

The Endocrine Examination

From Practice to Evidence

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Part 1 — The examination

Setting up. Endocrine disease changes the whole patient slowly, and the examination is therefore two things at once: a survey of the body's proportions, skin, hair and face for the pattern of a hormone in excess or deficit, and a targeted examination of the gland the history has accused. The first is done from the end of the bed and takes a minute; the second is done with the hands on the neck, the feet and the eyes. The oldest photograph the patient carries is a better instrument than most of what follows, because the changes of acromegaly, Cushing's syndrome and hypothyroidism are changes over years that the patient and the family have stopped seeing.

The general survey

- **Habitus and proportions.** Height, weight and body-mass index measured, not estimated; waist circumference at the midpoint between the lowest rib and the iliac crest, or at the crest, with the tape horizontal and the patient breathing out; arm span against height and upper-to-lower segment ratio where a syndrome is in question; the distribution of fat — central with a supraclavicular and dorsocervical pad in cortisol excess, gynoid in hypogonadism; the tall, long-limbed habitus of Marfan and Klinefelter; the short stature, webbed neck and widely spaced nipples of Turner.
- **The face.** Coarsening of the features, a prominent supraorbital ridge and jaw, spacing of the teeth and macroglossia in acromegaly; the round, plethoric face with a filled-in temporal fossa in Cushing's; the puffy, dull, expressionless face with periorbital oedema and loss of the outer third of the eyebrows in hypothyroidism; the staring, lid-retracted face of thyrotoxicosis; the pigmented creases and buccal mucosa of Addison's disease; the moon face of long steroid treatment; the hirsutism, acne and temporal recession of androgen excess in a woman, scored where it matters by the modified Ferriman–Gallwey method over nine sites.
- **Skin and hair.** Dry, cool, coarse skin and brittle hair in hypothyroidism; warm, moist, velvety skin and a fine tremor in thyrotoxicosis; thin skin with purple striae over a centimetre wide, easy bruising and poor wound healing in cortisol excess; acanthosis nigricans in the neck folds, axillae and over the knuckles in insulin resistance; vitiligo, which travels with autoimmune thyroid and adrenal disease; pretibial myxoedema in Graves' disease; necrobiosis lipidica on the shins, the shiny hairless skin of neuropathy and the calluses of pressure in diabetes; carotenaemia of the palms in hypothyroidism.
- **Hands.** Large, spade-like hands with thick fingers and a doughy sweaty palm in acromegaly; a fine tremor on outstretched fingers with a sheet of paper on the back of the hand, warm palms, palmar erythema, onycholysis and thyroid acropachy in thyrotoxicosis; the carpal tunnel

signs that accompany acromegaly, hypothyroidism and diabetes; thin, bruised skin in cortisol excess; the short fourth metacarpal of pseudohypoparathyroidism; the dark knuckle creases of Addison's disease.

- **Blood pressure and pulse**, as the cardiovascular chapter set out, with a postural drop in adrenal insufficiency and autonomic neuropathy, hypertension in Cushing's, Conn's, acromegaly and pheochromocytoma, and the rate and rhythm that carry the thyroid: a resting tachycardia or atrial fibrillation in thyrotoxicosis, bradycardia in myxoedema.

The thyroid gland

Inspect from the front with the neck slightly extended and the patient swallowing a sip of water: a goitre rises on swallowing, a thyroglossal cyst rises on protrusion of the tongue. Then palpate from behind, the thumbs on the nape and the fingers over the lobes, the patient's chin down to relax the strap muscles, and swallow again; then from the front with one thumb displacing the trachea to bring the opposite lobe forward. For the gland: size (a normal lobe is about the volume of the patient's distal thumb phalanx), consistency (soft, firm, hard, or the rubbery firmness of Hashimoto's), surface (smooth or nodular), tenderness (subacute thyroiditis), and whether the lower border can be reached — if it cannot, the goitre is retrosternal, and percussion over the manubrium and Pemberton's sign (facial suffusion and venous distension when the arms are raised above the head) are added. For a nodule: site, size, consistency, mobility and fixation. Then the trachea for deviation, the cervical lymph nodes as the haematological chapter described, and auscultation over each lobe for the bruit of Graves' disease.

Thyroid status

The status is read from the whole patient, not the gland, and it is scored rather than guessed.

