

Direct Medical Costs of Nasopharyngeal Carcinoma in Indonesia: a Healthcare Payer Perspective

Authors:

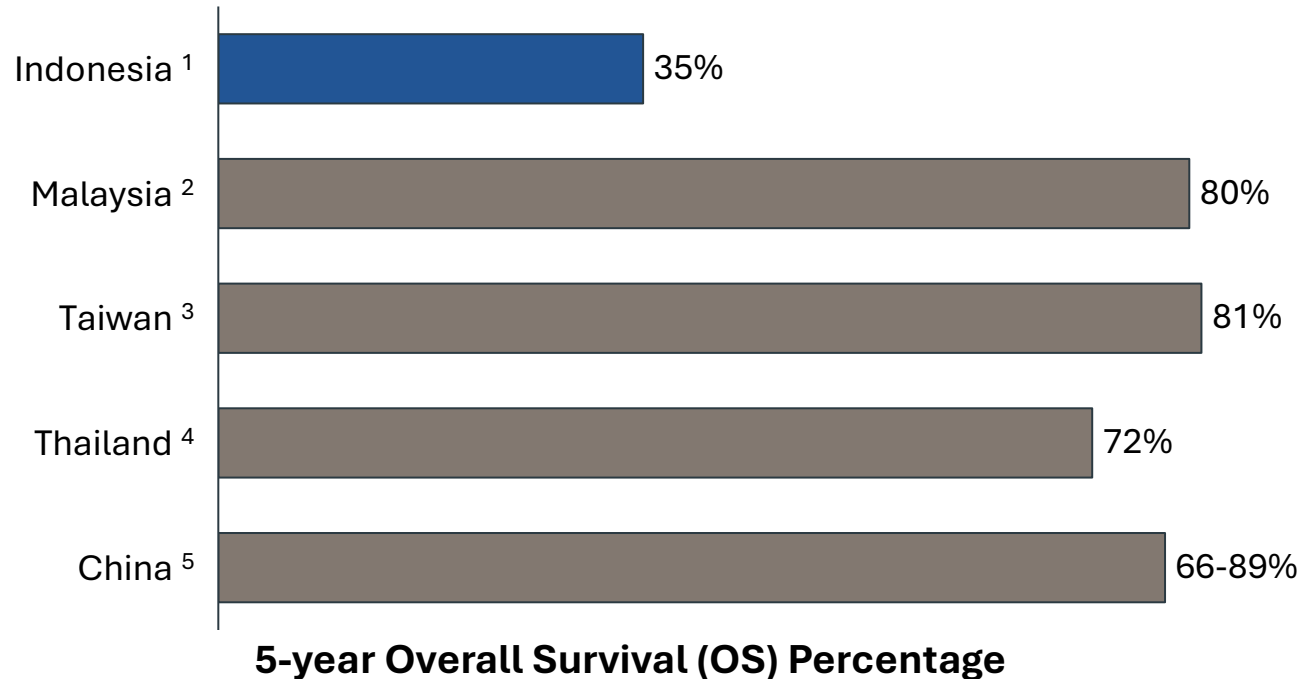
Royasia Viki Ramadani ¹, Cosphiadi Irawan ², Erna Kristin ³, Susanna Hilda Hutajulu ⁴, Yussy Afriani Dewi ⁵, Gregorius Ben Prajogi ⁶, Lucia Rizka Andalucia ⁷, Donni Hendrawan ⁸, Sudi Indrajaya ³, See-Hwee Yeo ¹, Shikha Dhawan ⁹, Junice Ng ¹⁰

¹ Real World Solutions, IQVIA Solutions Asia, Singapore, Republic of Singapore, ² Internal Medicine, Dr. Cipto Mangunkusumo Hospital, Universitas Indonesia, Jakarta, Indonesia, ³ Faculty of Medicine, Public Health, and Nursing, Gadjah Mada University, Yogyakarta, Indonesia, ⁴ Division of Hematology and Medical Oncology, Department of Internal Medicine, Faculty of Medicine, Public Health and Nursing, Universitas Gadjah Mada/Dr Sardjito General Hospital, Yogyakarta, Indonesia, ⁵ Department of Otorhinolaryngology–Head and Neck Surgery, Faculty of Medicine Padjadjaran University, Hasan Sadikin General Hospital, Bandung, Indonesia, ⁶ Radiation Oncology, Dr. Cipto Mangunkusumo Hospital, Jakarta, Indonesia, ⁷ Department of Pharmaceutical and Medical Devices, Ministry of Health, Indonesia, ⁸ Research, Innovation and Development Department, BPJS Kesehatan, Indonesia, ⁹ BeOne Medicines, Ltd., Medical Affairs Southeast Asia, Singapore, Republic of Singapore, ¹⁰ BeOne Medicines, Ltd., Global HEOR, Singapore, Republic of Singapore

