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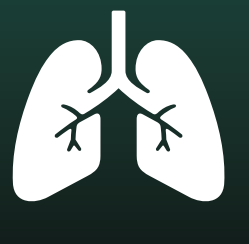
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Introduction



Approximately 76.8% of the Brazilian population is assisted only by Public Health System (SUS). One of the main factors associated with the high mortality rate of most **Non-Small Cell Lung Cancer (NSCLC) patients** in the public sector is due to the advance stage diagnosis^{1,2}. Severe resource limitations may impact the diagnosis, treatment, and clinical outcomes in this sector. Effective treatment in stage III NSCLC is the patient's last chance of cure^{3,4}. In Brazil, for unresectable stage III NSCLC durvalumab is approved as **consolidation treatment** after chemoradiation therapy (CRT)⁵. However, immunotherapy is not available in SUS for lung cancer patients. Clinical and economic data in public scenario are scarce, particularly for stage III disease. This study assesses the unresectable NSCLC stage III patient's journey and expenditures in SUS.

Methods



Information from patients with lung cancer (ICD C34) diagnosed between January/2008 - December/2022 was evaluated using a public claims database (DATASUS). According to the sequence of chemotherapy and radiotherapy, unresectable stage III patients were identified and classified as eligible or not for the analysis (Figure 1).

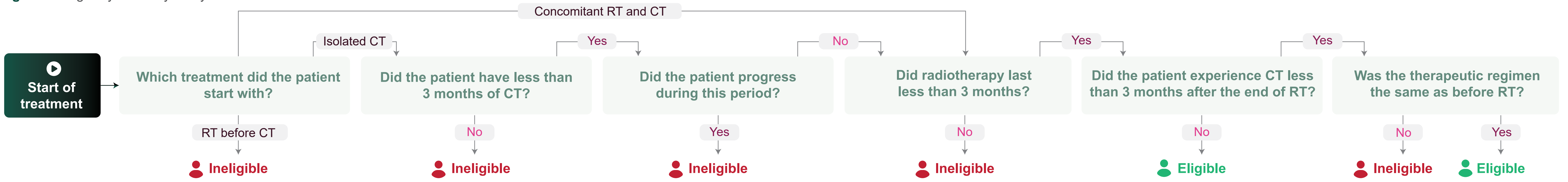


Mortality, Outpatient, and Hospitalization Information databases were used to assess outcomes. Progression-free survival (PFS) was defined as the period between the end of chemoradiation and death or starting a first line of treatment for metastatic NSCLC.



Overall survival (OS) was defined as the period between the start of therapy for stage III unresectable NSCLC and death. Hospitalization and outpatient costs were estimated according to database resources between January/2017 - December/2022 and evaluated in Brazilian Real (R\$).

Figure 1: Eligibility for study analysis



Results



5,924 stage III unresectable NSCLC patients receiving chemoradiation therapy were identified. Median OS was 15 months (CI 95% 13-15 months) and median PFS was 4 months (CI 95% 3-4 months) (Figures 2 and 3). 2,701 deaths (45.6% of patients) were observed.