- **Thyrotoxicosis.** Pulse rate and rhythm; a fine tremor; warm, moist palms; lid retraction (sclera visible above the iris) and lid lag (the upper lid lagging behind the globe on downward gaze), which are signs of sympathetic overactivity and occur in any cause; proximal myopathy tested by rising from a chair with the arms folded; brisk reflexes; weight and appetite in the history. The Wayne index combines these into a score.
- **Graves' orbitopathy**, which is specific to Graves' disease: exophthalmos measured with a Hertel exophthalmometer, chemosis and conjunctival injection, lid and caruncular oedema, restriction of upgaze and diplopia, and the seven-item clinical activity score that decides treatment; optic nerve function by acuity, colour vision and the pupils.
- **Hypothyroidism.** Bradycardia; cool, dry, coarse skin; a hoarse, slow voice; slow thought and movement; periorbital puffiness; the delayed relaxation of the ankle jerk, best seen with the patient kneeling on a chair; carpal tunnel syndrome; a small effusion at the base; and the Zulewski score, which combines seven symptoms and five signs into a number that has been validated against the biochemistry.

The face and habitus of cortisol and growth hormone

- **Cushing's syndrome.** The features with discriminating value are the ones that reflect catabolism rather than obesity: thin skin with wide purple striae, easy bruising, proximal myopathy (rising from a squat or a low chair unaided), plethora, and hypertension; the supraclavicular fat pads; hirsutism and acne; hyperpigmentation when the cause is ectopic. Central obesity and a round face on their own are common and prove little.
- **Acromegaly.** The face and hands above; the jaw with prognathism and malocclusion; a large tongue; thick, oily skin with skin tags; sweating; an enlarged thyroid; the visual fields by confrontation for a bitemporal hemianopia, and the signs of the diseases it brings — hypertension, cardiomegaly, sleep apnoea, carpal tunnel syndrome, and the arthropathy of large joints.
- **Hypopituitarism.** Pale, fine, wrinkled skin, loss of body hair, small soft testes, and the field defect of the tumour that caused it; postural hypotension when the adrenal axis has gone.

The adrenal, the calcium and the gonads

- **Adrenal insufficiency.** Hyperpigmentation in the buccal mucosa, the creases, the scars and the pressure areas; postural hypotension measured, not assumed; loss of axillary and pubic hair in a woman; vitiligo; the wasting and dehydration of a crisis.
- **Phaeochromocytoma and Conn's syndrome** are diagnoses of the history and the laboratory; the examination records the blood pressure, its variability and the postural response, and looks for the café-au-lait patches and neurofibromas of the syndromes that carry the tumour.
- **Calcium.** For hypocalcaemia: Trousseau's sign, a carpal spasm within three minutes of a cuff inflated 20 mmHg above systolic, and Chvostek's sign, twitching of the facial muscles on tapping the facial nerve in front of the ear; perioral paraesthesia, laryngeal stridor and the cataracts of long-standing disease; the short metacarpals and round face of pseudohypoparathyroidism. For hypercalcaemia: the band keratopathy, the dehydration, the corneal calcification and, in hyperparathyroidism, nothing in the neck — a parathyroid adenoma is not palpable, and a palpable mass in hyperparathyroidism is a carcinoma until proved otherwise.
- **The gonads.** Tanner staging in adolescents; testicular volume by orchidometer; gynaecomastia distinguished from fat by the disc of tissue under the areola; hirsutism scored; galactorrhoea sought by expression; the field defect and the headache of the prolactinoma.

The diabetic patient

The examination of the patient with diabetes is a search for the complications, and the two places that reward it most are the feet and the eyes.

- **The feet.** Shoes off, socks off, both feet, every visit. Inspect the skin between the toes and under the heels for fissures, callus, ulcers and infection; the nails; the shape of the foot — clawed toes, prominent metatarsal heads, the rocker-bottom of a Charcot joint, which is warm, red and swollen and mistaken for cellulitis. Feel the temperature and the dorsalis pedis and

posterior tibial pulses, with the ankle–brachial index when either is absent or the history suggests claudication. Test protective sensation with a 10 g monofilament at the standard plantar sites, or with the Ipswich touch test (the examiner's index finger lightly touching the tips of the first, third and fifth toes for two seconds) where no monofilament is to hand; vibration with a 128 Hz fork at the hallux; the ankle jerks. For an ulcer: site, size in centimetres (an area above 2 cm² matters), depth, the base, the edge, discharge and smell, surrounding cellulitis — and the probe-to-bone test, a sterile blunt probe passed to the base to feel for the hard, gritty contact of bone.

