

# גידולי בלוטת התריס

פרופ' רחמים (רמי) בן יוסף

אסותא- השירות לטיפול ביוזר רדיואקטיבי

A.R.M א.ר.מ.

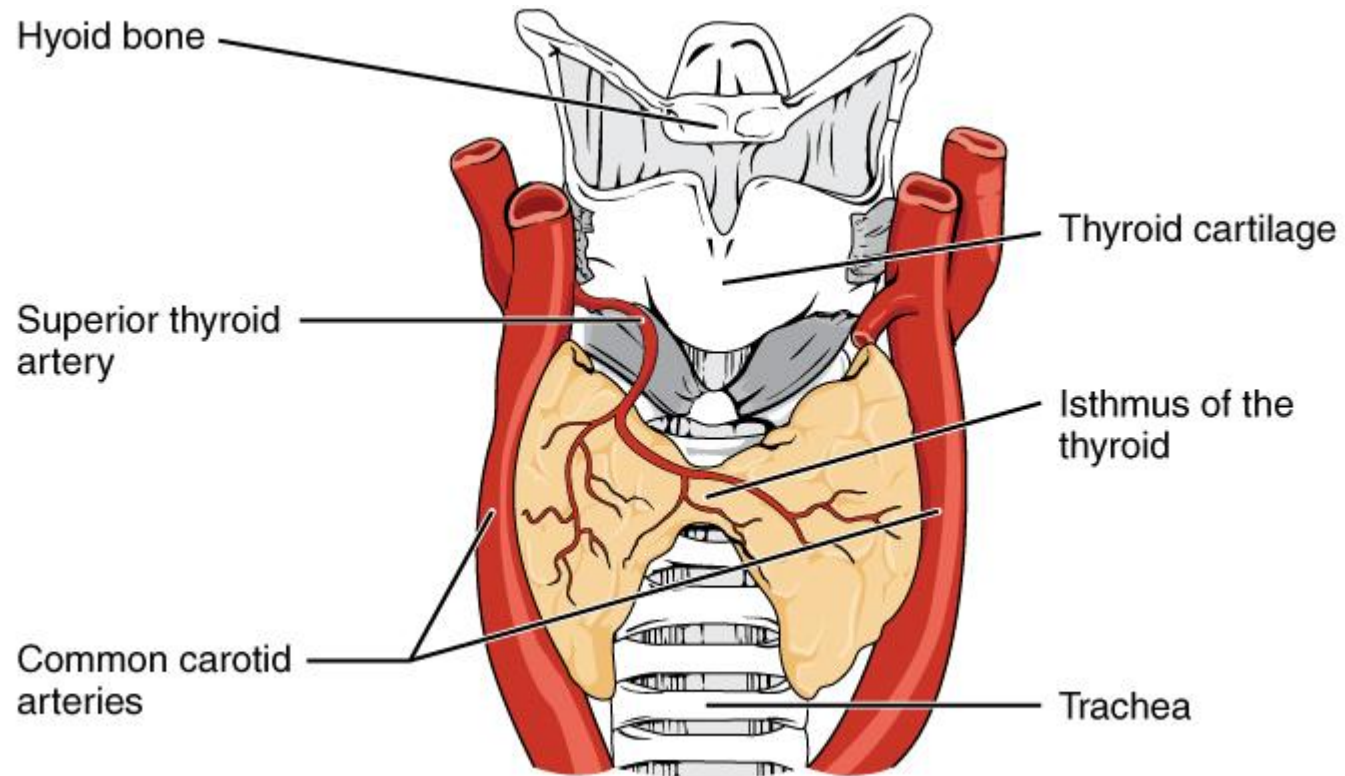
The center for Otorhinolaryngology  
Head and Neck & Maxillofacial Surgery

