AAVBC

AMERICAN ACADEMY OF VALUE BASED CARE

Acromegaly

Quick Reference Guide

2026

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1 CLINICAL SNAPSHOT

Definition: Acromegaly is a chronic endocrine disorder caused by sustained excess of **growth hormone** (GH), arising in more than **95%** of **cases from** a **benign GH-secreting pituitary adenoma.** Unregulated GH drives hepatic production of **insulin-like growth factor-1** (IGF-1), which produces progressive somatic enlargement of bone, soft tissue, and visceral organs along with a systemic cardiovascular, metabolic, and musculoskeletal burden. Because growth is gradual, acromegaly is better understood as an **underdiagnosed systemic disease** than a rare endocrine curiosity: the diagnosis is typically delayed **6–10 years** from symptom onset, and by then patients carry a mean of roughly **four coexisting comorbidities**. The single highest-value primary care behavior is to check a serum IGF-1 when a cluster of common comorbidities accumulates is not to wait for overt acral or facial change.[1,2]

ICD-10 Codes:

Acromegaly is reported with **E22.0** (acromegaly and pituitary gigantism) — the most specific available code — supported by documentation of "acromegaly due to GH-secreting pituitary adenoma". Because a pituitary adenoma is the cause in more than 95% of cases, **D35.2** (benign neoplasm of pituitary gland) is a required companion code whenever the adenoma is documented. **E23.0** (hypopituitarism) is coded when post-surgical or post-radiation pituitary insufficiency is present. Avoid **E22.9** (hyperfunction of pituitary gland, unspecified) — it lacks specificity and does not map to an HCC; use **E22.8** only for non-GH pituitary hypersecretion. Code each GH-driven comorbidity to its true etiology rather than a nonspecific term: type 2 diabetes (**E11.**-, not **R73.09** hyperglycemia), obstructive sleep apnea (**G47.33**, not **G47.9**), bilateral carpal tunnel syndrome (**G56.03**, not unspecified neuropathy), acromegalic arthropathy (**M14.8**-, with **E22.0** as the underlying cause), hypertensive heart disease (**I11.-**), and cardiomyopathy (**I42.-**).[3]

Prevalence and Burden: Acromegaly is estimated to affect approximately **25,000 people in the United States**, with **roughly 3,000 new cases diagnosed annually.** Two large US claims-based analyses using nationwide databases (2008–2013) found a prevalence of approximately 78–88 cases per million enrollees, with incidence rates of about 11 new cases per million person-years.[4]

HCC/RAF V28 Mapping

ICD-10 CODE(S)[3]	HCC CATEGORY (V28)	RAF (CNA)	DOCUMENTATION REQUIREMENT
E22.0 (Acromegaly and pituitary gigantism)	HCC 51 — Addison's and Cushing's Diseases/ Acromegaly/ Other Specified Endocrine Disorders[31]	**0.510**	Acromegaly and pituitary gigantism. Document 'acromegaly due to GH-secreting pituitary adenoma;' must appear at every encounter where acromegaly is managed, including 'controlled' post-treatment visits
D35.2 (Benign neoplasm of pituitary gland)	HCC 23 — Prostate/ Breast/and Other Cancers and Tumors	0.186	Benign neoplasm of pituitary gland. Code alongside **E22.0** whenever the adenoma is documented (>95% of cases); omitting it misses the disease mechanism

ICD-10 CODE(S)[3]	HCC CATEGORY (V28)	RAF (CNA)	DOCUMENTATION REQUIREMENT
E11.- (e.g., E11.65, E11.22) (GH-driven type 2 diabetes)	HCC 37/38 — Diabetes	0.166	GH-driven type 2 diabetes. Document 'type 2 diabetes mellitus' with complication subcodes — not 'hyperglycemia' (**R73.09**) — and note GH excess as the exacerbating mechanism
I42.-/I11.- (Acromegalic cardiomyopathy or hypertensive heart disease/ heart failure)	HCC 227 — Cardiomyopathy/ Myocarditis; HCC 226 — Heart Failure	0.189/0.360	Acromegalic cardiomyopathy or hypertensive heart disease/heart failure. Document the causal link to GH excess to reflect true complexity
E23.0 (Hypopituitarism after surgery or radiation)	No HCC (supports complexity)	—	Hypopituitarism after surgery or radiation (occurs in 34–89% of macroadenoma patients); requires lifelong hormone-replacement monitoring
G47.33 (Obstructive sleep apnea)	No HCC in V28 (document; supports complexity)	—	Obstructive sleep apnea — document **G47.33** with macroglossia/jaw enlargement as anatomical drivers, not 'sleep disorder NOS' (**G47.9**); OSA was not retained as an HCC in V28
M14.8-/G56.03 (Acromegalic arthropathy)	No HCC (most); document each	—	Acromegalic arthropathy (use **M14.8**- with **E22.0** as underlying cause; ~70% of patients) and bilateral carpal tunnel syndrome (**G56.03**) — code distinctly rather than 'osteoarthritis' or 'neuropathy NOS'
E22.9 (Pituitary hyperfunction, unspecified)	No HCC — AVOID	—	Avoid : Pituitary hyperfunction, unspecified. Maps to no HCC and loses risk-adjustment value; reserve only when GH excess is genuinely unconfirmed