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This study aims to estimate the direct medical costs of NPC from a public payer's perspective in Indonesia from 2019-2022

Background and aim



- 5-year OS in Indonesia was lower compared to neighbouring endemic Asian countries, possibly due to delays in diagnosis⁶, treatment initiation⁷, and fragmented care.
- To support cost-effectiveness analysis and inform policy decision, this study aims to estimate direct medical costs from a public payer's perspective using JKN data from 2019–2022

Reference:

¹ Hutajulu et al., PLOS One (2021).

² Prasad U et al., Int J Radiat Oncol Biol Phys (2002).

³ Lin Y-H et al., Radiat Oncol (2018).

⁴ Setakornnukul J et al., BMC Cancer (2018)

⁵ Lan X-W et al., PLOS One (2016)

⁶ Flesh R et al., BMC Med Educ (2010)

⁷ Flesh R et al., BMC Public Health (2017)

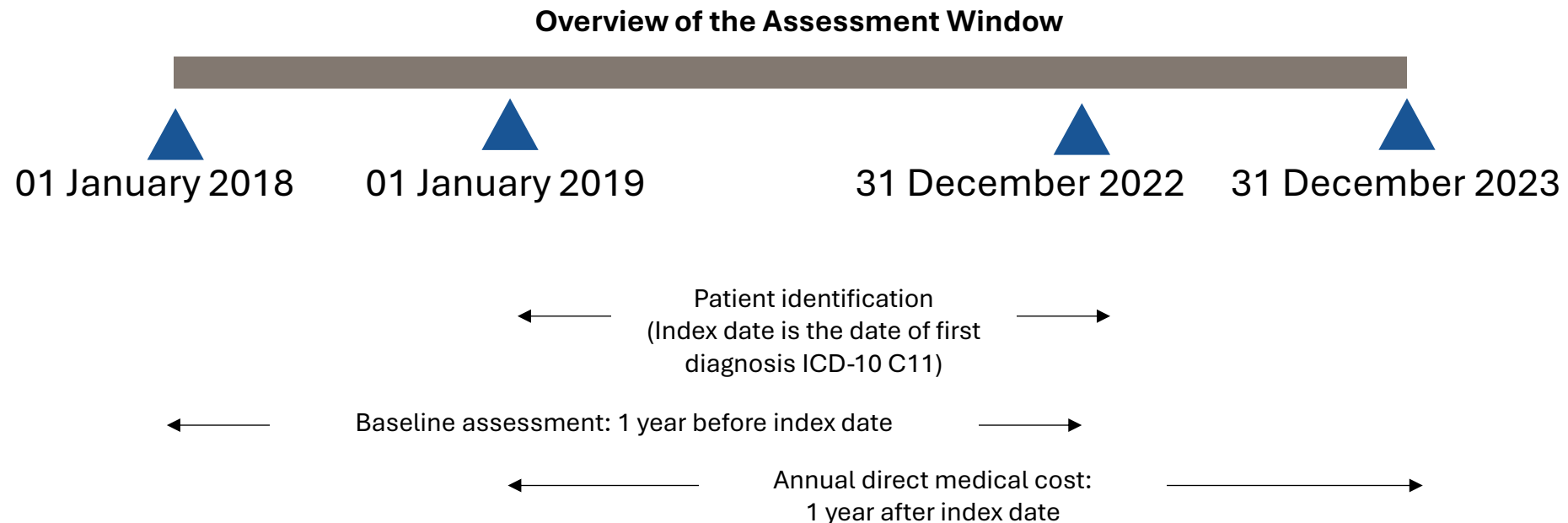


We conducted a retrospective database analysis using JKN claims data

Methods

Study population:

- Nasopharyngeal Carcinoma (NPC) adult patients aged ≥ 18 years old with at least 2 medical visits related to NPC were identified from the JKN database between 2019 and 2022
- Index date was defined as the first visit associated with NPC, as coded by ICD-10 'C11'
- Baseline characteristics were assessed over a 12-month period before the index date
- Patients were classified as having received NPC-related treatment if they underwent chemotherapy, radiotherapy, or surgical procedures for NPC and the relevant treatment procedure codes