המרכז לרפואת אף אוזן גרון  
ניתוחי ראש צוואר, פה ולסתות

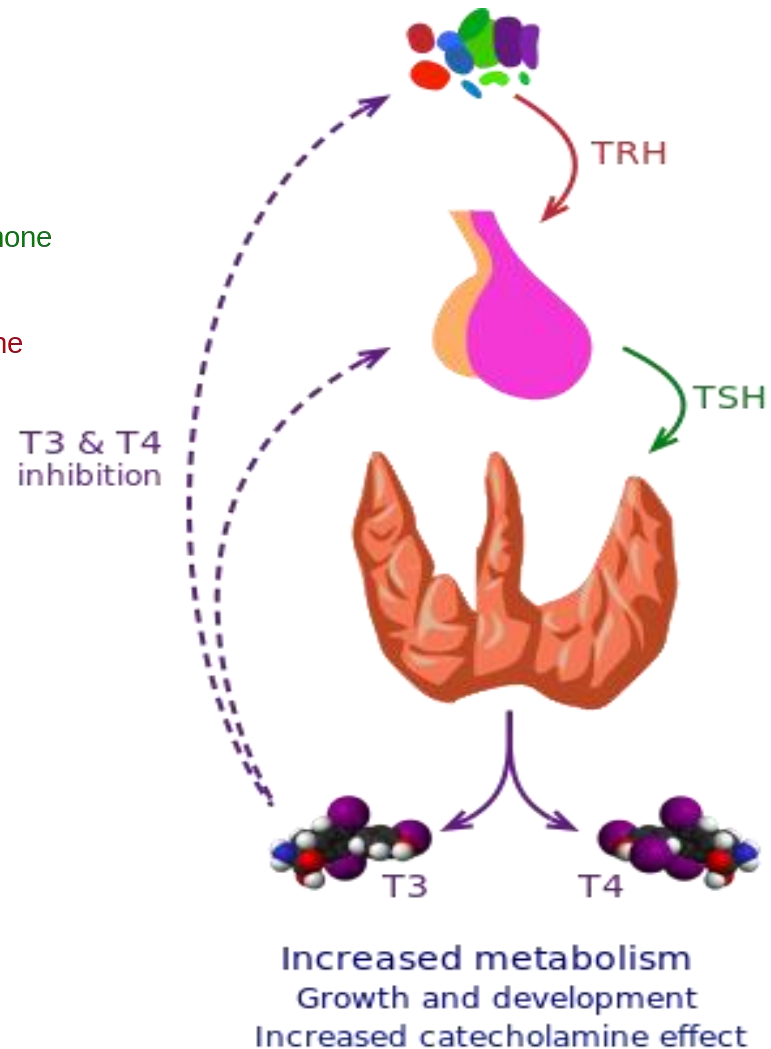
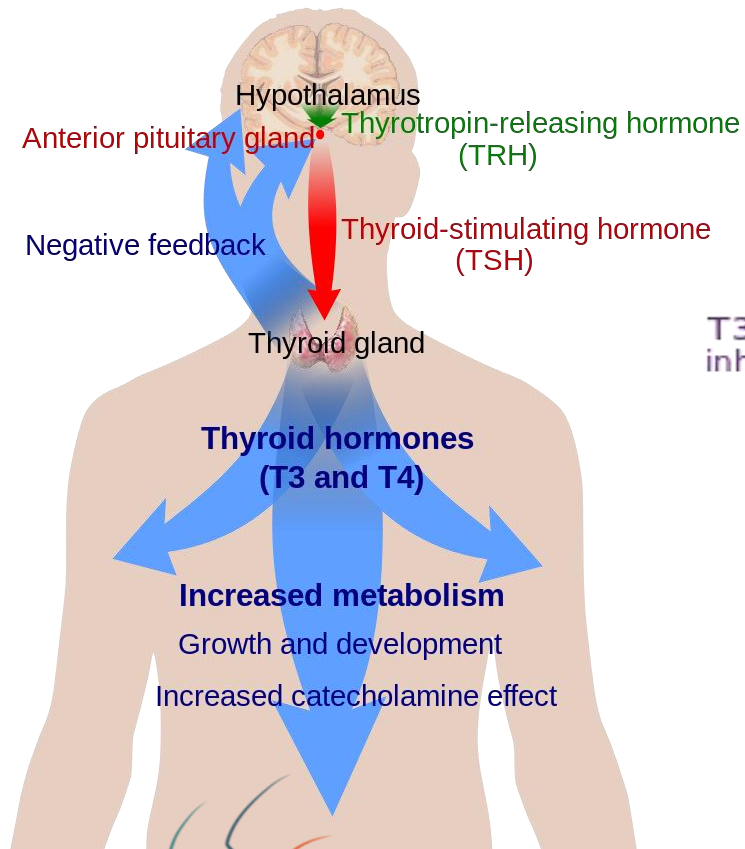