ABBREVIATIONS: CMS = Centers for Medicare & Medicaid Services; CMS-HCC V28 = CMS Hierarchical Condition Category Model, Version 28; CNA = Community Non-Dual Eligible, Aged; GH = growth hormone; HCC = Hierarchical Condition Category; ICD-10-CM = International Classification of Diseases, 10th Revision, Clinical Modification; IGF-1 = insulin-like growth factor-1; MA = Medicare Advantage; OSA = obstructive sleep apnea; RAF = Risk Adjustment Factor
*Illustrative annual value at a representative 2024 CMS-HCC base rate (~$10,402) × CNA RAF — confirm payment year and segment against current CMS tables[29,30]

RAF values represent the Community Non-Dual Eligible Aged (CNA) coefficient from the 2026 CMS-HCC model; values vary across patient populations based on eligibility and care setting

Risk-Adjusted Care Resources per Patient/Year

Risk-adjusted care resource allocation — MA base rate × RAF coefficient for HCC: 0 (CNA segment, CY2026). Patients in higher-acuity living situations (institutional, dual eligible) shift to different CMS segments with different coefficients; the CNA value shown reflects community-dwelling MA enrollees

Acromegaly and pituitary gigantism

~$5.3K

HCC 51 · RAF 0.510 · per active patient/year

2 RECOGNITION AND DIAGNOSIS

AAVBC PERSPECTIVE

*From the AAVBC's perspective, value-based care in acromegaly demands that primary care close the **diagnostic delay gap** — currently **exceeding 5 years** on average, with 25% of patients waiting more than 10 years and almost 60% reporting misdiagnosis before a correct diagnosis is reached.*[1]

On average, more than three physicians are consulted before acromegaly is diagnosed, reflecting insufficient awareness among nonspecialists.

Over half of all new acromegaly diagnoses are made by primary care physicians, internists, and gynecologists, making this the frontline where the gap must be closed.

*The single most actionable step is to **order** an **age-adjusted serum IGF-1** — not a random GH level — when a patient presents with a **cluster** of **associated conditions** (**bilateral or relapsing carpal tunnel syndrome, new-onset type 2 diabetes, obstructive sleep apnea, debilitating arthropathy, diastolic-predominant hypertension, or hyperhidrosis),** even without classic acral or facial changes.*

Medicare Diagnostic Workup

TEST[2]	COVERAGE	FREQUENCY	CPT/ HCPCS	CLINICAL INDICATION
No population-based acromegaly screening	Not recommended; acromegaly is a rare disease with no asymptomatic screening program	—	—	Evaluation is suspicion-triggered: **check IGF-1 when a comorbidity cluster (bilateral CTS, new/worsening diabetes, OSA, arthropathy)** accumulates

TEST[2]	COVERAGE	FREQUENCY	CPT/ HCPCS	CLINICAL INDICATION
Serum IGF-1 (Somatomedin C)	Medicare Part B; covered diagnostic lab	First-line screen; no frequency limit when medically necessary; annually for surveillance	84305	**Preferred initial test**; **age- and sex-normalized IGF-1** reflects integrated GH secretion (90–95% sensitivity and specificity)
OGTT with GH measurement	Medicare Part B; covered when IGF-1 borderline	Confirmatory; once when IGF-1 is 1.1–1.5× ULN	82951	**Failure to suppress GH** below **0.4 µg/L** on OGTT is 85–90% sensitive and >95% specific; random GH is unreliable due to pulsatile secretion
Pituitary MRI with and without contrast	Medicare Part B; medically necessary	At diagnosis once biochemically confirmed; surveillance per specialist	70553	**Tumor localization and surveillance**; dedicated pituitary protocol; visual fields if macroadenoma abuts the chiasm
Visual field testing[6]	Medicare Part B; covered	When a macroadenoma abuts or compresses the optic chiasm	92081–92083	**Detects bitemporal hemianopia** from chiasmal compression
Colonoscopy (high-risk screening)	Medicare Part B; covered every 24 months as high-risk	At diagnosis, then every 24 months	G0105	Acromegaly is **high-risk** for **colon neoplasia** (OR for **colon cancer 4.35**); high-risk surveillance interval applies
Echocardiogram (TTE)	Medicare Part B; covered	At diagnosis and when cardiac symptoms arise[1]	93306	Evaluates **acromegalic cardiomyopathy,** valvular disease, and LVH
Thyroid ultrasound	Medicare Part B; covered	At diagnosis; periodic surveillance	76536	**Elevated thyroid nodule** (OR 3.6) and **thyroid cancer** (OR 7.9) risk