Figure 2: Overall survival for the current sample of patients

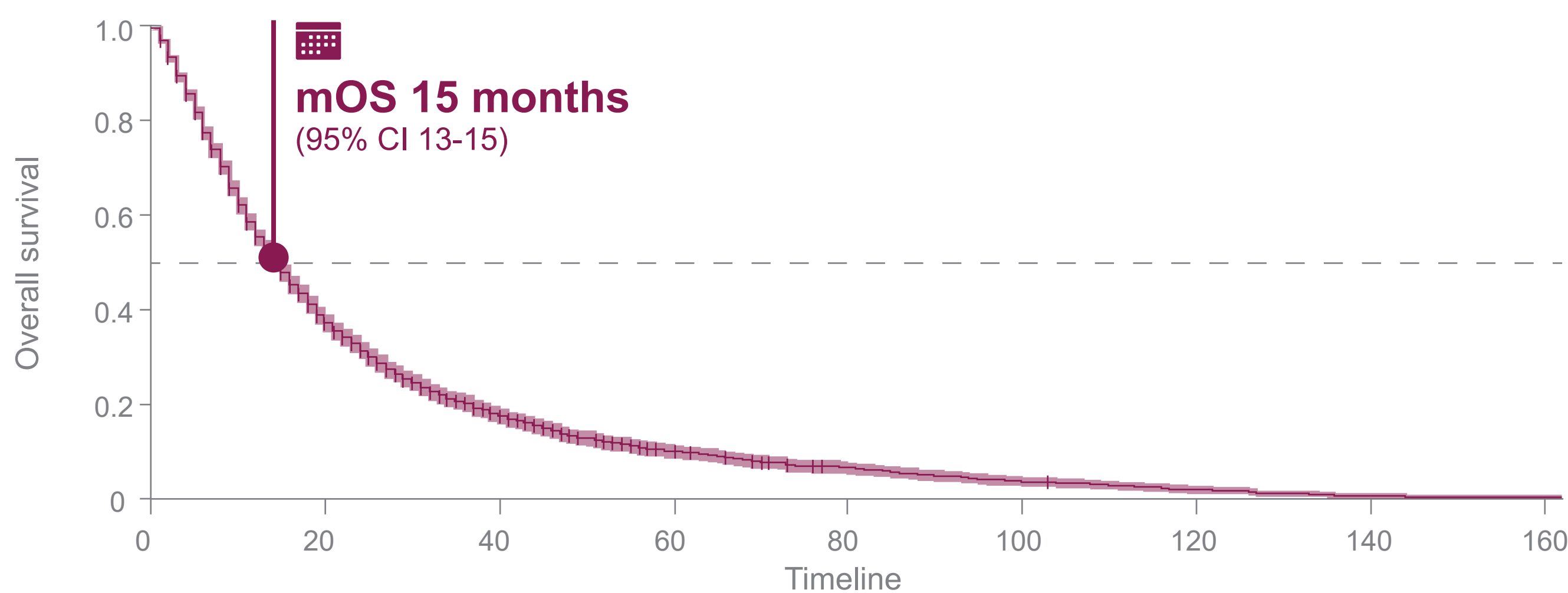
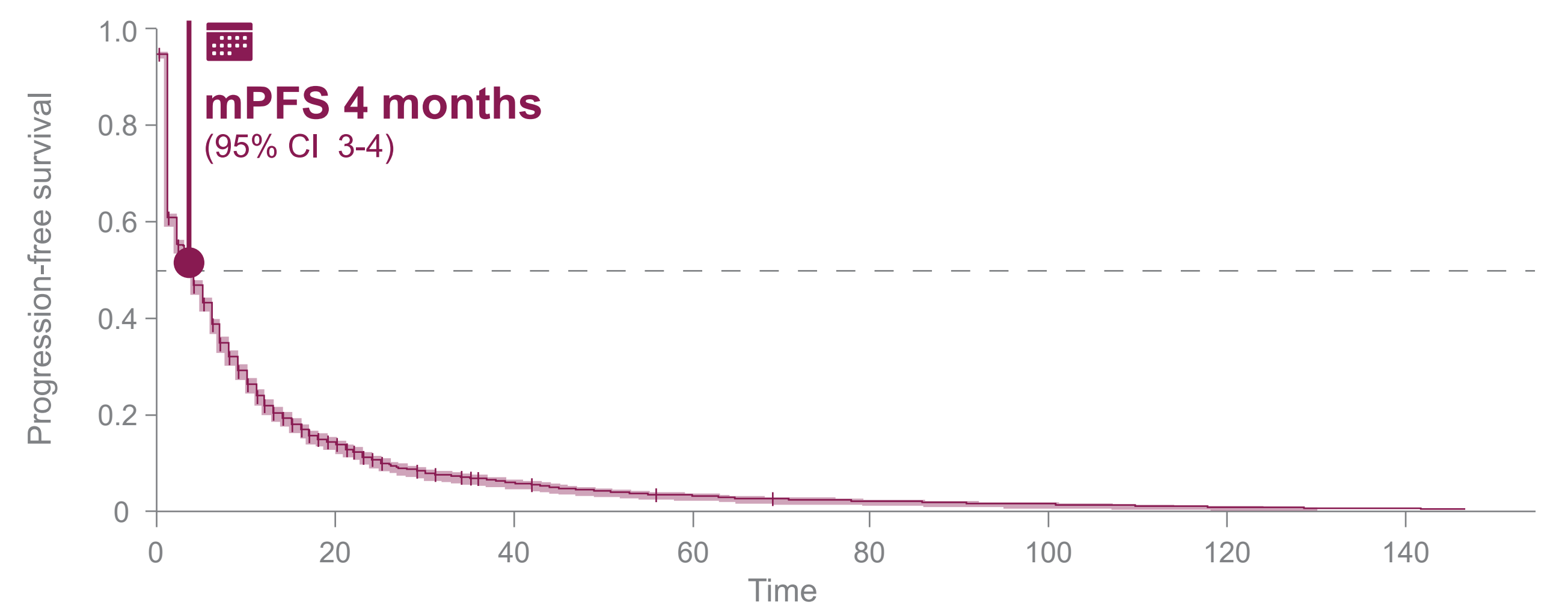


Figure 3: Progression-free survival after chemotherapy/radiotherapy for the current sample of patients



There was a 21.3% increase in costs with disease management over the years (BRL 55.8 million and BRL 67.7 million for 2017 and 2022, respectively) (Figure 4). The total cost for patients who progressed was 32.6% higher when compared to patients with non-progressive disease. Patients who progressed interacted with the system 2,4 months more than those who did not progress (8,4 vs 6,0 months) (Figure 5).