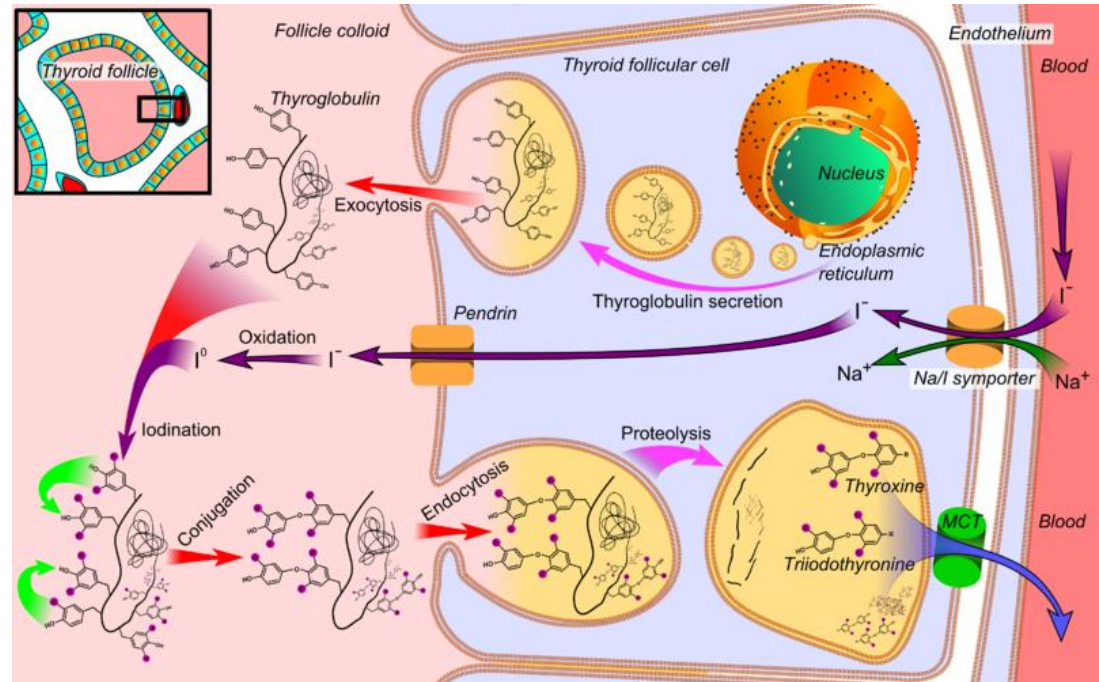
- High resolution US can detect thyroid nodules in 19-68% of randomly selected individuals.
- Prevalence of thyroid nodules 5% in women and 1% in men living in iodine sufficient sites
- Thyroid cancer occurs in 7-15% of US detected nodules
- 90% are differentiated thyroid cancer
- Yearly incidence - 14 cases per 100,000

- Well differentiated papillary/follicular carcinoma
- Poorly differentiated thyroid cancer
- Anaplastic thyroid cancer



# Thyroid system





Diagnosis: US guided biopsy

PET-CT (?), contrast?

Blood: T4, TSH

Treatment: Thyroidectomy


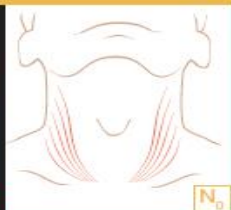
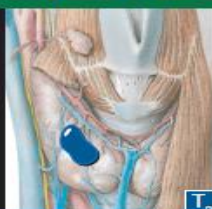
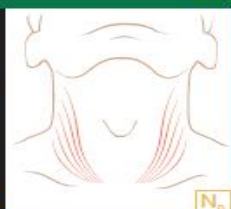
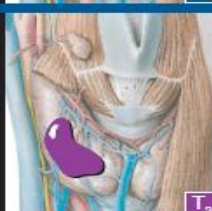
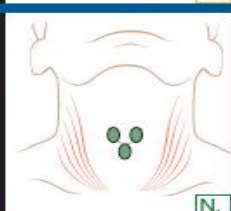
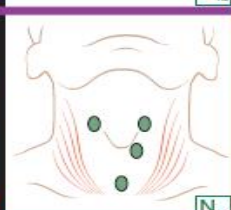

