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### **ETU003**

## **Uniform Whole Body Immobilization Device for Radiotherapy**

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**Introduction:** Radiotherapy is a treatment modality that utilizes radiation, either from radioactive sources or generated by a Linear Accelerator (Linac). To ensure precise targeting and protect surrounding healthy organs, accurate and stable patient immobilization is essential. Immobilization devices vary by treatment area—such as the head, head and neck, thorax, and pelvis—but are typically limited to one unit per type, posing challenges when treating multiple patients with similar conditions simultaneously. This study aims to evaluate the accuracy of a newly developed immobilization tool called UNIMOB (Uniform Whole Body Immobilization Device), designed as an affordable and flexible alternative. **Methods:** The research follows experimental design, constructing the UNIMOB using an 11 mm-thick acrylic baseplate, a vacuum-formed headrest, and a thermoplastic mask for individualized immobilization. The UNIMOB's performance is compared to standard immobilization equipment in terms of positioning accuracy, reproducibility, and safety. **Results:** Show that the vacuum headrest, filled with moldable styrofoam beads, adapts precisely to the shape of the patient's head, while the acrylic baseplate offers safe attenuation during irradiation. UNIMOB meets the clinical criteria for consistent and reproducible positioning. Moreover, verification tests demonstrate low setup error values, supporting its effectiveness. **Conclusions:** The UNIMOB device enhances treatment precision and offers a cost-effective solution for radiotherapy departments, especially those with limited resources or in scenarios requiring simultaneous treatment for multiple patients with similar anatomical sites.

**Keywords:** immobilization device, uniform whole body immobilization device, accuracy