TEST[2]	COVERAGE	FREQUENCY	CPT/ HCPCS	CLINICAL INDICATION
DXA with vertebral fracture assessment	Medicare Part B; covered	At diagnosis and periodically	77080/77085	**Vertebral fractures** occur in **~30%** at presentation, often with normal/near-normal BMD; standard FRAX is unreliable in acromegaly

ABBREVIATIONS: BMD = bone mineral density; CPT/HCPCS = Current Procedural Terminology / Healthcare Common Procedure Coding System; CTS = carpal tunnel syndrome; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; IGF-1 = insulin-like growth factor-1; LVH = left ventricular hypertrophy; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea; TTE = transthoracic echocardiogram; ULN = upper limit of normal

Subtle Early Signs in Older Adults

SIGN/SYMPTOM[2,5]	PREVALENCE	CLINICAL SIGNIFICANCE
Acral enlargement (hands, feet — increased shoe/ring size)	>95%	Often the earliest patient-noticed change; **insidious onset delays recognition**
Dysmorphic facies (frontal bossing, large nose/lips, prognathism, dental diastema, macroglossia)	~21.5% as presenting complaint; near-universal over time	Prognathism leads to incisor separation and jaw malocclusion; macroglossia contributes to airway obstruction; **patients may first seek dental or maxillofacial care**
Thick, coarse, oily skin; hyperhidrosis	Hyperhidrosis 27–65%; seborrhea 37%	Due to **increased collagen production** and sebaceous gland hypertrophy; excess perspiration led 2% of patients to seek initial care
Skin tags	~52.5%	**Associated with insulin resistance and colonic polyps;** cutaneous androgenization finding common in acromegaly
Headache	~50–60%	**Due to dural stretching and tumor invasion of pain-producing structures**; may present as atypical phenotypes (cluster headache, SUNCT); responds to somatostatin receptor ligands
Visual field defects (bitemporal hemianopia)	~23% have visual defects at diagnosis	**Caused by suprasellar tumor extension** compressing the optic chiasm; ~70% have macroadenomas at diagnosis

SIGN/SYMPTOM[2,5]	PREVALENCE	CLINICAL SIGNIFICANCE
Arthropathy (early osteoarthritis, vertebral fractures, dorsal kyphosis)	~70%; vertebral fractures >50%	Major determinant of long-term disability; **distinctive MRI findings include excessively thick joint cartilage**; may persist despite biochemical control
Carpal tunnel syndrome	~64%	Bilateral or relapsing carpal tunnel syndrome should raise suspicion; due to soft-tissue and nerve sheath thickening
Obstructive sleep apnea	~65–69%	Hallmark of uncontrolled acromegaly; primarily obstructive from soft-tissue thickening of tongue/ pharynx; **persists in up to 40% after biochemical control**
Hypertension	18–55% (28.8% at diagnosis in Liège survey)	Mediated by **GH action** on r**enal sodium/water reabsorption and RAAS activation**; may not reverse with biochemical control
Diabetes or prediabetes	~50% (30–50% at diagnosis)	HR 4.0 vs. general population; **GH induces insulin resistance**; significantly raises cardiovascular risk
Cardiomyopathy (biventricular concentric hypertrophy)	13–79% by echo; ~5% by cardiac MRI	May be partly reversible with biochemical control; diastolic dysfunction in ~45%; **CHF rare (<3%) but usually irreversible**
Valvular heart disease (aortic/mitral regurgitation)	Up to 30%	Unlikely to reverse with biochemical control; **requires echocardiographic surveillance**
Colonic polyps/ colorectal cancer	Polyps in ~32%; SIR 2.6 for CRC	**Colonoscopy at diagnosis recommended**; repeat q5y if polyps or elevated IGF-1, q10y if neither; redundant tortuous bowel makes screening challenging
Thyroid nodules/ goiter	34% thyroid enlargement at diagnosis	**Increased thyroid volume and nodularity**; SIR 9.2 for thyroid cancer
Voice deepening	Common	Due to **hypertrophic changes of larynx** and sinuses
Hyperprolactinemia	~30%	Often with galactorrhea; **due to tumor co-secretion or stalk compression**