- **The eyes.** Acuity with a pinhole, each eye; then the fundi, which in a patient with diabetes means either a dilated pupil examined by someone who examines fundi every day, or a retinal photograph read by a grader or an algorithm — because the undilated look through a direct ophthalmoscope by a physician is the technique the evidence below shows to be inadequate.
- **The rest.** Blood pressure and the postural drop; the injection sites for lipohypertrophy, which explains an erratic glucose; the oral cavity for periodontal disease and candida; the skin signs above; the autonomic examination — resting tachycardia, the heart-rate response to deep breathing and standing — where gastroparesis, erectile dysfunction or unexplained hypoglycaemia is in the history; and the cardiovascular and neurological examinations that the complications call for.

Bone

Osteoporosis has no examination until it has caused a fracture, and the examination is then a search for the fracture the patient did not notice: loss of height against the recorded or remembered maximum; a thoracic kyphosis with a wall-to-occiput distance greater than zero, measured with the patient standing heels and back against the wall; a rib-to-pelvis distance of fewer than two fingerbreadths in the mid-axillary line; a weight under 51 kg; fewer than twenty teeth; and the vertebral tenderness of a recent collapse.

Putting the signs together

The endocrine examination sorts patients into the patterns of a hormone in excess or deficit, and the pattern chooses the single blood test that settles the question.

Pattern	The signs that make it
Thyrotoxicosis	Tachycardia or atrial fibrillation; fine tremor; warm moist palms; lid retraction and lid lag; proximal myopathy; brisk reflexes; weight loss; a goitre with a bruit and the orbitopathy when the cause is Graves'.
Hypothyroidism	Bradycardia; cool dry coarse skin; a puffy face with periorbital oedema; hoarseness; slowed thought and movement; delayed relaxation of the ankle jerk; carpal tunnel syndrome; a Zulewski score above five.
Cushing's syndrome	Thin skin, wide purple striae, easy bruising; proximal myopathy; plethora and hypertension; supraclavicular and dorsocervical fat pads; central obesity; hirsutism and acne; pigmentation when ectopic.
Acromegaly	Coarse features, prognathism, spaced teeth and macroglossia; large sweaty hands and feet; skin tags; carpal tunnel syndrome; hypertension; a bitemporal

Pattern	The signs that make it
	field defect; an old photograph that looks like someone else.
Adrenal insufficiency	Pigmentation of creases, scars and buccal mucosa; postural hypotension; weight loss; vitiligo; loss of body hair in a woman.
Hypocalcaemia	Trousseau's sign; Chvostek's sign; perioral paraesthesia; stridor and tetany when severe; cataracts and the skeletal features of pseudohypoparathyroidism when chronic.
Diabetic foot at risk	Loss of protective sensation on monofilament or touch test; absent pulses or a low ankle–brachial index; deformity, callus and dry fissured skin; a previous ulcer or amputation.
Diabetic foot osteomyelitis	An ulcer larger than 2 cm ² , a positive probe-to-bone test, and the inflammatory markers and radiograph that follow.
Occult vertebral fracture	Height loss; wall–occiput distance above zero; rib–pelvis distance under two fingerbreadths; a kyphosis; weight under 51 kg.
Polycystic ovary syndrome and androgen excess	Hirsutism scored on the modified Ferriman–Gallwey scale; acne; androgenic alopecia; acanthosis nigricans and central obesity; virilisation — clitoromegaly, deepened voice, muscle bulk — pointing instead to a tumour.

Part 2 — What the literature says

How well do examiners agree?

The endocrine signs divide, as in the other chapters, into the measured and the judged. Waist circumference by a stated protocol is among the most reproducible measurements in medicine, with intra- and inter-observer intraclass correlations above 0.98 [1, 2]; Hertel exophthalmometry between two observers correlates at 0.89, with 96 per cent of readings within 2 mm, though a quarter to a third of readings by inexperienced observers differ from a senior one by enough to matter [3, 4]; the modified Ferriman–Gallwey hirsutism score reaches an intraclass correlation of 0.65 in routine practice and 0.72 between experienced clinicians, and a kappa above 0.9 when the raters have been trained together [5, 6]. The judged signs do worse. When Jarløv and colleagues had several observers assess the same thyroid glands, inter-observer kappa values ran from –0.04 to 0.54 and intra-observer values from 0.44 to 1.00 [7]; in a field study of 225 schoolchildren, repeated palpation by experienced examiners agreed with itself at kappa 0.53 to 0.63 — no better than repeated ultrasound — and the 1994 WHO grading found 20 to 33 per cent more goitre than the 1960 grading in the same necks [8]. The clinical activity score for Graves' orbitopathy, which decides immunosuppression, has one item, caruncular oedema, whose inter-observer reliability is poor and which is vulnerable to bias [9].

