>	Low-risk	3,265.92 €	3,717.63 €	4,217.42 €	4,687.65 €	5,201.33 €

Graph 2. One-way sensitivity analysis results, via tornado

