LANDESKRANKENHAUS FELDKIRCH
Akademisches Lehrkrankenhaus
Nuklearmedizin

# M. Basedow – pro Radiojod

Alexander Becherer

Abteilung für Nuklearmedizin
Akademisches Lehrkrankenhaus Feldkirch

# Disclosures

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**Vortragshonorare, Ad-Boards**

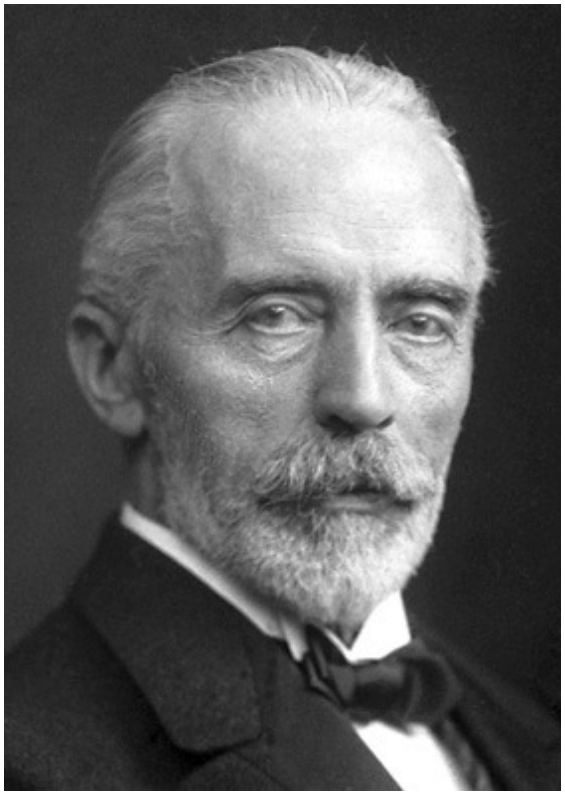
- Bayer
- Eisai
- Eli Lilly
- GE Healthcare
- Merck
- Novartis
- Sanofi-Genzyme

**Fortbildungsgrants**

- BSM
- GE Healthcare
- Merck
- Sandoz
- Siemens

# Definitive Therapie

Theodor Kocher, 1. Strumektomie 1876



Saul Hertz, 1. Radiojodtherapie 1941

# Therapieziel

**Beseitigung der Hyperthyreose**

**Vermeidung eines Rezidivs**

0021-972X/96/$03.00/0
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# Graves' Hyperthyroidism: Treatment with Antithyroid Drugs, Surgery, or Radioiodine—A Prospective, Randomized Study*

OVE TÖRRING, LEIF TALLSTEDT, GÖRAN WALLIN, GÖRAN LUNDELL, JAN-GUSTAF LJUNGGREN, ADAM TAUBE, MARIA SÄÄF, BERTIL HAMBERGER, AND THE THYROID STUDY GROUP†

Erfolgsraten (N=179):

| | | |
|---|---|---|
| Thyreostatika | < 35 a: 58 % | ≥ 35 a: 66 % |
| Chirurgie | < 35 a: 97 % | ≥ 35 a: 92 % |
| $^{131}$I | | ≥ 35 a: 79 % |

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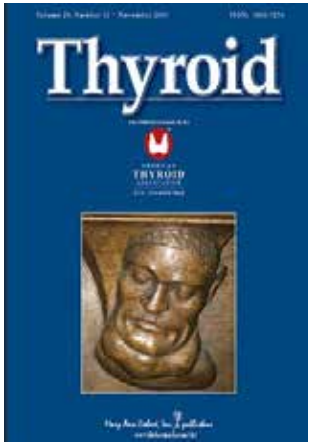
# The Long-Term Outcome of Treatment for Graves' Hyperthyroidism