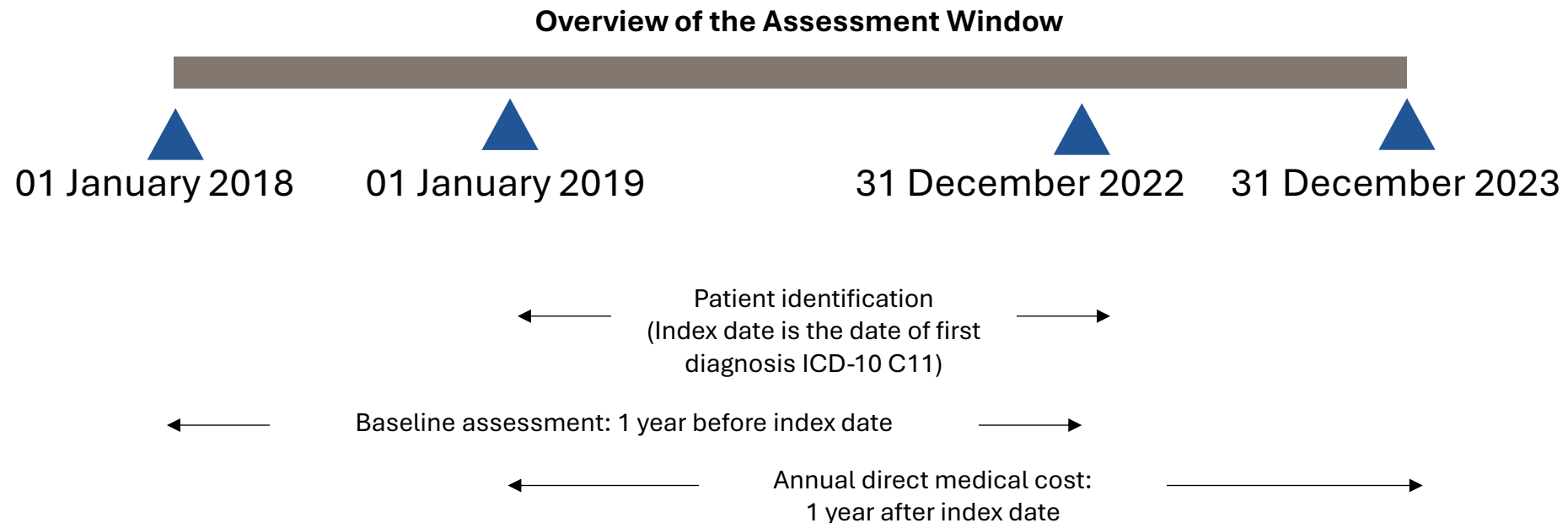


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The direct medical costs were estimated by incorporating two cost components within the JKN system: INA-CBGs and non-CBGs

Analysis

- Annual direct medical costs represent sum of all inpatient and outpatient costs within 365 days after the index date
- Costs in Indonesian Rupiah (IDR) were inflated using the Consumer Price Index (CPI) in 2024 and converted to USD dollars (US\$ 1=IDR 15,881)

reimburse hospitals based on a pre-defined fee for each Case Base Group (CBG), determined by the patient's diagnosis and the complexity of care

Bundling costs (CBGs)

- Inpatient
- Outpatient specialist
- Procedure costs (chemotherapy, radiotherapy, and surgical)
- Drugs for 7 days prescription

Unbundling costs (non-CBGs)

- Chemotherapy drugs beyond 7-days prescription
- Diagnostic and procedure
- Non-cancer drug
- Radiotherapy costs with special procedure

Hospital-based	Primary Care
Based on diagnosis group (INA-CBGs)	Capitation
Unbundling drugs and treatment/procedure (Non-CBGs)	Non-Capitation