ABBREVIATIONS: CI = confidence interval; GH = growth hormone; HR = hazard ratio; IGF-1 = insulin-like growth factor 1; IRR = incidence rate ratio; OR = odds ratio; RR = relative risk; SIR = standardized incidence ratio; SMR = standardized mortality ratio

Anatomical Mapping of Signs and Symptoms

Primary Care

Suspect disease among patients with acral enlargement and at least two acromegaly associated manifestations (e.g., sleep apnea, colonic polyps, and early arthropathy)

Ophthalmology

- Reduced visual fields
- Diplopia

Neurology

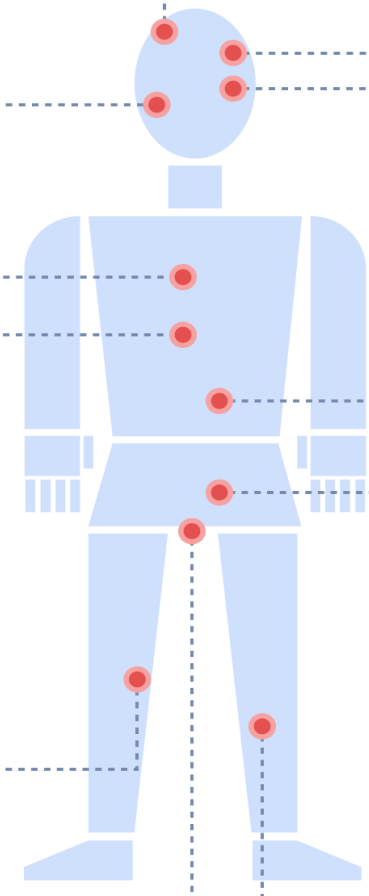
- Paresthesias
- Carpal tunnel syndrome
- Mood changes
- Headache

Anesthesia

- Difficult intubation due to macroglossia
- Soft-tissue hypertrophy in the upper airways

Dentistry and Maxillofacial Surgery

- Prognathism and jaw enlargement
- Macroglossia
- Nose enlargement
- Lip thickening
- Dental diastasis
- Facial changes



Cardiology

- Left ventricular hypertrophy
- Diastolic and later systolic dysfunction
- Hypertension
- Aortic dilatation
- Valvular dysfunctions
- Arrhythmias

Particularly in young people and in those without other risk factors that could explain these findings

Gastroenterology

- Gallstones
- Diverticula
- Colonic polyps

Particularly in young people and in those without other risk factors that could explain these findings

Pulmonology and Otolaryngology

- Snoring
- Daytime sleepiness
- Voice changes
- Sleep apnea syndrome

Gynecology

- Menstrual cycle anomalies
- Uterine fibromatosis with fibroids (particularly in young women)
- Polycystic ovary syndrome
- Infertility
- Hypogonadism
- Hyperprolactinemia

Orthopedics and Rheumatology

- Swollen and painful hands and feet
- Kyphosis or vertebral fractures
- Osteoporosis
- Articular pain

Particularly in young people

Oncology

- Breast cancer
- Thyroid cancer
- Colorectal cancer
- Prostate cancer
- Other cancers

Particularly in young people and in those without other risk factors that could explain these findings