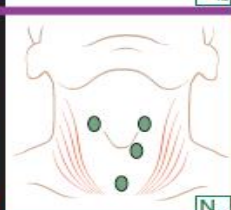


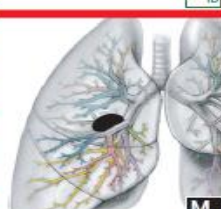
Radio-Active Iodine (RAI)

Follow-up: US

T4, TSH, TG



# THYROID

DEFINITION OF TNM			STAGE GROUPINGS	
0	<b>T<sub>1</sub></b> Tumor ≤2 cm in greatest dimension limited to the thyroid			<b>Stage I</b> T1 N0 M0
I	<b>T<sub>2</sub></b> Tumor >2 cm but not more than 4 cm in greatest dimension limited to the thyroid			<b>Stage II</b> T2 N0 M0
II	<b>T<sub>3</sub></b> Tumor >4 cm in greatest dimension limited to the thyroid or any tumor with minimal extrathyroid extension (e.g., extension to sternothyroid muscle or perithyroid soft tissues)			<b>Stage III</b> T3 N0 M0 T1 N1 <sub>a</sub> M0 T2 N1 <sub>a</sub> M0 T3 N1 <sub>a</sub> M0
III	<b>N1a</b> Metastasis to level VI (pretracheal, paratracheal, and prelaryngeal/Delphian lymph nodes)			
	<b>T<sub>4a</sub></b> Tumor of any size extending beyond the thyroid capsule to invade subcutaneous soft tissues, larynx, trachea, esophagus, or recurrent laryngeal nerve			<b>Stage IVA</b> T4a N0 M0 T4a N1 <sub>a</sub> M0 T1 N1 <sub>b</sub> M0 T2 N1 <sub>b</sub> M0 T3 N1 <sub>b</sub> M0 T4a N1 <sub>b</sub> M0
IVA	<b>N1b</b> Metastasis to unilateral, bilateral, or contralateral cervical or superior mediastinal lymph nodes			
	<b>T<sub>4b</sub></b> Tumor invades prevertebral fascia or encases carotid artery or mediastinal vessels			<b>Stage IVB</b> T4b Any N M0
IVB	<b>M1</b> Distant metastases			
IVC				<b>Stage IVC</b> Any T Any N M1



## Primary goals of RAI are:

1. Remnant ablation (to facilitate detection of recurrent disease).
2. Adjuvant therapy (intended theoretically to destroy suspected, but unproven, residual disease).
3. Active therapy (intended to treat persistent disease).