Sign	Agreement	Comment
Waist circumference (WHO or NIH protocol)	ICC 0.98 – 0.99	Intra- and inter-observer; a measurement, not a judgement [1, 2]
Hertel exophthalmometry	r 0.89; 96 per cent within 2	Reliable between experienced observers; a quarter to a third of readings by the inexperienced differ materially [3, 4]

Sign	Agreement	Comment
	mm	
Modified Ferriman–Gallwey score	ICC 0.65 – 0.72; $\kappa > 0.9$ trained	The upper lip carries the most variability [5, 6]
Goitre by palpation	$\kappa -0.04 - 0.54$ between observers	Intra-observer 0.44 – 1.00 [7]; repeated palpation κ 0.53 – 0.63 in field conditions, the same as repeated ultrasound [8]
WHO goitre grade	grading-system dependent	The 1994 system reports 20 – 33 per cent more goitre than the 1960 system in the same children [8]
Graves' clinical activity score	poor for caruncular oedema	The other items less studied than the score's use would suggest [9]
Ipswich touch test	good	Agrees with the monofilament with specificity 96 – 98 per cent [10]

How accurate are the signs?

Question	Finding	Likelihood ratio or accuracy	Source
Does this patient have a goitre?	Palpation of a gland larger than the distal thumb phalanx in both lobes	Palpation is moderately sensitive and specific; the examination is most useful when the gland is clearly enlarged or clearly normal, and least in between	Siminoski 1995 [11]
Is there a thyroid nodule?	Palpation, against ultrasound	Sensitivity 6 – 17 per cent for nodules under 1 cm and 48 – 58 per cent for larger ones; 21 – 58 per cent of nodules over 2 cm missed	Systematic estimates 2022 [12]
	A documented thyroid examination before a first ultrasound, 327 patients	Sensitivity 72 per cent, specificity 36 per cent for any abnormality; for a solitary nodule sensitivity 20 per cent, specificity 79 per cent; positive predictive value 74 per cent for multinodular goitre	Endocrine Practice 2023 [13]
Is this patient thyrotoxic?	Lid retraction · lid lag · fine tremor · warm moist skin · pulse ≥ 90	LR+ 33 · 19 · 12 · 6.8 · 4.5	Compiled in McGee; summarised in Am Fam Physician 2016 [14, 15]
	Wayne index ≥ 20 · < 11	LR+ 18; LR– 0.04	
	Thyroid bruit	Present in up to 85 per cent of Graves' disease by auscultation; rare outside	Review 2014 [16]

Question	Finding	Likelihood ratio or accuracy	Source
		stimulated hyperthyroidism	
Is this patient hypothyroid?	Coarse skin, bradycardia and delayed ankle reflex together	LR+ 3.8, LR– 0.48; no single sign gave a likelihood ratio above 3.9	Indra 2004 [17]
	Zulewski score > 5 · 0 – 2	Positive predictive value 97 per cent · negative predictive value 94 per cent (validation cohorts); the original score against biochemistry and tissue markers	Zulewski 1997 [18]; validation 2024 [19]
	Billewicz index	Specificity 99 per cent but sensitivity below 2 per cent in an elderly cohort; sensitivity 98 per cent in another — a score whose performance depends entirely on the population	Reports 2020 and 2024 [20, 21]
Does this patient have Cushing's syndrome?	Easy bruising · proximal myopathy · hypertension	The features of greatest discriminatory value in 70 patients; obesity and a round face discriminate poorly	Ross & Linch 1982 [22]; Endocrine Society 2008 and its 2022 revisit [23, 24]
Is this hypocalcaemia?	Trousseau's sign · Chvostek's sign	Sensitivity 94 per cent, specificity 99 per cent · positive in 10 – 25 per cent of normal people and absent in about a third of the hypocalcaemic	Reviews [25, 26]
Is this patient insulin-resistant?	Acanthosis nigricans	Sensitivity 59 per cent, specificity 70 per cent in a young overweight UK cohort; on the neck, 67 and 83 per cent against a clamp-derived index	Case–control 2022 [27]; validation study [28]
Has this diabetic foot lost protective sensation?	10 g monofilament · Ipswich touch test	Monofilament LR+ 11 – 16, LR– 0.09 – 0.54 (see the neurological chapter) · Ipswich sensitivity 51 – 83 per cent, specificity 96 – 98 per cent against the monofilament	Kanji 2010; review 2021 [10]
Does this diabetic foot ulcer have osteomyelitis beneath it?	Probe-to-bone · ulcer area > 2 cm ²	LR+ 6.4, LR– 0.39 · LR+ 7.2, LR– 0.48; an ESR above 70 mm/h LR+ 11	Butalia 2008 [29]; systematic review 2016 [30]
Does this diabetic patient have retinopathy?	Direct ophthalmoscopy by a physician	Sensitivity 41 per cent against 64 per cent for a single retinal photograph; below 80 per cent for diabetologists through an undilated pupil	Comparative studies [31, 32]