Gabriel Sjölin,[1,*] Mats Holmberg,[2,3,*] Ove Törring,[4] Kristina Byström,[5] Selwan Khamisi,[6,7] Dorota de Laval,[8] Mirna Abraham-Nordling,[9] Jan Calissendorff,[9,10] Mikael Lantz,[11,12] Bengt Hallengren,[11,12] Helena Filipsson Nyström,[2,13] and Göran Wallin[1,9]




1186 Pat. eingeschlossen (60% der Kohorte), f-u 8 ± 0,9 Jahre

Analyse nach

- Erstlinien-Behandlung
- Remissionsrate
- Rückfallrate
- QoL, Demographie, Ko-Morbiditäten, Lebensstil

TABLE 2. LONG-TERM RESULT OF FIRST-LINE TREATMENT WITH ANTITHYROID DRUGS, $^{131}$I RADIOTHERAPY, SURGERY, OR CONSERVATIVE (EXPECTANCY) TREATMENT IN A COHORT OF PATIENTS DIAGNOSED WITH *DE NOVO* GRAVES' HYPERTHYROIDISM 2003–2005

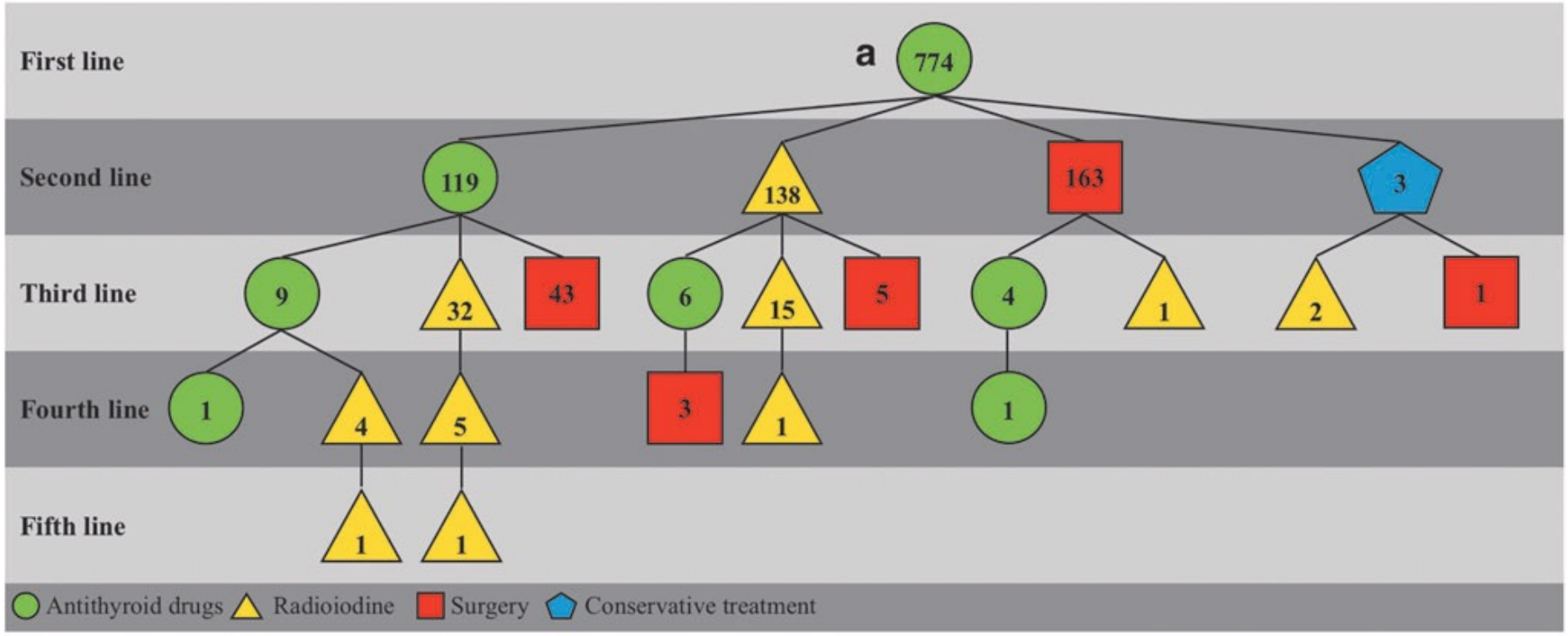
| *First treatment* | *Number of treated* n *(%)* | *In remission*[a] n *(%)* | *Levothyroxine treated*[b] n *(%)* | *Changed treatment*[c] n *(%)* | *In remission after changed treatment*[d] n *(%)* | *Total in remission*[e] n *(%)* |
|---|---|---|---|---|---|---|
| ATD 12-18 mo | 774 (65.3) | 351 (45.3) | 81 (23.0) | 178 (23.0) | 157 (20.3) | 508 (65.6) |
| $^{131}$I | 324 (27.3) | 264 (81.5) | 204 (77.3) | 0 (0) | 0 (0) | 264 (81.5) |
| Surgery | 54 (4.6) | 52 (96.3) | 50 (96.2) | 0 (0) | 0 (0) | 52 (96.3) |
| Expectancy | 34 (2.9) | 27 (79.4) | 5 (18.5) | 0 (0) | 0 (0) | 27 (79.4) |
| Total | 1186 (100) | 694 (58.5) | 340 (49.0) | 178 (15.0) | 157 (13.2) | 851 (71.8) |