Figure 4: Cost of non-small cell lung cancer in the SUS, both outpatient and hospital

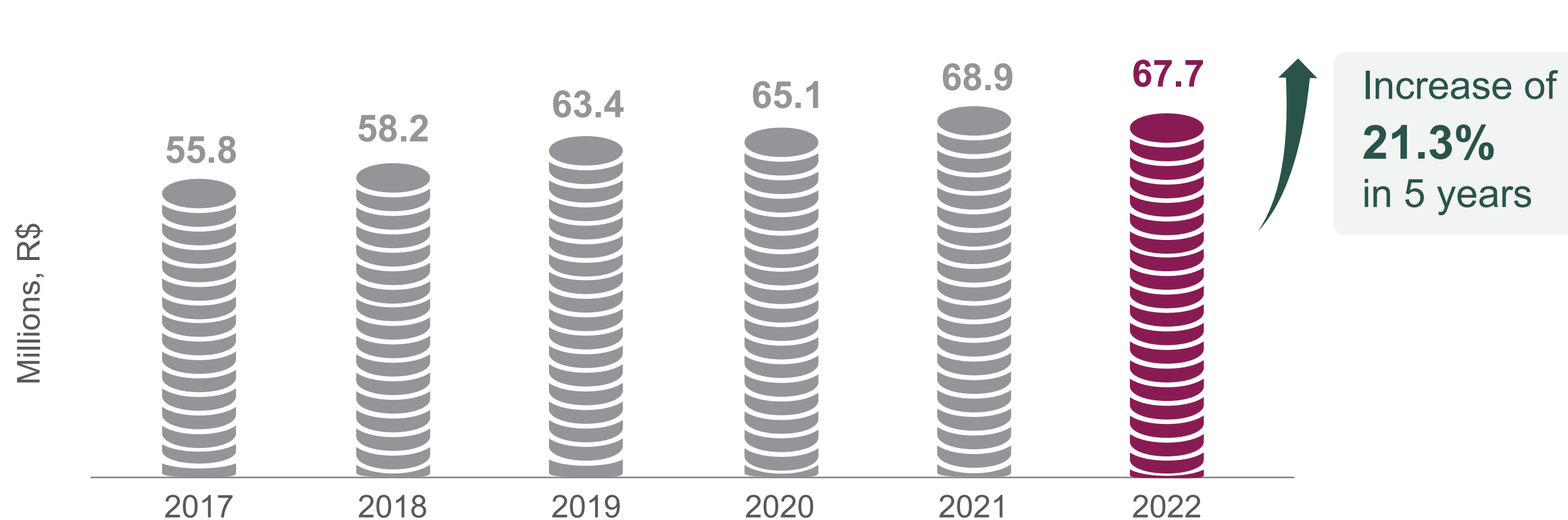
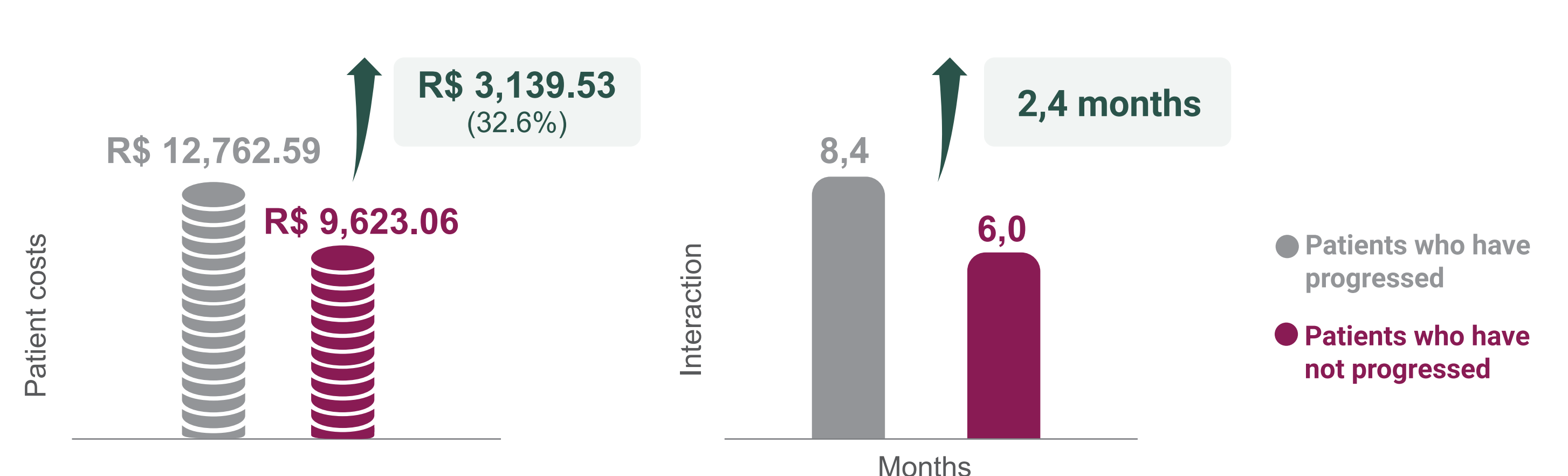
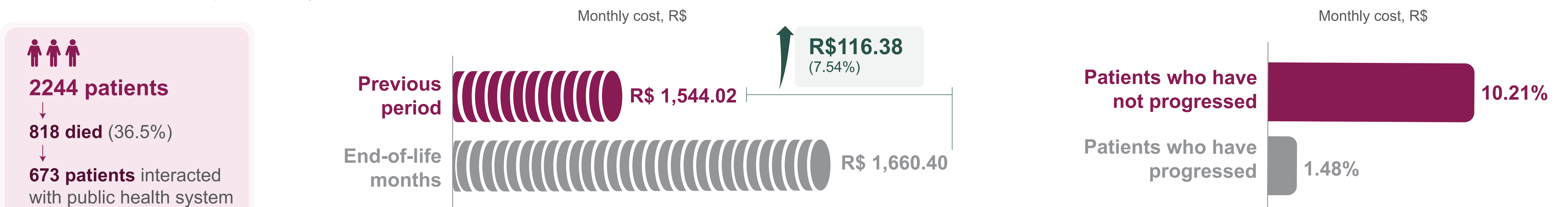