Question	Finding	Likelihood ratio or accuracy	Source
Is this patient hypovolaemic?	Postural pulse rise > 30/min or severe dizziness · supine tachycardia · orthostatic hypotension	Large blood loss: sensitivity 97 per cent; moderate loss: 22 per cent · supine tachycardia sensitivity 12 per cent · none of the signs useful for non-haemorrhagic hypovolaemia	McGee 1999 [33]
Does this woman have osteoporosis?	Weight < 51 kg · wall–occiput distance > 0 · rib–pelvis distance < 2 fingerbreadths · fewer than 20 teeth · self-reported humped back	LR+ 7.3 · 4.6 · 3.8 · 3.4 · 3.0; the last two point to an occult vertebral fracture	Green 2004 [34]

Three things follow. **The thyroid gland is examined badly and thyroid status is examined well:** palpation misses most nodules and half of the large ones, and examiners cannot agree on whether a gland is enlarged, while the signs of thyrotoxicosis — lid retraction, lid lag, the tremor — carry some of the largest likelihood ratios in the whole of physical diagnosis and the Wayne and Zulewski scores turn them into a number. **The classic signs of calcium and cortisol are unequal:** Trousseau's sign is nearly diagnostic and Chvostek's is close to useless, and the Cushingoid features that discriminate are the catabolic ones, not the fat. And **the diabetic foot is the best-evidenced examination in endocrinology**, with a rule-in test for osteomyelitis at the bedside and two validated screens for the loss of protective sensation, one of which needs no instrument at all.

The examiner is the limiting reagent

The thyroid data are the clearest case: a gland that one examiner calls enlarged and another calls normal (κ down to -0.04), a grading system that changes the prevalence of goitre by a third without changing a single neck, and a palpation that finds one nodule in five [7, 8, 13]. The diabetic eye is the other: the sensitivity of a physician's direct ophthalmoscopy for retinopathy, 41 per cent, is not a matter of skill but of instrument, and the photograph read by a grader beat it thirty years ago [31]. Where a score exists — Wayne, Zulewski, the clinical activity score, the Ferriman–Gallwey scale — trained raters converge and untrained ones do not [5, 6, 9]; where none exists, the sign belongs to the examiner.

Technique changes the answer

- **Measure the waist with a protocol** — the WHO midpoint or the NIH iliac crest — and record which; the site changes the number and the protocol makes it reproducible [1, 2].
- **Score thyroid status** rather than describing it; the Wayne index at 20 or above and the Zulewski score above 5 are the validated thresholds [14, 18, 19].
- **Palpate the thyroid from behind with the chin down and the patient swallowing**, and reach for the lower border; if the question is a nodule, the answer is an ultrasound, and the examination only decides how urgently [12, 13].

- **Elicit Trousseau's sign properly** — the cuff 20 mmHg above systolic for three minutes — and do not rely on Chvostek's [25, 26].
- **Examine the diabetic foot the same way every time:** shoes and socks off, both feet, the standard monofilament sites or the three-toe touch test, the pulses, and the probe into any ulcer [10, 29].
- **Dilate the pupil or use the camera** for the diabetic fundus; the undilated direct ophthalmoscope is the technique the evidence retires [31, 32].
- **Measure the height and the wall–occiput distance** in every older woman; the two are the examination for the vertebral fracture no one noticed [34].