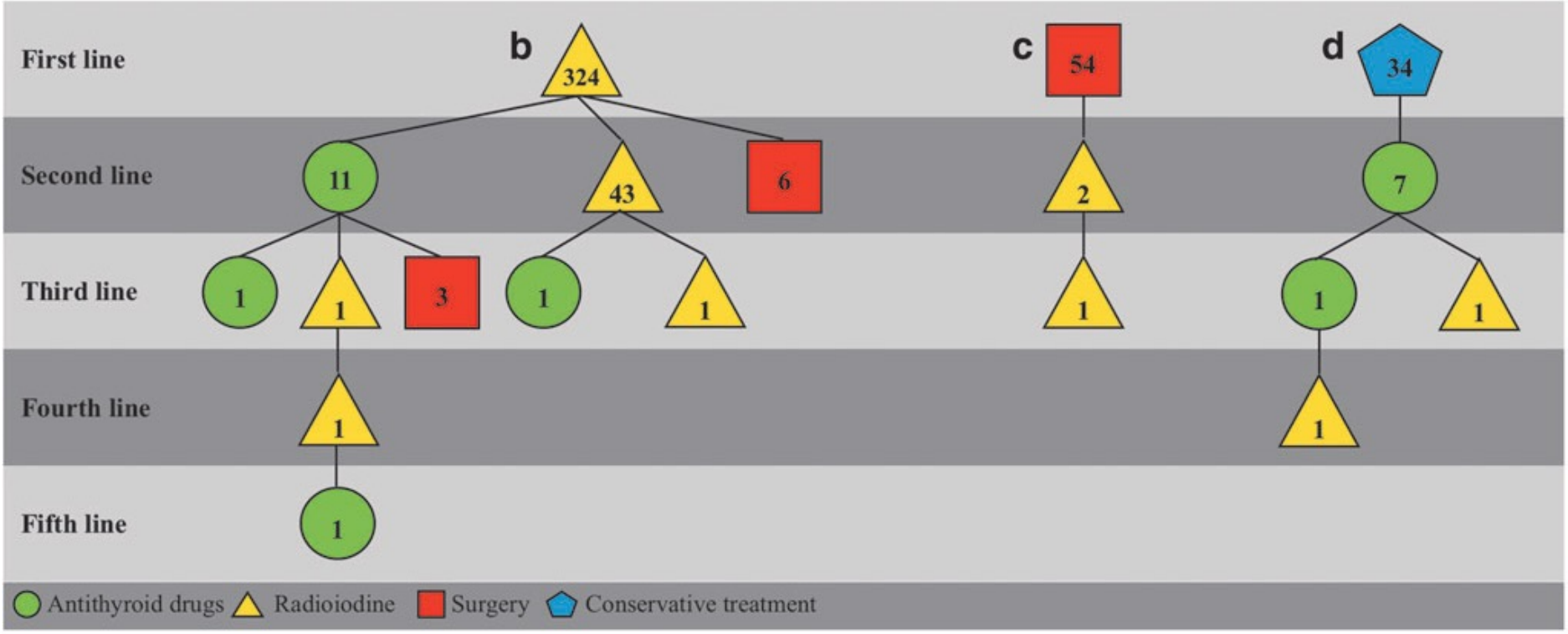
[a]At the follow-up after the first-line treatment only.
[b]At follow-up among the ones in remission after first-line treatment.
[c]Due to adverse reactions, development or worsening of TAO, persistent or high levels of TRAb, patient wishes, or desired pregnancy.
[d]At follow-up after changed treatment during the first treatment period.
[e]Total number of patients in remission after first-line treatment inclusive of patients who underwent change of first-line treatment.
TRAb, thyroid-stimulating hormone receptor antibodies.