Dermatology

- Increased sweating
- Skin thickening
- Skin tags

Geriatric Risk Factors

FACTOR	RISK SIGNAL	NOTES
Diabetes mellitus	HR 4.0 (95% CI 2.7–5.8) vs. general population; prevalence 15–38%[6]	**GH excess directly causes insulin** resistance; pasireotide worsens glycemia (see medication safety)
Hypertension	Prevalence 33–46%; OR 5.4 in elderly acromegaly vs. controls[1]	**Diastolic predominance**; rarely reverses with GH normalization — aggressive control is essential; precedes diagnosis by a mean of 6.6 years
Colonic neoplasia	Colorectal cancer IRR 1.78 (95% CI 1.22–2.60); colonic polyps RR 6.21 (95% CI 4.08–9.48)[7]	**Colonoscopy at diagnosis recommended**; repeat q5y if polyps or elevated IGF-1; particularly multiple or left-sided polyps
Thyroid nodules/ cancer	Thyroid cancer IRR 3.68 (95% CI 1.16–11.66); meta-analytic SIR 6.96 (95% CI 2.51–19.33)[7]	**Thyroid ultrasound if palpable nodularity**; cancer detected in 14.1% in some series
Left ventricular hypertrophy (elderly)	OR 3.0 (95% CI 1.5–5.8) in elderly acromegaly vs. controls[8]	Component of acromegalic **cardiomyopathy; prevalence greater in patients >50 y**; baseline echocardiography is warranted
Metabolic disorders (elderly)	OR 4.1 (95% CI 2.0–8.3) in elderly acromegaly vs. controls[8]	Cardiovascular and metabolic burden is additive to age-related disease
Female sex, diagnosed ≥65 years	Diagnostic delay 2–4.6 years longer than men; SMR 1.80 (95% CI 1.07–2.94) in women diagnosed ≥65[8]	**Estrogen decline blunts** the **phenotype**; the single highest-risk subgroup for missed diagnosis; women ≥50 y have significantly higher mortality than men
Uncontrolled/ delayed disease	SMR 1.76 with diagnostic delay >10 y; SMR 1.93 with older age; normalizes with biochemical control (SMR 0.71 with normal IGF-1)[2]	**Mortality correlates directly with diagnostic delay** and older age at diagnosis; cardiovascular disease is the leading cause of death
MEN1 (MEN1 gene)	Pituitary adenomas in 30–40% of MEN1 patients; somatotropinomas in 4–9%[9]	**Autosomal dominant; associated with parathyroid adenomas and pancreatic NETs**; pituitary MRI with contrast every 3–5 y and IGF-1 every 3–5 y recommended for screening

FACTOR	RISK SIGNAL	NOTES
Carney complex (PRKAR1A gene)	Up to 75% have somatotroph hyperplasia; ~10% develop clinical acromegaly[10]	**Autosomal dominant**; associated with cardiac myxomas, skin pigmentation, PPNAD, and schwannomas; acromegaly usually apparent by the third decade
McCune-Albright syndrome (GNAS, somatic mosaic)	GH hypersecretion in 20–30% of MAS patients; ~50% have detectable pituitary tumors on imaging[11]	Postzygotic activating GNAS mutation; associated with polyostotic fibrous dysplasia and café-au-lait macules; acromegaly almost always associated with skull base fibrous dysplasia; surgical cure is rare — **disease involves the entire pituitary**
FIPA/AIP mutations	~5% of all pituitary adenomas are familial; AIP mutations in 15–30% of FIPA kindreds; penetrance >50% in AIP-mutated families[12]	**Autosomal dominant**; predominantly somatotropinomas; younger age at diagnosis and larger tumors than sporadic cases

ABBREVIATIONS: AIP = aryl hydrocarbon receptor-interacting protein; CI = confidence interval; FIPA = familial isolated pituitary adenoma; GH = growth hormone; HR = hazard ratio; IGF-1 = insulin-like growth factor 1; IRR = incidence rate ratio; MAS = McCune-Albright syndrome; MEN1 = multiple endocrine neoplasia type 1; NET = neuroendocrine tumor; OR = odds ratio; PPNAD = primary pigmented nodular adrenocortical disease; RR = relative risk; SIR = standardized incidence ratio; SMR = standardized mortality ratio

