

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

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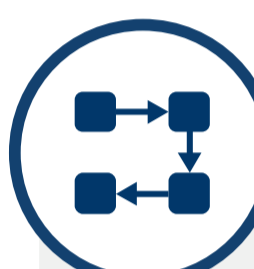
## Conclusions

- This is the first nationwide study to estimate the total cost of nasopharyngeal carcinoma (NPC) based upon the public payer, Jaminan Kesehatan Nasional (JKN), to help inform decision-makers
- The total cost in 2022 was estimated at US\$ 14.8 million, or 5% of the JKN cancer expenditure
- Over the 4-year period analyzed, annual medical costs for NPC increased, encompassing both bundled costs associated with treatments under the Indonesian Case-Base Groups (INA-CBG) system and Non-Case-Base Groups (Non-CBG) chemotherapy costs. This rise may be due to advancements in treatment options and increased prevalence of late-stage diagnoses
- Despite the significant spending on managing this disease, mortality rates remain high, highlighting a critical gap in the effectiveness of current treatment options, underscoring the need for more effective therapies that can improve patient outcomes



## Background

- In Indonesia, NPC represents a significant public health and economic burden, characterized by high mortality and morbidity. In 2020, the mortality rate was 4.7 per 100,000 population, resulting in 13,399 deaths<sup>1</sup>
- Cost-of-illness studies are crucial for guiding cost-effectiveness evaluations, shaping policy decisions for cancer control, and improving public health
- This is the first nationwide study that estimates the direct medical costs of NPC from a public payer's perspective in Indonesia, using the JKN database



## Methods

- This was a retrospective database study using information from the JKN database between January 1, 2018 and December 31, 2023
- The database covers approximately 96% of the Indonesian population or 267 million Indonesians in 2023
- It has longitudinal data for demographics, disease diagnoses, treatment, healthcare resource utilization and costs
- Disease diagnoses (primary and secondary diagnoses) are coded using the International Classification of Disease, Tenth Revision (ICD-10), while treatment procedures are coded using the International Classification of Disease, Ninth Revision, Clinical Modification (ICD-9-CM)
- INA-CBGs and Non-CBGs (Figure 1)
  - The direct medical hospital costs are based on the regulated reimbursement tariff system under the national health insurance (NHI) program, known as INA-CBGs and unbundling costs known as Non-CBGs tariffs
  - The INA-CBGs 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. Costs for surgery, radiation, and certain chemotherapy are aggregated within INA-CBGs, and cannot be identified when multiple procedures are performed during a single visit
  - Non-CBGs refer to treatments not covered under the INA-CBGs system, which may be reimbursed based on actual incurred costs
  - Radiotherapy can be classified as either CBGs or Non-CBGs; radiotherapy costs fall under Non-CBGs when specific procedure codes such as those for brachytherapy and stereotactic surgery are used. Otherwise, they fall under CBGs
  - Chemotherapy costs are classified as Non-CBG

### Study Population

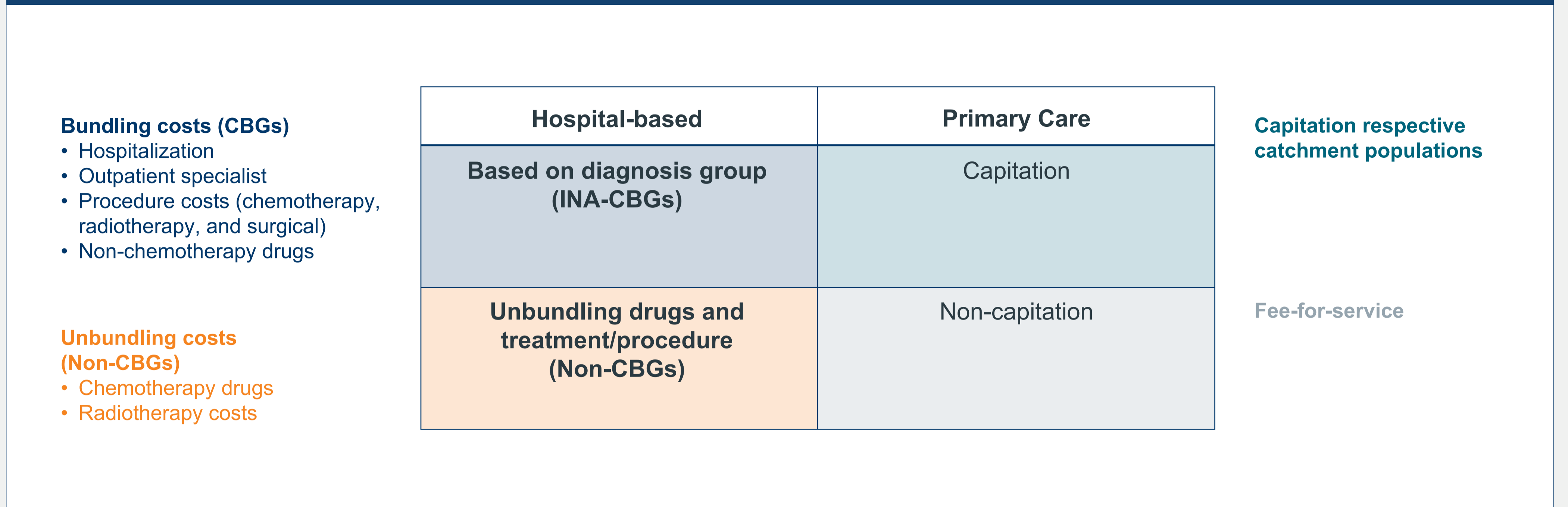
- NPC adult patients aged ≥18 years old with at least 2 medical visits related to NPC were identified from the JKN database between 2019 and 2022 (Figure 2)
  - Index date was defined as the first visit associated with NPC, as coded by ICD-10 'C11'
  - Baseline characteristics were assessed over a 12-month period before the index date
  - Individuals with missing information on age, sex, or documented with only 1 NPC-related visit were excluded
  - 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
- Results were summarized using descriptive statistics. Total costs represent sum of all inpatient costs and specialist outpatient costs under bundling and unbundling costs within 365 days after the index date. Costs in Indonesian Rupiah (IDR) were inflated using the Consumer Price Index in 2024 and converted to US dollars (US\$) (US\$ 1=IDR 15,881)