Capitation respective catchment populations

Fee-for-service

CBGs, Case based groups

treatments which may be reimbursed based on actual; incurred costs



Around 59% of 23,072 newly diagnosed NPC patients received treatment

Results

267 million JKN members

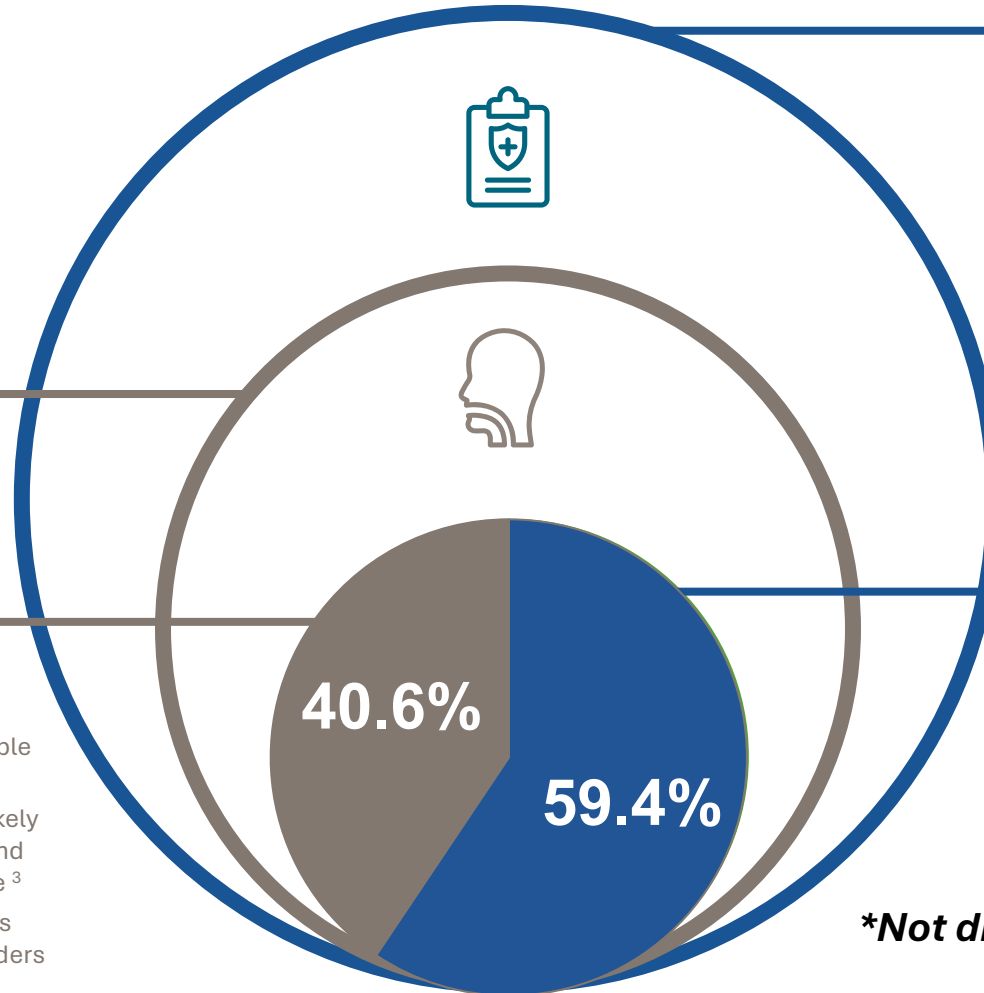
23,072 Newly diagnosed NPC

40.6% Did not received treatment

59.4% Received treatment

• Untreated patients were generally older, unmarried, subsidized member, and had lower CCI scores.

- Older patients may be frailer and less suitable for aggressive treatment ¹
- Unmarried and subsidized patients more likely to be socioeconomically disadvantaged ² and lack support limiting access and adherence ³
- A lower CCI suggests that patients have less frequent interactions with healthcare providers



****Not drawn to scale***

Reference:

¹ Lyu Y et al., Eur Arch Otorhinolaryngol (2021).

² Qi M et al., Plos One (2023).

³ Usta YY., Asian Pac J Cancer (2012).