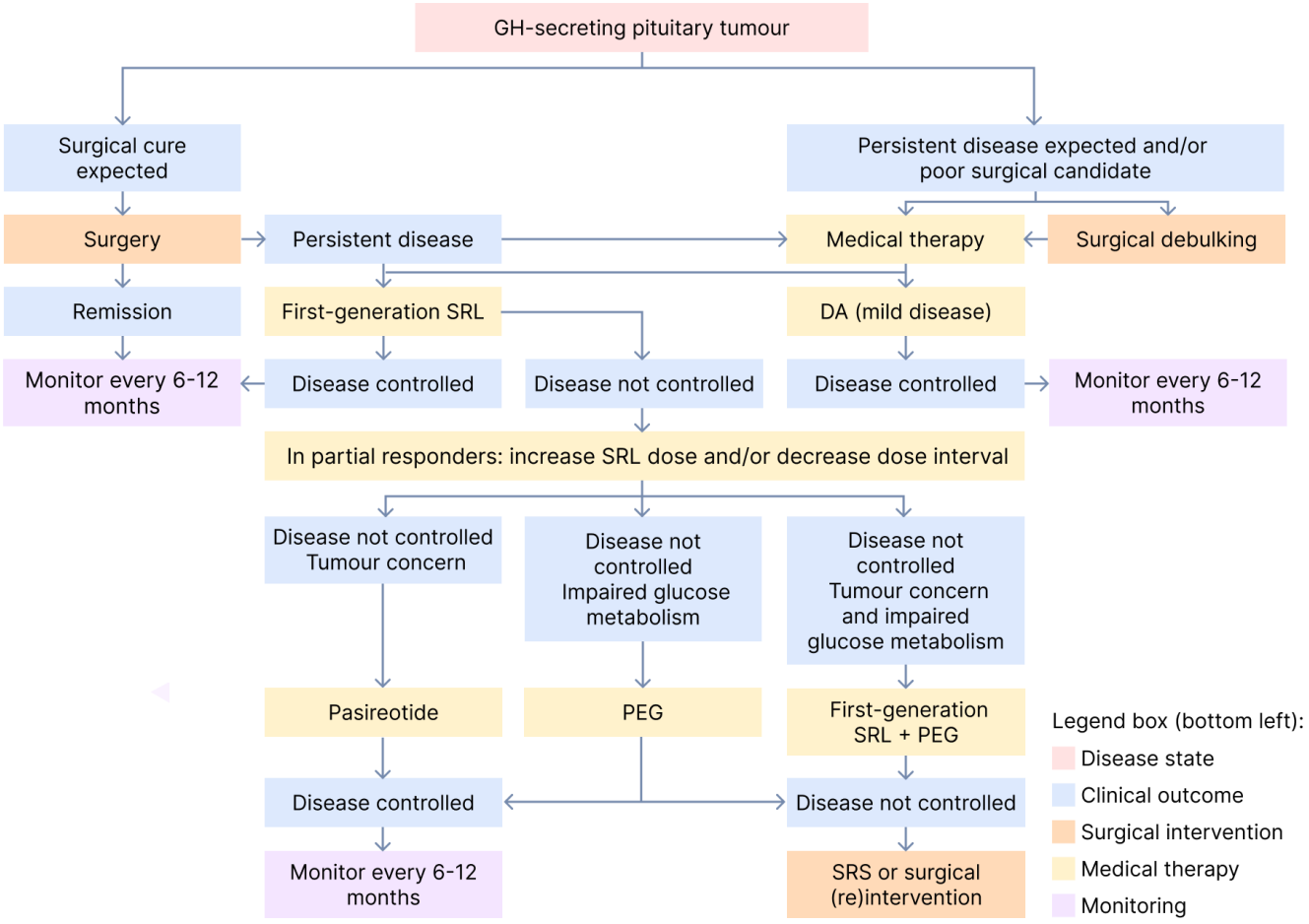
Diagnostic Thresholds (2024 Acromegaly Consensus and Staging Tools)

TEST/SYSTEM	DIAGNOSTIC CRITERION	NOTES
Serum IGF-1 (initial screen)[13,14]	**IGF-1 >1.3× ULN** for age, in a patient with typical clinical features, confirms the diagnosis (2024 Consensus)	**Age- and sex-normalized IGF-1** is 90–95% sensitive and specific; the preferred first-line test
OGTT with GH suppression[2,14]	Failure to suppress GH below **0.4 µg/L** (ultrasensitive assay) confirms disease; 85–90% sensitive, >95% specific	Used **for borderline IGF-1 (1.1–1.5× ULN);** random GH is diagnostically unreliable
IGF-1 confounders[2,14]	Uncontrolled diabetes, hepatic or renal failure, malnutrition, hypothyroidism, and oral estrogen can falsely lower IGF-1	A **'normal' IGF-1 does not exclude acromegaly** when suspicion persists — **proceed to OGTT**
Pituitary MRI[1]	Dedicated **pituitary-protocol MRI** localizes the adenoma; micro- (<10 mm) vs macroadenoma (≥10 mm)	Visual field testing when a macroadenoma abuts the optic chiasm

TEST/SYSTEM	DIAGNOSTIC CRITERION	NOTES
Knosp classification[15]	**Grades 0–4 of cavernous-sinus invasion on coronal MRI;** Grade 3–4 predicts lower surgical remission (30–50% vs 70–80%)	Modified Knosp subdivides Grade 3 into 3A (85% complete resection) and 3B (64%)
SAGIT instrument[16]	Clinician-reported activity tool: **S**igns/ symptoms **A**ssociated comorbidities **G**H, **I**GF-1 **T**umor; each domain 0–4	**SAGIT ≤5 discriminates controlled disease** (AUC 0.867); **>6 indicates need to start or escalate treatment** (AUC 0.866)
ACRODAT[16]	Decision-support **tool classifying disease** as stable mild moderate significant across five domains	Used mainly in specialist centers and trials; less robust published cutoffs than SAGIT
ACROSCORE[17]	**14-point clinical scoring system** incorporating diabetes, CTS, and other features to systematize suspicion	Utility depends on the clinician first considering acromegaly; supports targeted IGF-1 testing in primary care

