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Iodine -131 therapy for thyroid diseases - Doses, new regulations and patient advices

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The therapeutic use of I-131 has been widely used in patient care over the past 50 years. Its main applications are in hyperthyroidism and functioning thyroid cancer both to ablate the remnant tissue or to burn metastasis. The indications, doses, regulations of its use, precautions and guidelines defer in different centers and countries. Due to these different criteria the Chilean Society of Endocrinology and Metabolism invited an expert panel to discuss the situation and to issue a consensus document with clinical recommendations and radiological protection advice (ref. Michaud P. "Proposición de concensos para el uso de 131I en el tratamiento de la tirotoxicosis y el cáncer del tiroides". *Rev Med Ch* 1998;126:855-865).

Some of the proposals of the consensus committee are: 1. I-131 should be indicated in agreement by the endocrinologist and the nuclear medicine physician. 2. Pre-treatment I-131 thyroid uptake must be performed. 3 The only contraindications for treatment is pregnancy, in children it might be used with caution. 4. For thyrotoxicosis both a calculated or an ablative dose (555 MBq) criteria are acceptable In this case a secondary hypothyroidism must be considered an objective rather a complication. 5. In uninodular toxic goiter a 1110 MBq dose is recommended. 6. Iodine free diet should be restricted only for cancer patients. 7. Propylthiouracil (PTU) must be discontinued 5 days before treatment and it should be reinitiated 5 days latter. 8. The indication of prophylactic use of corticoids in patients with Graves' disease still require more clinical data to support its use. 9. In case of treatment failure, the dose should not be repeated before six months of follow-up. 10. For cancer patients with intrathyroid disease an ablative dose of 3700 MBq should be administered 4 weeks after total thyroidectomy or with a TSH level above 30 μUI/ml. 11. A whole body scan should be done one week latter. 12. Follow-up whole body scan should be used only if there are clinical suspicion of metastasis. Thyroid hormone replacement must be discontinued for 30 days or with a TSH value above 30μUI/ml. A 185 MBq dose of I-131 is recommended for follow-up scan in order to ovoid thyroid tissue stunning. 13. For treatment of metastasis a dose of 5700 to 7400 MBq is recommended if there are cervical lymphatic nodes or distant metastasis.

Since there are not local regulations for patient releases after the administration of 131I we recommended to adopt the criteria proposed by the United States Nuclear Regulatory Commission (NRC) published as 10 CFR 35.75 and the Regulatory Guide 8.39, "Release of Patients Administered Radioactive Materials". According to this regulation the physician in charge may authorize the release from its control any individual who has been administered radiopharmaceuticals or permanent implants containing radioactive materials if the total effective dose equivalent to any other individual from exposure to the released individual is not likely to exceed 5 millisieverts (0.5 rem). This proposal change a general limit to an individual based estimation of the radiation risk.

In this presentation a Patient Advice Guide is also presented to ovoid the unnecessary radiation to the general public, health worker and the environment.