TABLE 3. TOTAL NUMBER OF PATIENTS IN THE TREATMENT GROUPS AND THE EXTENT OF LEVOTHYROXINE TREATMENT AT FOLLOW-UP AFTER 6 TO 10 YEARS

| *Treatment*[a] | *Treated,* n *(%)* | *Levothyroxine treated,*[b] n *(%)* |
|---|---|---|
| ATD only[c] | 396 (33.4) | 91/396 (23.0) |
| $^{131}$I only[d] | 485 (40.9) | 402/485 (82.9) |
| Surgery only[e] | 258 (21.8) | 247/258 (95.7) |
| $^{131}$I plus surgery[f] | 20 (1.7) | 18/20 (90.0) |
| Conservative (monitoring)[g] | 27 (2.3) | 5/27 (18.5) |
| Total | 1186 | 763/1186 (64.3) |

[a]Administered treatment during the whole follow-up period in any order.
[b]Number of levothyroxine-treated patients at the end of the study period.
[c]ATD treatment only, one or several courses, and including patients who started with conservative treatment.
[d]$^{131}$I but no surgery.
[e]Surgery but no $^{131}$I.
[f]$^{131}$I plus surgery.
[g]Patients who were followed and monitored and when needed substituted with levothyroxine.


First line
a
774
Second line
119
138
163
3
Third line
9
32
43
6
15
5
4
1
2
1
Fourth line
1
4
5
3
1
1
Fifth line
1
1
Antithyroid drugs
Radioiodine
Surgery
Conservative treatment


First line
Second line
Third line
Fourth line
Fifth line
b
324
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43
6
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c
54
2
1
d
34
7
1
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1
Antithyroid drugs
Radioiodine
Surgery
Conservative treatment

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https://doi.org/10.1186/s40842-018-0071-6

Clinical Diabetes and Endocrinology

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RESEARCH ARTICLE **Open Access**

# Efficacy of radioactive iodine treatment of graves' hyperthyroidism using a single calculated $^{131}$I dose

Ka Kit Wong[1], Barry L. Shulkin[2], Milton D. Gross[1,3] and Anca M. Avram[1*]

