

# Leveling of Radiation Oncology Services in Indonesia

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## Background and Objective

Indonesia is the largest archipelago globally, which poses a great challenge to health services, especially cancer management.<sup>1</sup> Cancer management in Indonesia is usually only available in secondary and tertiary hospitals; therefore, most cancer patients will sometimes be referred multiple times to access cancer treatment.

Radiotherapy as one of the main modalities of cancer management plays an essential role. The output of radiotherapy quality is very much dependent on the availability of equipment and human resources.<sup>2</sup> In Indonesia, not all radiotherapy centers are equal. A lot of them still uses conventional technology with Cobalt-60 machine. A mapping of technology availability is done by the Indonesian Radiation Oncology Society to enable a swift proses of referral whenever a more advanced technology is necessary to treat particular patients.

Apart from that, another essential element that needs improvement is the availability of high-quality human resources. Education and training for radiation oncology is an important aspect underpinning a good radiotherapy center. Radiation oncology education in Indonesia has to meet a standard of competency. At the same time, it has to fulfill the immediate demand of human resources of various radiotherapy centers and capabilities nationwide. There are only one training and education center situated in Jakarta, under the Faculty of Medicine, Universitas Indonesia, which has a 3.5 to 4 years program.<sup>3</sup>

## Methods

The radiotherapy (RT) centers mapping was done by Indonesian Radiation Oncology Society annually. There are three main level of radiotherapy services that differ in its capability. Level 1A is RT facilities that provide RT with 2D technique and Level 1B is RT facilities that is able to provide up to 3D RT; Level II is RT facilities that is able to provide up to Intensity Modulated Radiotherapy (IMRT) or Stereotactic Radiosurgery / Radiotherapy (SRS / SRT); Level III is RT facilities that is able to provide all techniques from 2D, 3D, IMRT, SRS/SRT and Stereotactic Body Radiotherapy (SBRT).

The mapping was done based on the information gathered from all active radiation oncologists working in their own centers nationwide. This mapping became the guide to plan for RT center development, referral of patients, and radiation oncologists allocation. In center with level IA or IB capability, the society advocated and encourage to do technology upgrade. For center with Level III capability, a consultant will be allocated in that particular center.

## Results and Discussion

There are around 100 active radiation oncologists in Indonesia spread out across 46 centers in Indonesia with different level of capabilities (Figure 1). Most are concentrated in Java and Sumatera island. Some centers, especially in rural Indonesia, has only basic radiotherapy infrastructure, capable of only conventional radiotherapy with Cobalt-60 teletherapy (Level 1). The leveling of radiation oncology services has resulted in better homogeneity in clinical practice, which then it was expected to translate into better patient care. The cancer patient with difficult cases or rare cases can be referred to a higher level of radiotherapy center for treatment whenever applicable. The consultant in level III radiotherapy center is expected to be able to provide a more specialized care as the availability of more advanced RT technology.

## Conclusions

Radiation oncology profession in Indonesia is developing at a quick pace together with the increasing installation of radiotherapy equipment nationwide. An adapted and proper service leveling is required to be able to provide a better RT treatment for patients.

## References

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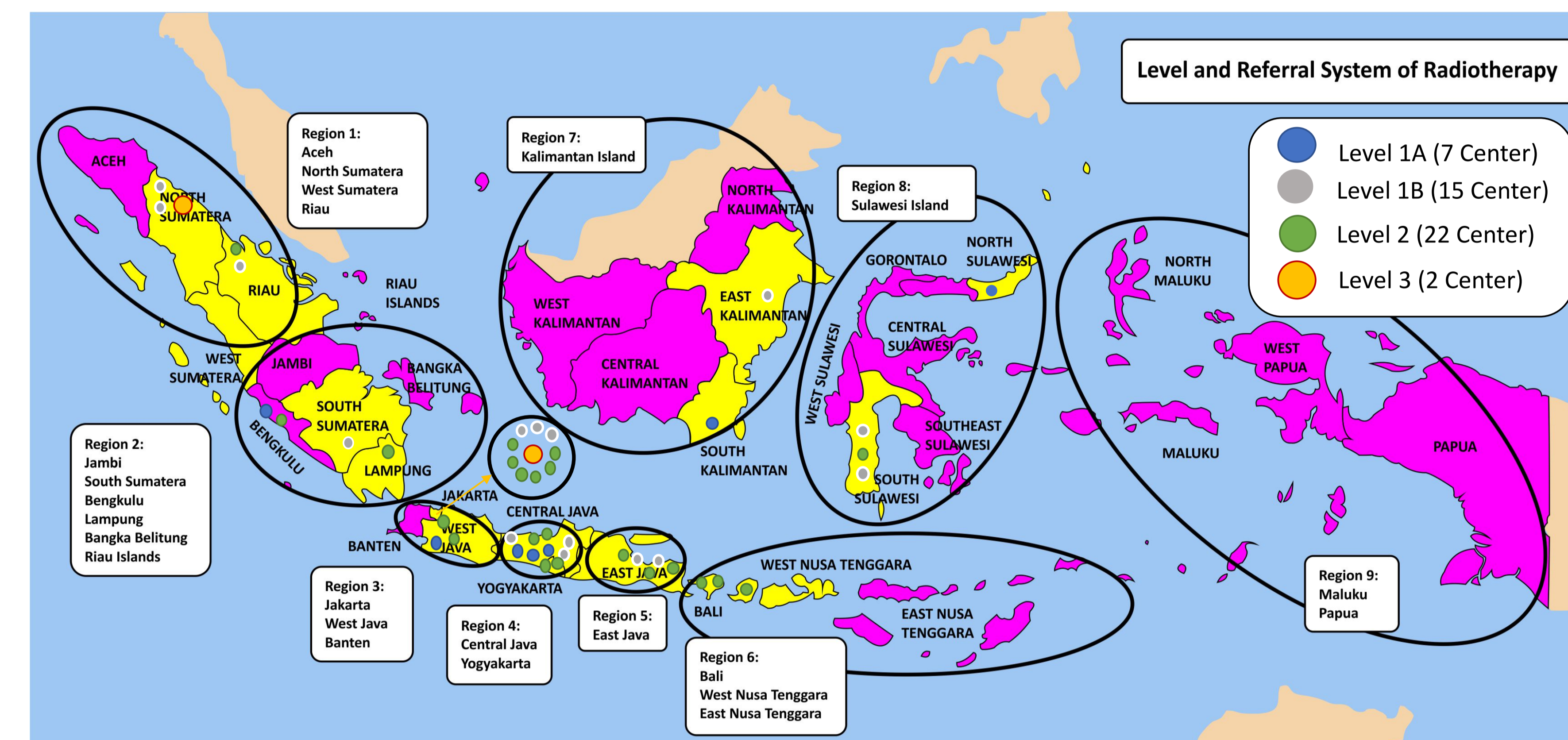