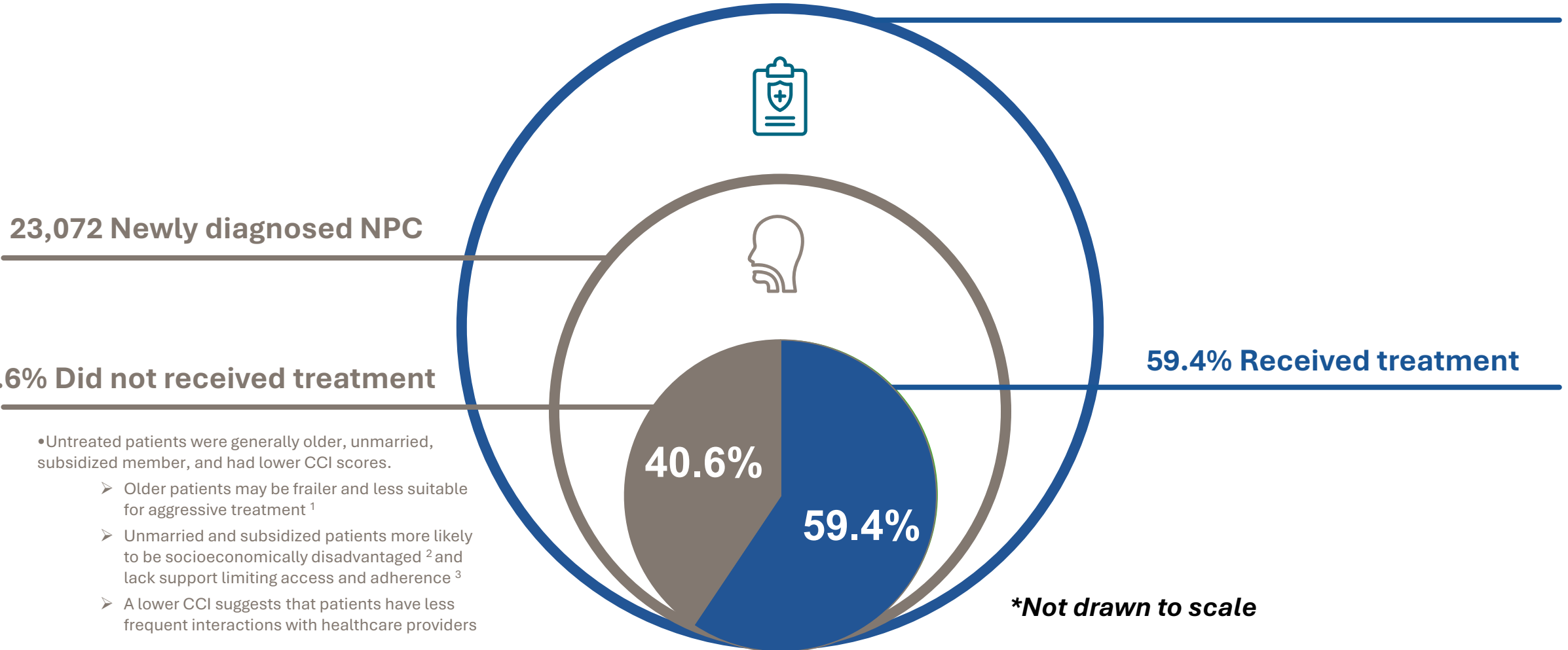
Abbreviation: JKN, Jaminan Kesehatan Nasional



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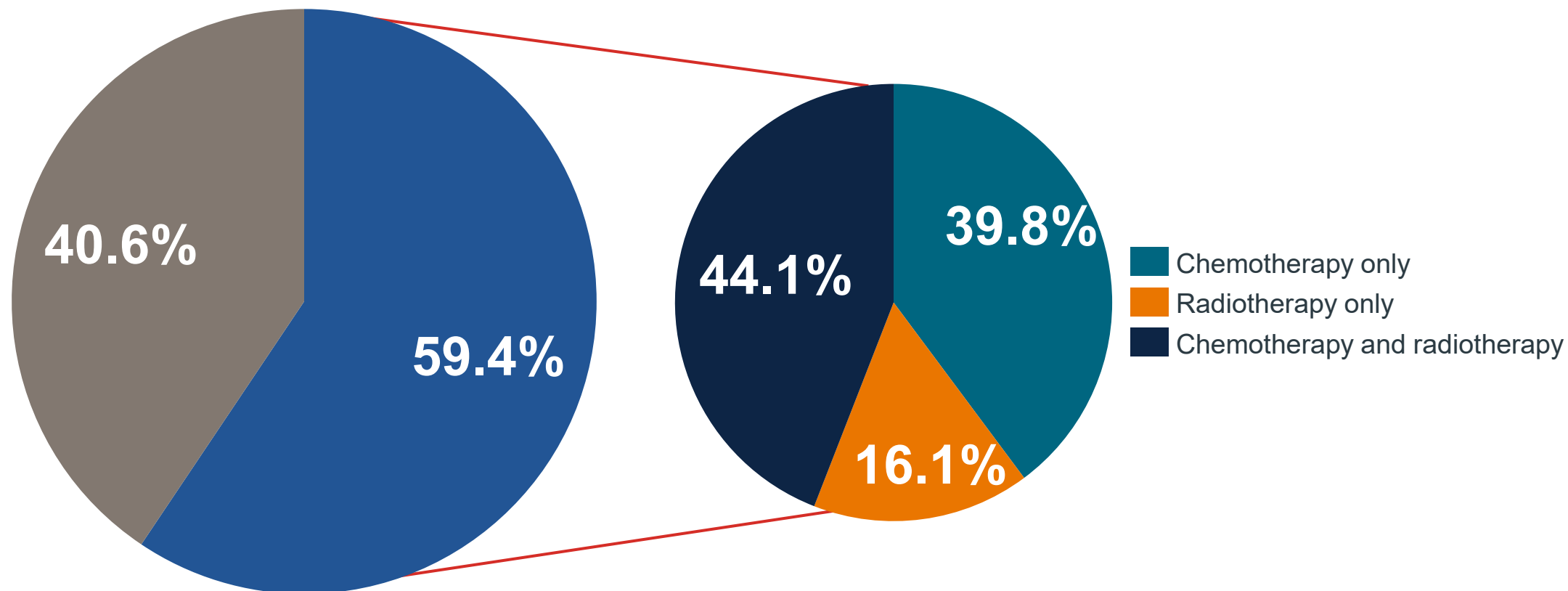