238 weibl., 78 männl. (3:1), davon 20 Kinder <18 a

179 pt. Therapie-naiv, 80 PTU, 37 MMI, 14 PTU + MMI, 6 Op

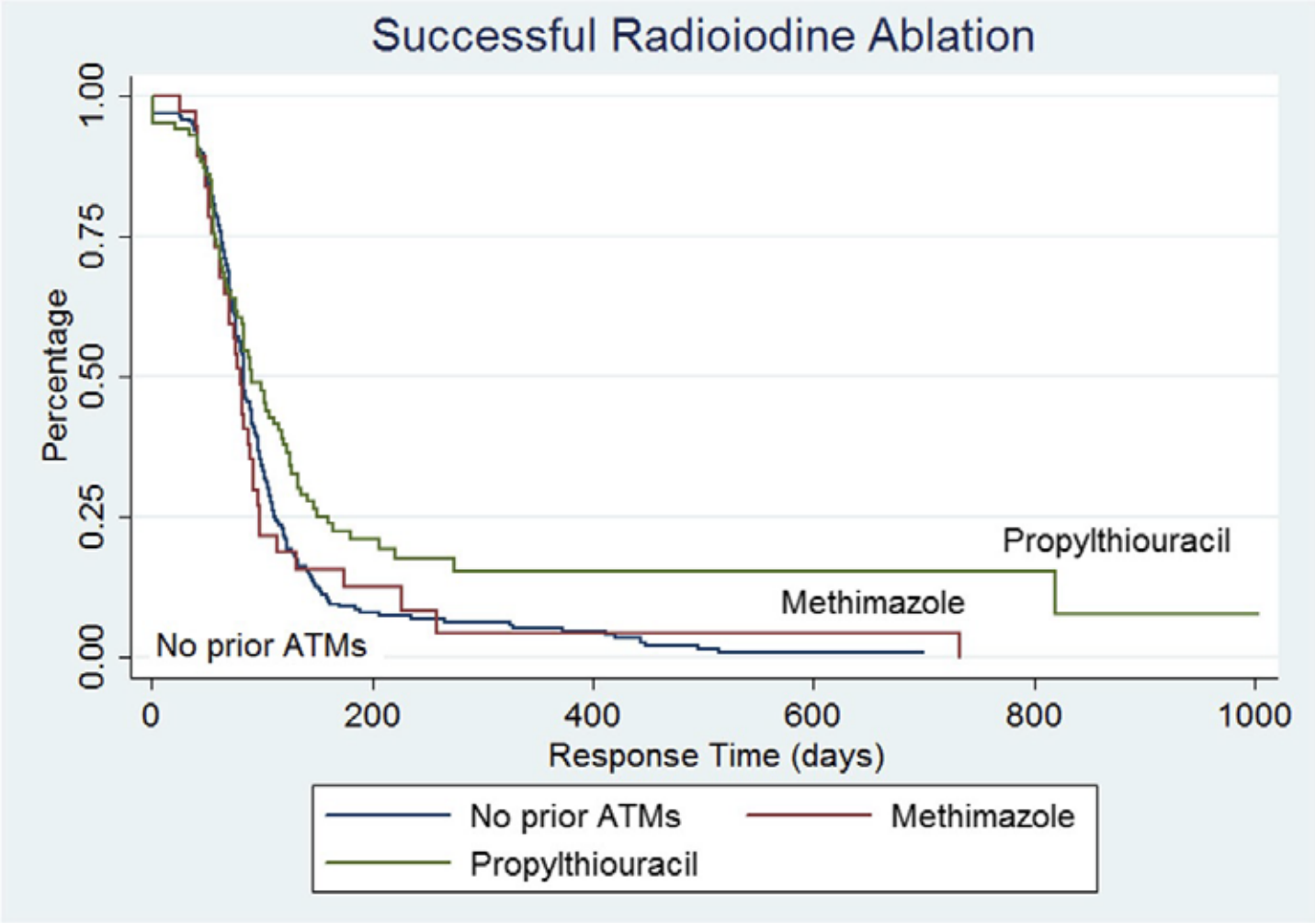
Mittleres Zeitintervall Dg – RJT 326 d

Mittlere SD-Masse 50 ± 10 g

Kontrolle nach 7 Wo und 3 Mo

# Radiojoduptake (RAIU)-Messung 6h und 24h

$$^{131}\text{I activity (mCi) dose} = \frac{0.2\,\text{mCi per gram of thyroid tissue x target thyroid tissue mass}}{\text{RAIU (\%)}}$$




