# syreon Middle East

# **Cost-Benefit Analysis of Proton Therapy Device Advancing Medical Tourism in Jordan**

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# INTRODUCTION

Proton therapy is revolutionizing cancer care by precisely targeting tumors while minimizing damage to surrounding tissues. This precision significantly reduces the risk of secondary cancers and enhances patients' quality of life.

Despite the high cost and limited availability of the device in certain countries, medical tourism allows patients to travel abroad for treatment, either for more

# **RESULTS**

Both the Jordanian economy and the RMS perspectives demonstrated promising financial results. For each perspective, the model outcomes were reported as Benefit-cost ratio (BCR), Net present value (NPV), Internal rate of return (IRR), and Payback period.

### **Benefit Cost Ratio**

affordable options or to access procedures unavailable in their home countries.

Jordan has become a popular destination for medical tourism due to the high quality of care and expertise offered by its hospitals and medical professionals, attracting patients from various regions including the Gulf, Saudi Arabia, Yemen, Iraq, Syria, and Libya<sup>1</sup>.

## **METHODS**

We conducted a cost-benefit analysis (CBA) to estimate the medical and nonmedical revenues from the proton therapy device. Model inputs were collected through local healthcare expert questionnaires, supplemented by relevant secondary data from literature sources. The reliability of the results was validated with local experts. The model time horizon was set to 10 years.

#### **Target Population**

Patient population was estimated through a questionnaire distributed among Jordanian medical experts and validated by data from the ESTRO conference abstract book<sup>2</sup>. This approach provided an estimate of the expected number of beneficiaries from Jordan and neighboring countries. These estimates illustrate the potential reach and impact of proton therapy within and beyond Jordan.



BCR shows a positive value from both perspectives. The Jordanian economy perspective shows a BCR of 1.24, while when considering medical revenues only, the BCR was still positive at 1.08 indicating the cost-effectiveness of the device.





Figure 1: Estimated Eligible Population

## Perspectives

The economic viability of proton therapy in Jordan was assessed from two distinct perspectives; The Jordanian holistic economy perspective and the royal medical services (RMS). This comprehensive view included the potential impact on medical tourism, indirect healthcare savings, and broader societal benefits.

Figure 3: Discounted Difference showing IRR, NPV, and Payback period from Jordanian economy perspective



Both perspectives show a positive NPV indicating profitable investments, a high IRR indicates a healthy annual rate of growth, and a payback period of 7 years and 9 year from the Jordanian economy and RMS perspectives, respectively.

This approach provided insights into the specific financial implications for the healthcare system.



## **CONCLUSION**

The CBA of establishing a proton therapy facility in Jordan shows it to be financially viable and potentially profitable, with significant returns on investment and a short payback period. Including non-medical revenues from medical tourism underscores the broader economic benefits, enhancing Jordan's healthcare offerings and positioning it as a leading medical tourism destination.

#### REFERENCES

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