## Results

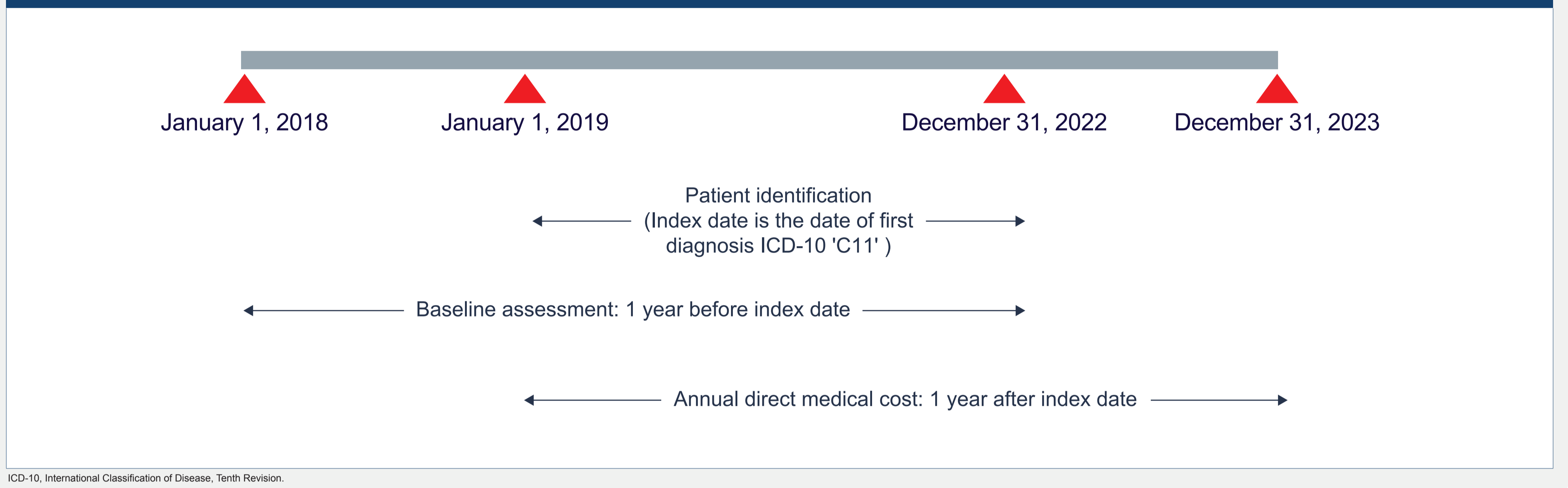
- Among the 267 million patients with records in JKN, 23,072 patients were newly diagnosed with NPC between 2019 and 2022. Of which, 13,660 (59%) patients received treatment related to NPC within 1 year after diagnosis
- The total direct medical hospital cost for all NPC patients in the JKN population was US\$ 14.8 million in 2022. This comprised 5% of the JKN cancer annual expenditure<sup>2</sup>
- Among patients who received treatment, the annual mean cost was US\$ 3234 (standard deviation [SD]=2596) per patient. CBGs accounted for 55% of the total mean cost, with the average inpatient and outpatient CBGs costing US\$ 1195 (SD=1566) and US\$ 578 (SD=555) per patient, respectively
- Radiotherapy cost per patient was US\$ 1192 (SD=1277). Chemotherapy cost was US\$ 246 (SD=486). Other Non-CBGs cost per patient was US\$ 23 (SD=80)
- Annual medical costs increased slightly over the 4-year period (Figure 3), with the exception of 2020, which was likely affected by the COVID-19 pandemic