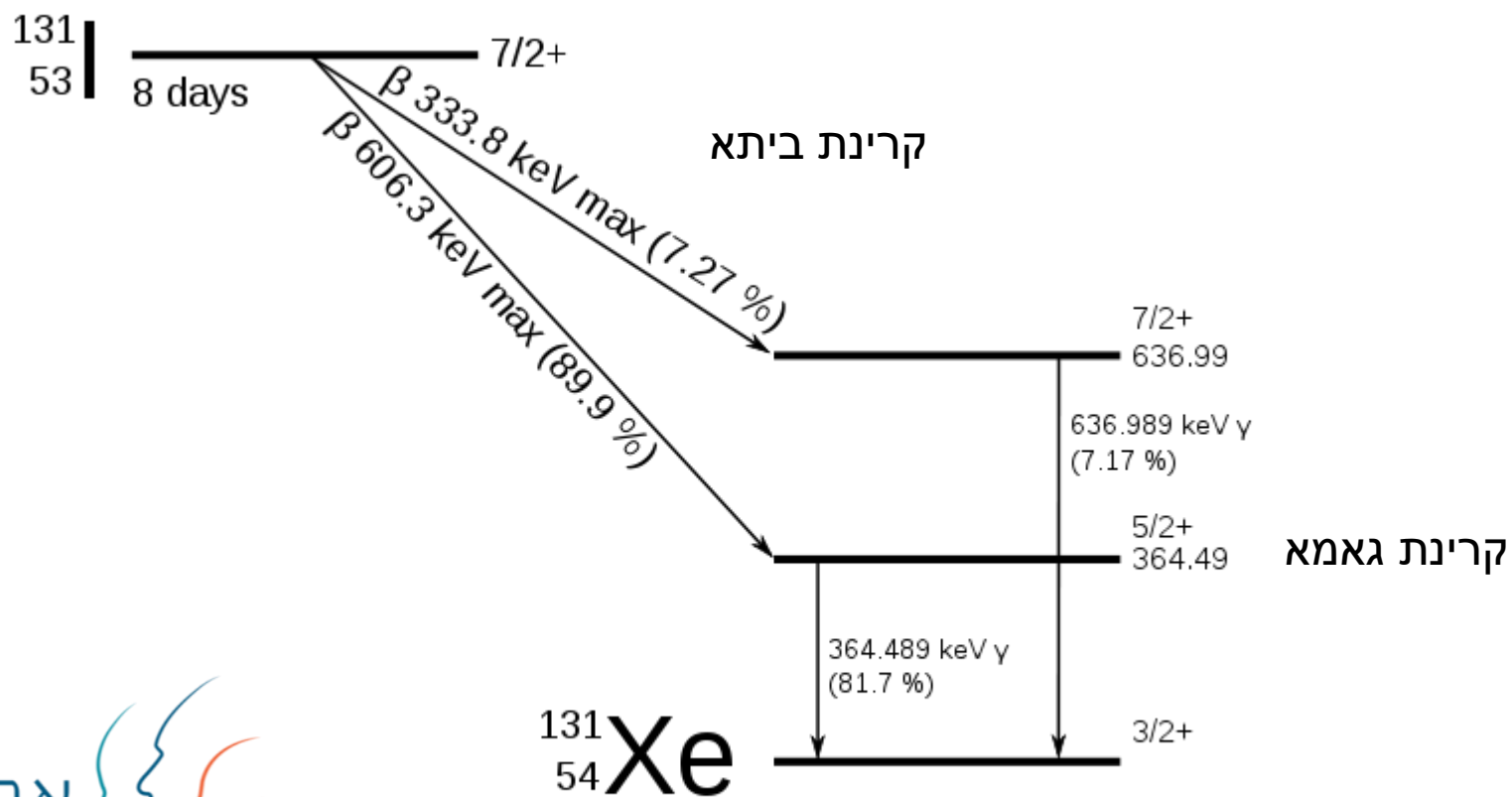
Thyroid cancer type	5-year survival				
	Stage I	Stage II	Stage III	Stage IV	Overall
Papillary	100%	100%	93%	51%	96% or 97%
Follicular	100%	100%	71%	50%	91%
Medullary	100%	98%	81%	28%	80%, 83% or 86%
Anaplastic	(always stage IV)			7%	7% or 14%

**Radio-Active Iodine (RAI) is indicated in intermediate and high risk patients**

**Should RAI be given in low risk patients?**



## ● Radio-active Iodine



*The* NEW ENGLAND JOURNAL *of* MEDICINE

ORIGINAL ARTICLE

## Ablation with Low-Dose Radioiodine and Thyrotropin Alfa in Thyroid Cancer

Low versus high dose of RAI  
Thyrogen versus Stopping Thyroid Medication

### CONCLUSIONS

Low-dose radioiodine plus thyrotropin alfa was as effective as high-dose radioiodine, with a lower rate of adverse events. (Funded by Cancer Research UK; ClinicalTrials.gov number, NCT00415233.)