Figure 5: Average cost per patient and interaction with the public health system



Of the total number of patients, 818 (36.5%) died and 673 had interactions with the system in the last three months before death (end-of-life period). The mean end-of-life cost in the public system was R\$1,660.40 (7.54% higher than in previous months) (Figure 6). For patients who did not progress, the mean end-of-life cost per month was 10.21% higher than in previous months. For patients who progressed, the mean end of life cost per month was 1.48% higher than in the previous period (Figure 6).

Figure 6: Cost of the end of life in the public health system



Conclusion



Stage III unresectable NSCLC patients treated in SUS have a poor prognosis, according to clinical outcomes calculated. The management of stage III NSCLC represents a high economic impact for the Brazilian government, especially with disease progression. Treatment alternatives that improve patients' outcomes may also allow health managers to use resources more efficiently.

References: NSCLC: Non-Small-Cell Lung Cancer; OS: Overall survival; SUS: Sistema único de saúde; PFS: Progression free survival; CT: Chemotherapy; RT: Radiotherapy; 1. Coelho JC, de Souza Carvalho G, Chaves F, et al. Non-Small-Cell Lung Cancer With CNS Metastasis: Disparities From a Real-World Analysis (GBOT-LACOG 0417). JCO Glob Oncol. 2022; 8:e2100333. 2. Datta D, Lahiri B. Preoperative evaluation of patients undergoing lung resection surgery. Chest. 2003; 123(6):2096-103. 3. Albain KS, Swann RS, Rusch VW, et al. Radiotherapy plus chemotherapy with or without surgical resection for stage III non-small-cell lung cancer: a phase III randomised controlled trial. Lancet. 2009;374(9687):379-86. 4. Gribsch I, Palmer M, Fayers PM, et al. Is progression-free survival associated with a better health-related quality of life in patients with lung cancer? Evidence from two randomised trials with afatinib. BMJ Open. 2014; 4(10):e005762. 5. Medication leaflet INFINZI™ (durvalumab). Available at: <https://consultas.anvisa.gov.br/#/bulario/q/?nomeProduto=imfin>. Accessed in: 19/10/2023.