ABBREVIATIONS: AUC = area under the curve; CTS = carpal tunnel syndrome; GH = growth hormone; IGF-1 = insulin-like growth factor-1; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; SAGIT = Signs/symptoms, Associated comorbidities, GH, IGF-1, Tumor; ULN = upper limit of normal

Acromegaly Pathogenesis



Clues to Dig Deeper

CLINICAL CLUE[2,18,19]	WHY IT MATTERS	NEXT DIAGNOSTIC STEP
Comorbidity cluster: bilateral CTS + new/worsening diabetes + OSA	The combination — even when each is individually common — is the practical trigger for screening; hypertension and CTS precede diagnosis by years	**Check serum IGF-1 (age-normalized)** before attributing the cluster to aging
Arthropathy with vertebral fractures and normal/near-normal BMD	**A distinctive pattern that points to acromegalic bone disease** rather than ordinary osteoporosis or osteoarthritis	**Order IGF-1**; **do not rely on FRAX,** which is unreliable in acromegaly

CLINICAL CLUE[2,18,19]	WHY IT MATTERS	NEXT DIAGNOSTIC STEP
Diabetes or hypertension that worsens despite standard management	**GH-driven insulin resistance and vascular change respond incompletely** to comorbidity-directed therapy alone	**Check IGF-1**; treat the hormonal cause, not only the downstream effect
Older woman with sweating, fatigue, menstrual change attributed to menopause	The highest-risk subgroup for missed diagnosis; estrogen decline blunts the phenotype	**Check IGF-1** before attributing symptoms to menopause; consider OGTT if borderline
Unusual or treatment-refractory headache	**Headache** is **highly prevalent** and may present atypically (cluster, SUNCT) and respond poorly to conventional therapy	**Consider pituitary etiology**; IGF-1 and, if confirmed, pituitary MRI
A 'normal' IGF-1 with strong clinical suspicion	**Confounders (uncontrolled diabetes, liver/renal disease, malnutrition, estrogen)** can mask the diagnosis	**Proceed to OGTT with GH measurement**; refer to endocrinology if suspicion persists

ABBREVIATIONS: BMD = bone mineral density; CTS = carpal tunnel syndrome; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; IGF-1 = insulin-like growth factor-1; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea; SUNCT = short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing

Common Oversights

OVERSIGHT/SHORTCUT	WHY IT MATTERS — WHAT TO DO INSTEAD[1,20,21]
Treating bilateral CTS as an isolated entrapment	**Bilateral or relapsing CTS is a key clue to GH-driven soft-tissue swelling**; check IGF-1 rather than proceeding straight to repeat release
Managing new diabetes without considering GH excess	**GH excess causes insulin resistance** (HR 4.0); when diabetes is new, worsening, or refractory, check IGF-1 before assuming primary type 2 diabetes
Treating sleep apnea with CPAP alone	**Macroglossia and pharyngeal hypertrophy are the anatomical drivers**; CPAP does not address the underlying GH excess — consider acromegaly when OSA coexists with other clues
Attributing arthropathy to osteoarthritis of aging	**Acromegalic arthropathy affects ~70% and has distinctive features** (thick cartilage on MRI); reassess for GH excess in progressive polyarticular disease

OVERSIGHT/SHORTCUT	WHY IT MATTERS — WHAT TO DO INSTEAD[1,20,21]
Reading vertebral fractures as ordinary osteoporosis	**Fractures with normal/near-normal BMD are a hallmark of acromegalic bone disease**; FRAX is unreliable, so suspicion must come from the pattern, not the DXA score
Waiting for overt acral or facial change before testing	By the time hand, foot, and facial enlargement are obvious, the disease has caused damage for years; screen on the comorbidity cluster, not the classic phenotype
Dismissing an older woman's symptoms as menopause	**Women face the longest delays**; sweating, fatigue, and menstrual change warrant IGF-1 before being attributed to menopause
Accepting a 'normal' IGF-1 in a confounded patient	**Uncontrolled diabetes, liver/renal disease, malnutrition, and estrogen lower IGF-1**; if suspicion persists, **proceed to OGTT**
Assuming surgery cured the disease	**Remission is achieved in only 40–60% of macroadenomas**; recurrence and persistent comorbidities require **lifelong IGF-1 and GH surveillance**