Figure 1. INA-CBGs and Non-CBGs Within Indonesia's Hospital Reimbursement System



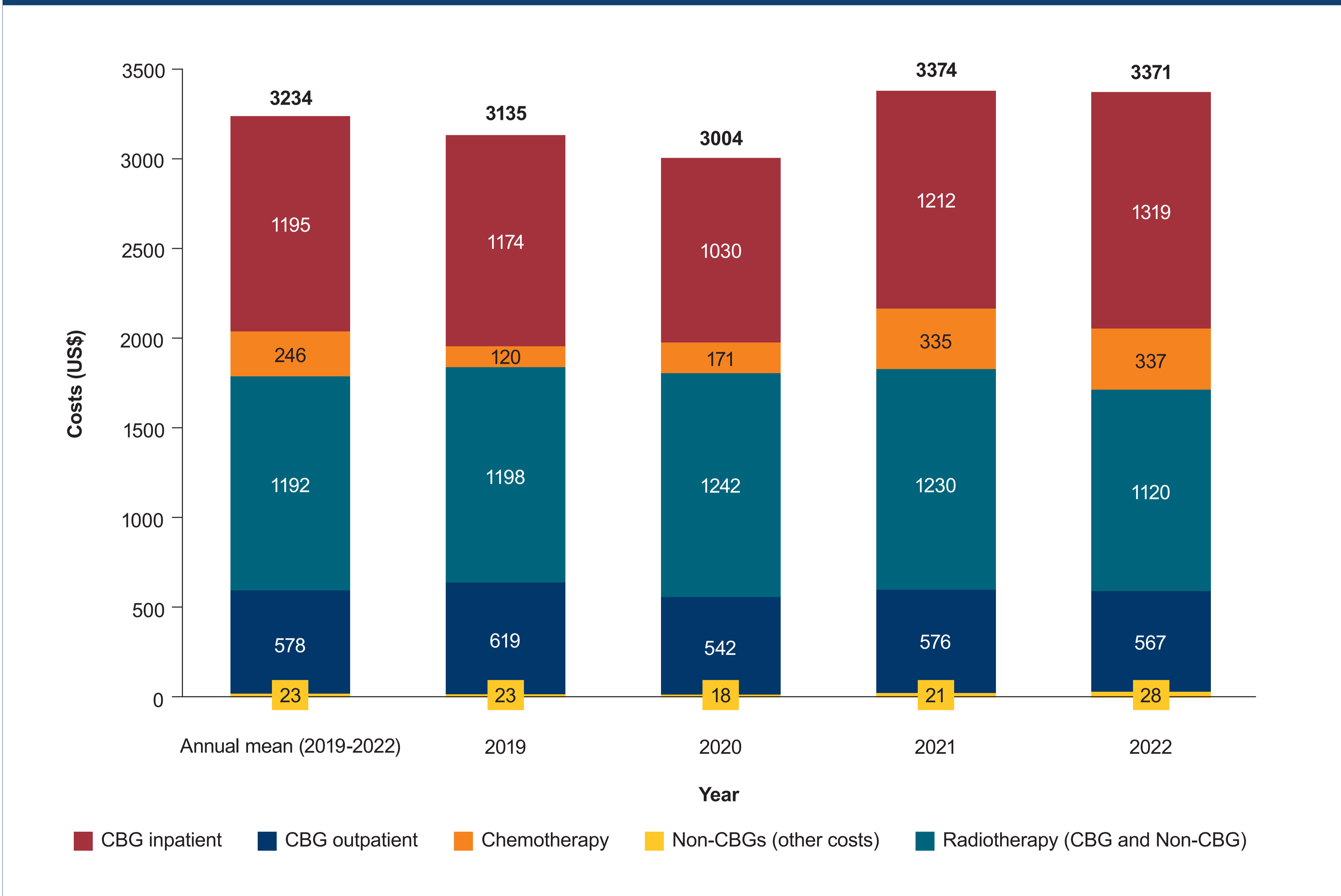
CBG, Case-Base Groups; INA-CBG, Indonesian Case-Base Groups; Non-CBG, Non-Case-Base Groups.

Figure 2. Overview of the Assessment Window



ICD-10, International Classification of Disease, Tenth Revision.

Figure 3. Annual Average Direct Medical Costs Incurred by Patients Diagnosed With NPC in Indonesia From 2019 to 2022



CBGs, Case-Base Groups; Non-CBG, non-Case-Base Groups; NPC, nasopharyngeal cancer; US\$, US dollar.

## References

- International Agency for Research on Cancer. Global Cancer Observatory; Indonesia. 2021.
- BPJS Kesehatan, Program Management Report & Financial Report 2022.

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## Presenter Disclosures

Cosphiadi Irawan has no disclosures.

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