Chemoradiotherapy was the most common treatment for newly diagnosed NPC between 2019-2022

Results - Treatment modalities

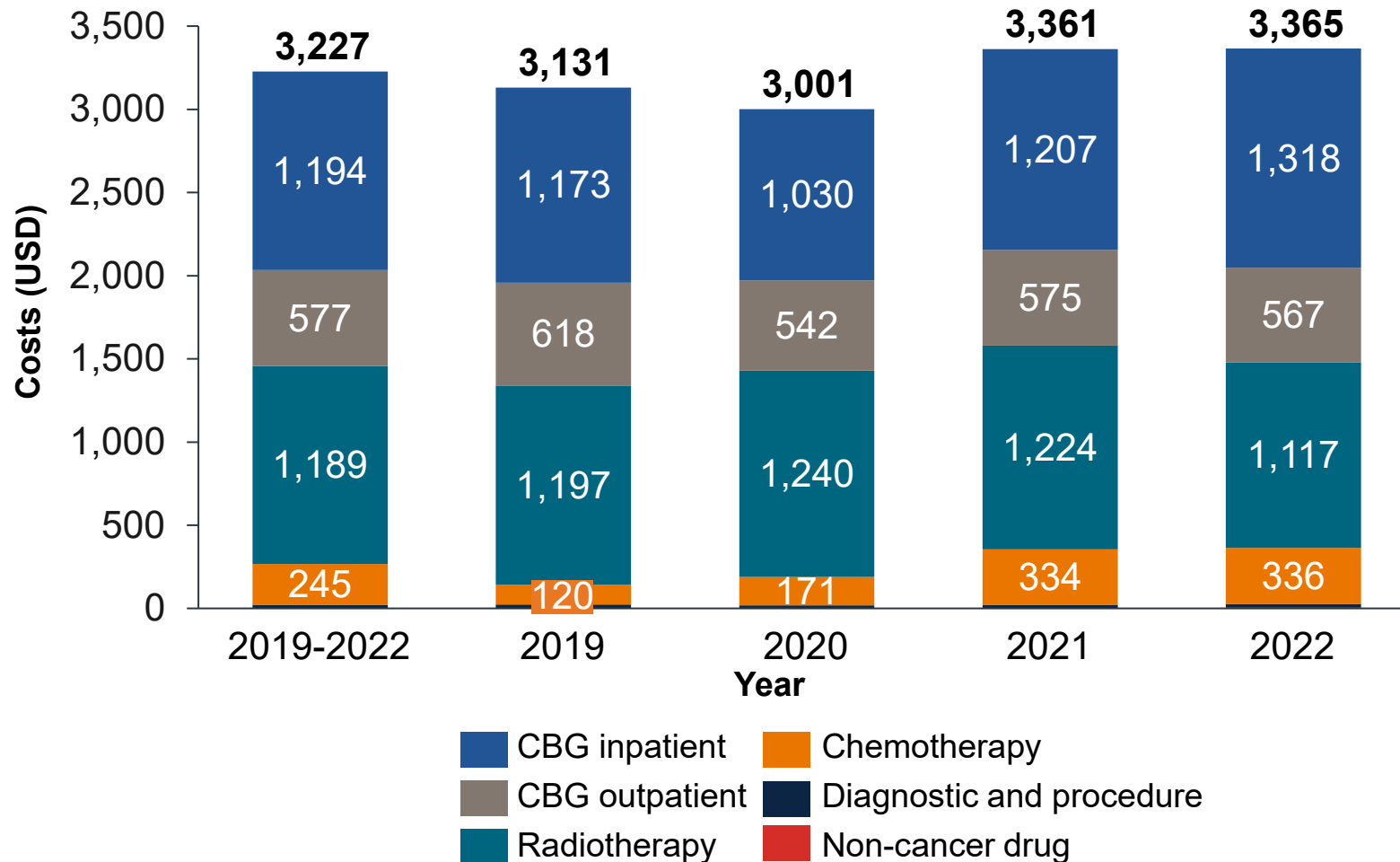


23,072 Newly diagnosed between 2019-2022



The primary cost drivers were radiotherapy expenses and inpatient costs under the INA-CBG system