**Erfolg**

1. RJT 295/316 (93%)
2. RJT 18/316 (6%)
3. RJT 2/316 (<1%)

OP nach 2. RJT 1/316

European Thyroid JOURNAL | C F Mooij, T D Cheetham *et al.* | Pediatric Graves' disease ETA guideline | 11:1 | e210073

GUIDELINES

# 2022 European Thyroid Association Guideline for the management of pediatric Graves' disease

**Christiaan F Mooij[1,*], Timothy D Cheetham[2,3,*], Frederik A Verburg[4], Anja Eckstein[5], Simon H Pearce[2,6], Juliane Léger[7]** and **A S Paul van Trotsenburg[1]**

## Abstract

Hyperthyroidism caused by Graves' disease (GD) is a relatively rare disease in children. Treatment options are the same as in adults – antithyroid drugs (ATD), radioactive iodine (RAI) or thyroid surgery, but the risks and benefits of each modality are different. The European Thyroid Association guideline provides new recommendations for the management of pediatric GD with and without orbitopathy. Clinicians should be alert that GD may present with behavioral changes or declining academic performance in children. Measurement of serum TSH receptor antibodies is recommended for all pediatric patients with hyperthyroidism. Management recommendations include the first-line use of a prolonged course of methimazole/carbimazole ATD treatment (3 years or more), a preference for dose titration instead of block and replace ATD, and to avoid propylthiouracil use.

Where definitive treatment is required either total thyroidectomy or RAI is recommended, aiming for complete thyroid ablation with a personalized RAI activity. We recommend avoiding RAI in children under 10 years of age but favor surgery in patients with large goiter. Pediatric endocrinologists should be involved in all cases.

RAI can theoretically be used in any patient with GD, but contraindications are pregnancy (and becoming pregnant within 6 months after RAI), breast-feeding, young age (<5 years; because of a greater long-term theoretical risk of malignancy) and active GO which can be exacerbated by RAI. Relative contraindications are age 5–10 years, inactive GO and large goiter that may need repeated treatment.

Side effects following RAI treatment in pediatric GD patients are extremely rare, although sometimes a mild tenderness over the thyroid may be observed in the first week after treatment. Observational studies in pediatric patients treated with RAI aiming at hypothyroidism reported no malignancies or fertility problems with a maximum follow-up of nearly four decades.

Clinical Practice Guideline | L Bartalena, G J Kahaly and others | Guidelines for medical management of GO | 185:4 | G43–G67

# The 2021 European Group on Graves' orbitopathy (EUGOGO) clinical practice guidelines for the medical management of Graves' orbitopathy

**L Bartalena[1,*], G J Kahaly[2,*], L Baldeschi[3], C M Dayan[4], A Eckstein[5], C Marcocci[6], M Marinò[6], B Vaidya[7] and W M Wiersinga[8] on behalf of EUGOGO[†]**

*European Journal of Endocrinology*
(2021) **185**, G43–G67

| | | | |
|---|---|---|---|
| 5 | Glucocorticoid prophylaxis | Oral prednisone/prednisolone prophylaxis should be given to radioactive iodine (RAI)-treated patients at risk of progression or *de novo* development of GO (smokers, severe/unstable hyperthyroidism, high serum TSHR-Ab). Regimen: high risk: 0.3–0.5 mg/kg/bodyweight as starting dose, tapered, and withdrawn after 3 months; low risk: 0.1–0.2 mg/kg/bodyweight, tapered, and withdrawn after 6 weeks. Patients with longstanding and stably inactive GO can receive RAI without prednisone/prednisolone cover if risk factors for GO progression, particularly smoking and high serum TSHR-Ab titers are absent. Uncontrolled post-RAI hypothyroidism should be avoided. | 1, ØØØØ |