Figure 1. Distribution and Leveling of Radiotherapy Services in Indonesia (year 2020)

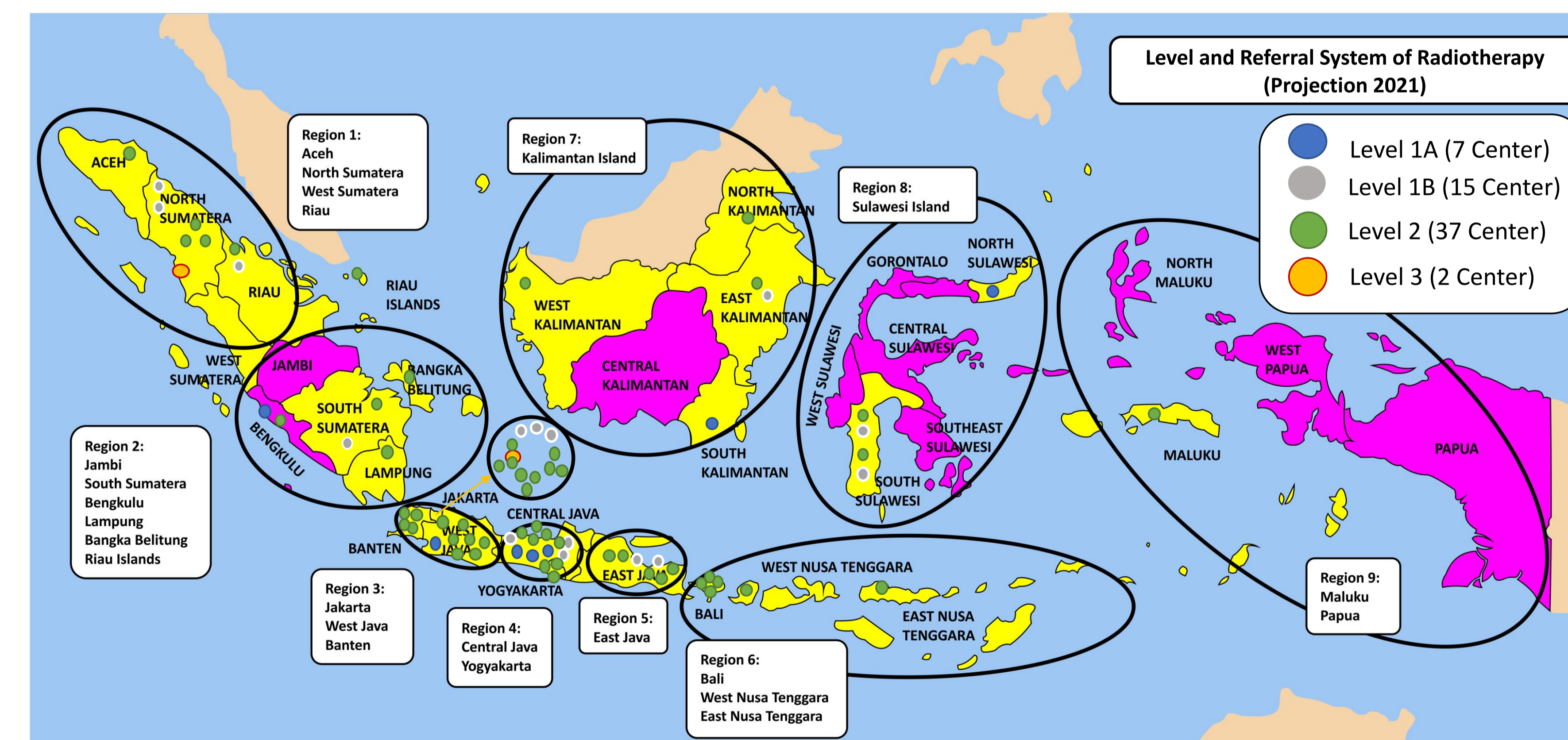


Figure 2. Distribution and Leveling of Radiotherapy Services in Indonesia (Projection Year 2021)