Results – Average direct medical costs

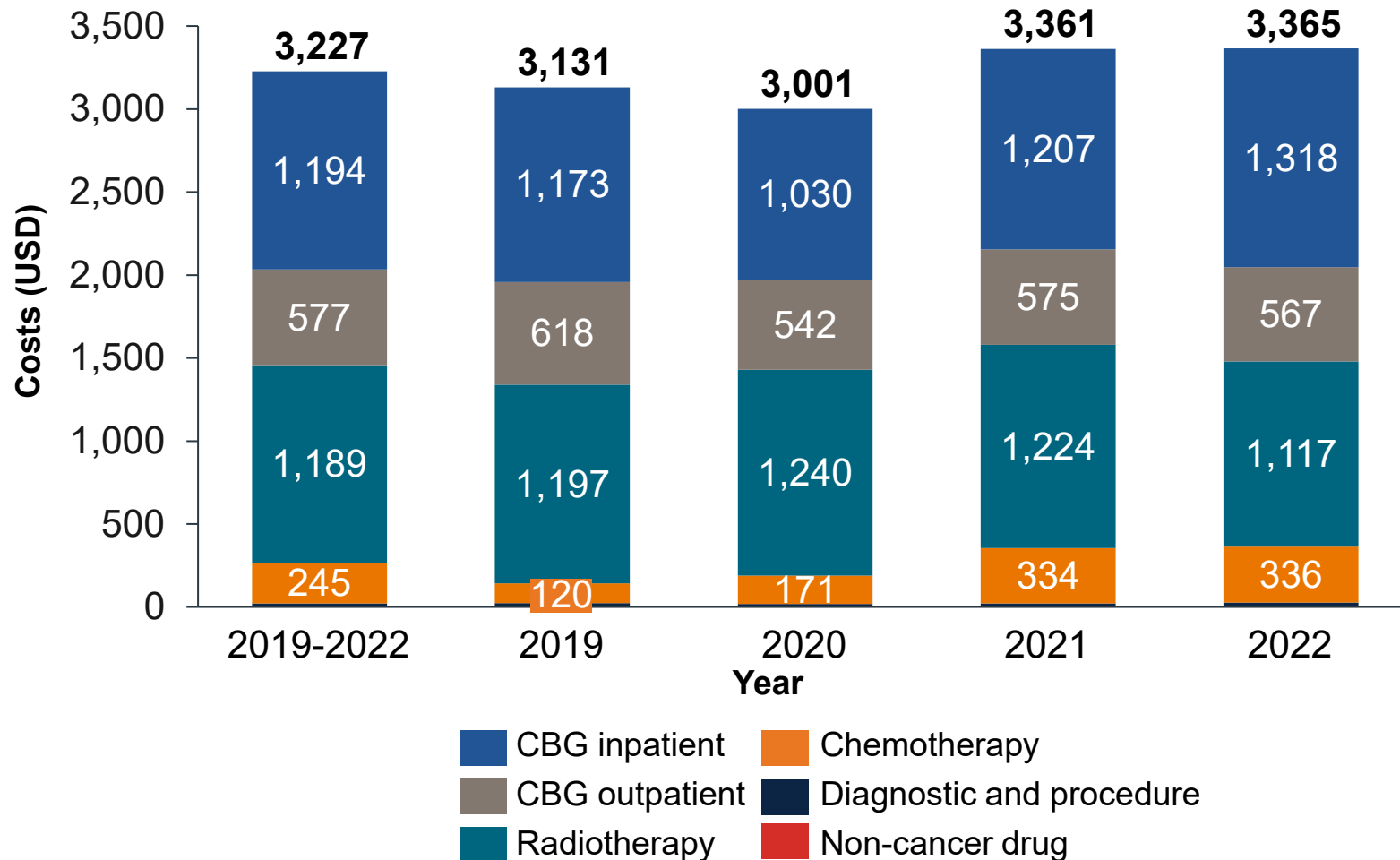


- CBGs accounted for 55% of the total mean costs
- The total costs for all NPC patients in the JKN population was US\$ 14.8 million in 2022, or comprised ~5% of the JKN cancer annual expenditure ¹