What has changed, 2020 – 2026

The retina is read by an algorithm. Autonomous artificial-intelligence systems for diabetic retinopathy were cleared by the US Food and Drug Administration from 2018; the first of them has a sensitivity of 87 per cent and specificity of 90 per cent in its pivotal trial and pools to 95 and 91 per cent across later studies, and the second pools to a sensitivity of 95 per cent and specificity of 81 per cent across 17 real-world studies and 162,695 examinations [35, 36, 37]. The examination — a photograph through an undilated pupil, taken by a nurse — is now more sensitive than the ophthalmoscope in any physician's hand. What has not changed is uptake: in US claims data from 2021 to 2023 the autonomous system was billed in 2.2 per cent of diabetic eye-imaging encounters [38].

The face is read by an algorithm too. Machine-learning classifiers trained on facial photographs now detect acromegaly with an area under the curve of 0.89, equal to expert endocrinologists and with higher sensitivity (0.82 against 0.66) in a 2026 head-to-head comparison, and in real time from a smartphone image [39, 40, 41]; a 2025 multiview deep-learning system for Cushing's syndrome, trained on 42 matched pairs and validated externally on 13, outperformed 18 endocrinologists [42], a decade after the first automated face classifier reached 92 per cent accuracy in women [43]. The two diseases in which the examination has always meant recognising a face are the two in which the recognition is being automated.

The thyroid nodule has left the fingers. Ultrasound finds nodules in a fifth to two-thirds of people in whom palpation found none, and the 2023 Mayo series put the sensitivity of a documented examination for a solitary nodule at 20 per cent [12, 13]. Computer-aided ultrasound systems classify nodules with sensitivity around 92 per cent and specificity around 83 per cent against histology, and the American College of Radiology's reporting system decides which are aspirated [44, 45]. The debate that remains is not whether to palpate but whether to examine an asymptomatic thyroid at all [46].

The foot has acquired two validated screens and one rule-in test. The Ipswich touch test, needing no instrument, was reviewed in 2021 and revalidated in 2024 against the monofilament with specificity above 96 per cent [10, 47]; the probe-to-bone test was pooled in 2016 with a sensitivity of

87 per cent and specificity of 83 per cent for osteomyelitis, and the International Working Group on the Diabetic Foot built it into its 2023 guideline [30, 48].

The scores have been re-examined. The Zulewski score was revalidated in 2024 and 2025 cohorts with a positive predictive value of 97 per cent above 5 and a negative predictive value of 94 per cent at 0 to 2 [19, 49]; the Billewicz index was shown to fail almost completely in the elderly, with a sensitivity under 2 per cent, and to succeed in a younger cohort with a sensitivity of 98 per cent — the same score, two populations [20, 21]. The Endocrine Society's 2008 advice on whom to screen for Cushing's syndrome was revisited in 2022 with the same list of discriminating features and a plea to use them [24]. And the waist circumference, thirty years after it was proposed, was declared a vital sign by an international consensus in 2020 [2].

Part 3 — Practical synthesis for teaching

- Teach the endocrine examination as the recognition of a pattern across the whole patient, and ask for the old photograph; the gland is the last thing examined, not the first.
- Teach the scores with the signs: the Wayne index for thyrotoxicosis, the Zulewski score for hypothyroidism, the clinical activity score for the orbit, the Ferriman–Gallwey scale for hirsutism. A trained rater with a score is reproducible; an impression is not.
- Teach the thyroid honestly: the examination of thyroid status is one of the strongest in physical diagnosis and the examination of the gland is one of the weakest. Palpate for size, tenderness, the lower border and the bruit, and send the nodule question to the probe.
- Teach Trousseau's sign and retire Chvostek's; teach the catabolic signs of Cushing's and stop teaching the moon face as if it discriminated.
- Make the diabetic foot examination a ritual — shoes off, both feet, monofilament or touch test, pulses, probe — because it is the endocrine examination with the best evidence and the one most often skipped.
- Send the diabetic eye to the camera, and teach students to read the algorithm's report rather than to peer through an undilated pupil.
- Measure: the waist, the height, the wall–occiput distance, the exophthalmos. The number is what the next examiner will reproduce.

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Caveats

The likelihood ratios for the signs of thyrotoxicosis are McGee's compilation as summarised in a 2016 review, not a single primary study, and the goitre row reports Siminoski's conclusion qualitatively because the numerical values in his tables were not retrieved. The Trousseau and Chvostek figures are the ones repeated in reviews and reference texts; a primary diagnostic-accuracy study was not located. The Billewicz rows deliberately show two contradictory cohorts. The Cushing's AI study is cited from its abstract, without its accuracy figures. Where a reference is given by title and address only, the search results did not return an author list; check before distribution.