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**PHARMACEUTICAL INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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**Radiotherapy treatment planning software - Requirement and
test method for electron beam dose calculation accuracy**

放射治疗计划软件 电子束剂量计算准确性要求和试验方法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed by the National Medical Products Administration. This document was prepared by the Subcommittee on Radiotherapy, Nuclear Medicine and Radiation Dosimetry Equipment of the National Technical Committee for Standardization of Medical Electrical Appliances. (SAC/TC10/SC3) is under its jurisdiction. This document was drafted by: Beijing Institute for Medical Device Testing (Beijing Medical Biological Protective Equipment Testing and Research Center), Varian Medical... Medical Equipment (China) Co., Ltd., Peking University Cancer Hospital, Shanghai United Imaging Healthcare Co., Ltd., Elekta (Shanghai)

Technology Co., Ltd. The company, Xi'an Dayi Group Co., Ltd., Sichuan University, the First Medical Center of the General Hospital of the Chinese People's Liberation Army, and Shanghai University of Science and Technology. The main drafters of this document are. Jiao Chunying, Zhang Xin, Wu Hao, Fu Guotao, Liu Yanfang, Ye Shaoqiang, Chen Shufei, Zhang Zhongyuan, Lin Angchun, and Gou Chengjun. Li Yueling, Xie Chuanbin, Liu Baolin, Yan Rongguo. Radiotherapy planning software Accuracy requirements and test methods for electron beam dose calculation

1 Scope

YY/T 1981 puts a number on how accurate a radiotherapy planning system has to be for electron beams. It specifies the requirements for the accuracy of electron beam dose calculation in radiotherapy treatment planning software, referred to as RTPS, and describes the corresponding test methods. It applies to planning software handling external beam electron radiotherapy. Electron beams behave differently from photons at tissue interfaces and near the surface, which is where dose calculation algorithms diverge most and where a planning error reaches the patient directly. The document takes effect on 1 January 2027. For a vendor of treatment planning systems seeking Chinese registration, or a hospital physics team commissioning one, this is the standard the electron dose accuracy verification is run against.

This document specifies the accuracy requirements for electron beam dose calculation in radiotherapy planning software (RTPS) and describes the corresponding experimental methods. This document applies to radiotherapy units with long-range electron beam dose calculation functions used in conjunction with medical electron accelerators. Software for slicing. This document is not applicable to electron beam radiotherapy planning software for specific applications.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB 9706.201 Medical Electrical Equipment - Part 2-

3 Terms and Definitions

The terms and definitions defined in GB 9706.201, GB 15213, GB/T 17857 and YY 0775, as well as the following terms and definitions, apply to this document.

3.1 Dose calculated values [Source: YY 0775-2010, 3.1]

3.2 nominal energy Provided by the manufacturer, it is used to characterize the energy of the radiation beam. [Source: GB 15213-2016, 3.13]

3.3 A beam-limiting device for electron radiation beams. [Source: GB 9706.201-2020, 201.3.203]

3.4 maximum dose depth The depth at which the maximum absorbed dose is located on the radiation beam axis within the phantom when the phantom surface is at a specific distance.