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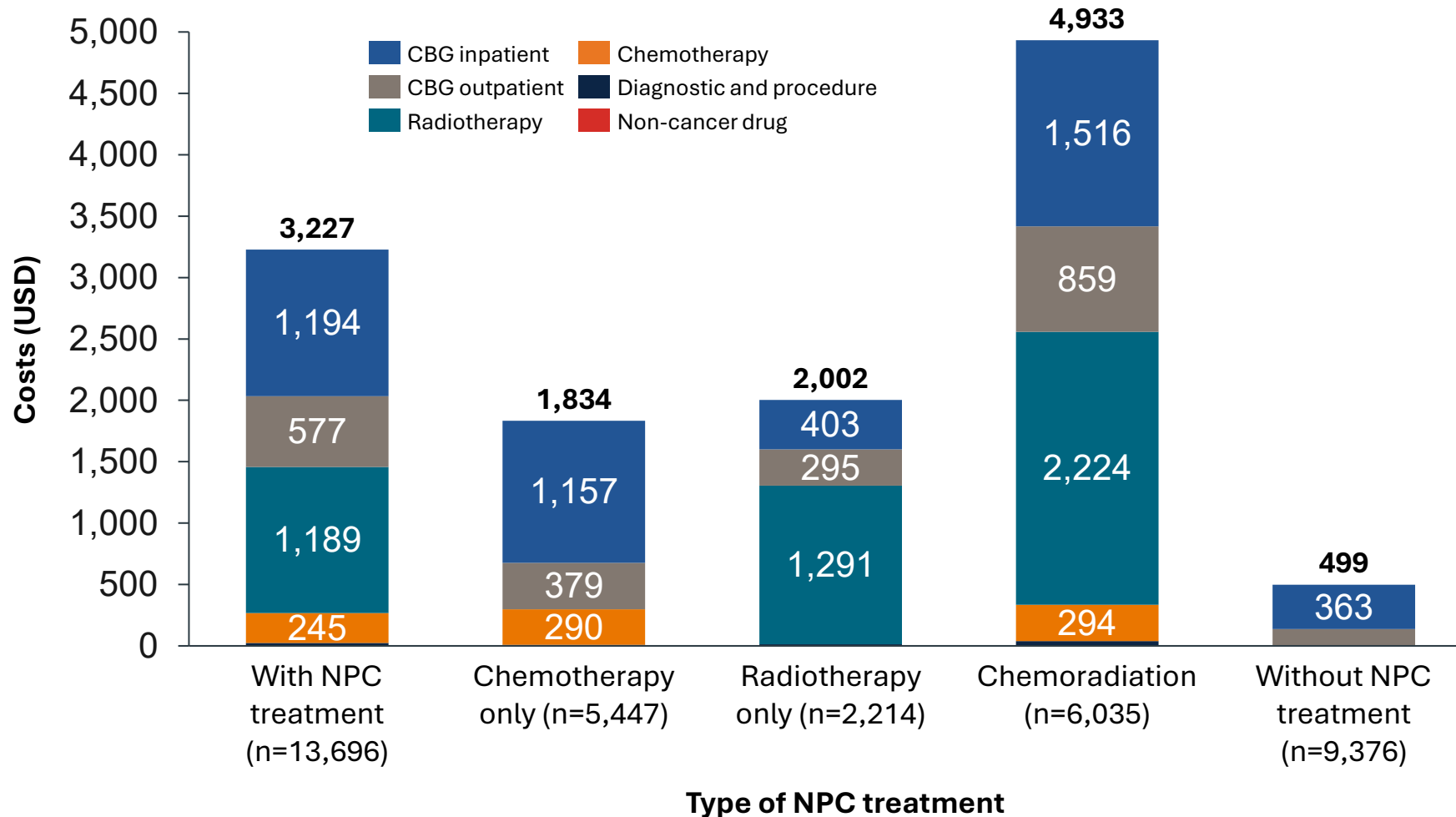


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Patients who underwent chemoradiation incurred the highest overall costs

Results – average direct medical costs by treatment modality



This is the first nationwide study to estimate the total cost of NPC based on public payer perspective

Conclusions

- 1** A substantial proportion of patients remained untreated (41%) , and NPC poses a heavy economic burden on Indonesia's health system
- 2** The total costs of NPC in 2022 was estimated at US\$ 14.8 million, or 5% of the JKN cancer expenditure
- 3** Strengthening prevention of NPC, early diagnosis and efficient resource allocation is essential to manage healthcare costs
- 4** These findings can support policy effort aimed at optimizing resource allocation, expanding treatment coverage, and improving cancer delivery under JKN scheme