**Appendix Table 6. Adverse events reported during the 3 months post-ablation**

All were CTCAE grade 1 or 2 (except where indicated)	Comparison 1		Comparison 2	
	1.1 GBq N=220	3.7 GBq N=218	rhTSH N=219	THW N=219
	n (%)	n (%)	n (%)	n (%)
Expected effects:				
Nausea	0	4 (2)	1 (<1)	3 (1)
Sialadenitis	1 (<1)	0	0	1 (<1)
Taste abnormalities (dysgeusia)	2 (<1)	1 (<1)	2 (<1)	1 (<1)
Discomfort in salivary glands				
Dry mouth	5 (2)	2 (<1)	5 (2)	2 (<1)
Swelling of salivary glands	1 (<1)	1 (<1)	0	2 (<1)
Hypothyroidism <sup>(3)</sup>	3 (1)	1 (<1)	2 (<1)	2 (<1)
Gastrointestinal:				
Bloating stomach	2 (<1)	0	1 (<1)	1 (<1)
Constipation	2 (<1)	0	0	2 (<1)
Flatulence	1 (<1)	0	0	1 (<1)

Other pain:

Arthralgia or myalgia	1 (<1)	2 (<1)	2 (1)	1 (<1)
Back pain	1 (<1)	0	1 (<1)	0
Bilateral neck pain	3 (1)	3 (1)	5 (2)	1 (<1)
Cramps in hands	1 (<1)	0	1 (<1)	0
General pain	2 (<1)	2 (<1)	1 (<1)	3 (1)
Headache	1 (<1)	4 (2)	2 (<1)	3
Muscular aches	1 (<1)	0	1 (<1)	0
Neck discomfort	7 (3)	11 (5)	14 (6)	4 (2)
Tendinitis	1 (<1)	0	0	1 (<1)

Neurological sensation:

Hot flushes	2 (<1)	4 (2)	3 (1)	3 (1)
Parasthesiae in fingers	1 (<1)	0	0	1 (<1)
Peripheral neuropathy	0	5 (2)	2 (<1)	3 (1)
Feeling cold	1 (<1)	0	1 (<1)	0
Sensory neuropathy	2 (<1)	0	2 (<1)	0

General feeling:

Fatigue	32 <sup>(1)</sup> (15)	31 (14)	30 (14)	33 (15)
Lethargy	4 (2)	1 (<1)	2 (<1)	3 (1)
Low mood/depression	3 (1)	2 (1)	2 (<1)	3 (1)
Poor concentration	0	1 (<1)	0	1 (<1)



Others:

Aspiration	1 (<1)	0	0	1 (<1)
Colds	1 (<1)	1 (<1)	2 (<1)	0
Dizziness	1 (<1)	1 (<1)	1 (<1)	1 (<1)
Dry or itchy skin	2 (<1)	2 (<1)	2 (<1)	2 (<1)
Dyspnoea	0	1 (<1)	1 (<1)	0
Epistaxis	0	1 (<1)	1 (<1)	0
Facial (eyes) swelling	1 (<1)	0	0	1 (<1)
Flaky nails	0	1 (<1)	0	1 (<1)
Hair thinning	0	2 (<1)	1 (<1)	1 (<1)
Infection	1 (<1)	0	1 (<1)	0
Left vocal cord palsy <sup>(2)</sup>	1 (<1)	0	0	1 (<1)
Musculo-skeletal/soft tissue	1 (<1)	0	0	1 (<1)
Neck swelling	2 (<1)	3 (1)	3 (1)	2 (<1)
Palpitations	2 (<1)	0	2 (<1)	0
Pruritus	0	1 (<1)	0	1 (<1)
Rash	0	1 (<1)	0	1 (<1)
Sore throat	0	1 (<1)	0	1 (<1)
Soreness around scar	1 (<1)	1 (<1)	1 (<1)	1 (<1)
Rigors	1 (<1)	1 (<1)	1 (<1)	1 (<1)
Tinnitus	1 (<1)	1 (<1)	0	2 (<1)
Trauma to chest	0	1 (<1)	1 (<1)	0
Visual disturbance	1 (<1)	0	1 (<1)	0
Voice changes	4 (2)	0	2 (<1)	2 (<1)
Weight gain	2 (<1)	2 (<1)	3 (1)	1 (<1)
Heavy chest	1 (<1)	0	0	1 (<1)

**Any of the above\***

**59 (27)**

**53 (24)**

**60 (27)**

**52 (24)**

(1) Two with Grade 3 fatigue

(2) One with Grade 3

(3) One with grade 3

The p-value for 27% (1.1GBq) vs. 24% (3.7GBq) was 0.55.

The p-value for 27% (rhTSH) vs. 24% (THW) was 0.38.

## Conclusion

RAI is the best targeted therapy,  
available at this present time, for  
thyroid cancer

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