ABBREVIATIONS: BMD = bone mineral density; CPAP = continuous positive airway pressure; CTS = carpal tunnel syndrome; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; IGF-1 = insulin-like growth factor-1; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea

Key Differentials in Elderly

PRESENTATION[2,18,20]	DIFFERENTIAL	KEY TESTS
Bilateral CTS with soft-tissue swelling	Acromegaly **vs** hypothyroidism; rheumatoid arthritis; primary entrapment neuropathy	**Serum IGF-1; TSH**; clinical exam for acral/soft-tissue change
New or refractory diabetes with metabolic cluster	GH-driven (acromegaly) insulin resistance **vs** primary type 2 diabetes; Cushing syndrome	I**GF-1; if borderline, OGTT with GH**; consider cortisol evaluation
Progressive polyarticular arthropathy in an older adult	Acromegalic arthropathy **vs**; primary osteoarthritis; inflammatory arthritis[9]	**IGF-1; joint imaging** (thick cartilage favors acromegaly)
Bitemporal hemianopia or chiasmal symptoms	GH-secreting macroadenoma **vs**; other sellar/parasellar mass; non-functioning pituitary adenoma	**Pituitary MRI; visual fields**; full pituitary hormone panel
Sudden severe headache with visual loss/ ophthalmoplegia	Pituitary apoplexy **vs**; subarachnoid hemorrhage; cavernous sinus pathology	**Emergent MRI;** stress-dose glucocorticoids; neurosurgical evaluation

PRESENTATION[2,18,20]	DIFFERENTIAL	KEY TESTS
Fatigue, weight change, new hormonal symptoms post-treatment	Evolving hypopituitarism **vs**; recurrent acromegaly; intercurrent illness	**Pituitary axis testing (cortisol, thyroid, gonadal)**; surveillance IGF-1/GH

ABBREVIATIONS: CTS = carpal tunnel syndrome; GH = growth hormone; IGF-1 = insulin-like growth factor-1; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; TSH = thyroid-stimulating hormone

Comorbidity Screening

CONDITION[1,5,22]	PREVALENCE/ASSOCIATION	SCREENING APPROACH
Type 2 diabetes (E11.-)	~50% at diagnosis; HR **4.0** vs general population; OR 4.1 in elderly acromegaly	**Fasting glucose/HbA1c** at diagnosis and periodically; manage aggressively; avoid pasireotide where glycemia is fragile
Hypertension/ hypertensive heart disease (I11.-)	Prevalence 33–46%; OR **5.4** in elderly; rarely reverses with GH control	**Blood pressure** at every visit; treat to goal; rarely reverses, so sustained control matters
Acromegalic cardiomyopathy/ valvular disease (I42.-)	LVH OR **3.0** in elderly; valvular disease and arrhythmias common	Baseline **echocardiogram;** expedited cardiology for new cardiac symptoms
Obstructive sleep apnea (G47.33)	Prevalence **29–65%**; driven by macroglossia/pharyngeal hypertrophy	**Sleep study**; document anatomical drivers; CPAP plus treatment of the GH excess
Colon neoplasia	Colonic polyps RR **6.21**; colon cancer OR **4.35**	**Colonoscopy** at diagnosis, **then every 24 months (high-risk)**
Thyroid nodules/ cancer	Nodules OR **3.6**; thyroid cancer OR **7.9**	**Thyroid ultrasound** at diagnosis; periodic surveillance
Vertebral fractures/ acromegalic bone disease	Fractures in ~30% at presentation, often with normal BMD	**DEXA** with vertebral fracture assessment; do not rely on FRAX
Hypopituitarism after treatment (E23.0)	Occurs in 34–89% of macroadenoma patients post-surgery/radiation	**Monitor cortisol, thyroid, and gonadal axes;** avoid supraphysiologic glucocorticoid replacement

ABBREVIATIONS: BMD = bone mineral density; CPAP = continuous positive airway pressure; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; HbA1c = hemoglobin A1c; HR = hazard ratio; LVH = left ventricular hypertrophy; OR = odds ratio; OSA = obstructive sleep apnea; RR = relative risk

⚠ RED FLAG — EMERGENCY/ACTIVATE CRISIS RESPONSE[23–25]

- **Activate emergency evaluation now** for: **Pituitary apoplexy** — sudden severe headache (present in ~80–100%), acute visual loss, ophthalmoplegia (cranial nerve III palsy in ~50%), altered consciousness, or hemodynamic instability — requires emergent neurosurgical evaluation, stress-dose IV glucocorticoids (hydrocortisone 100 mg bolus), and urgent MRI
- **Acute adrenal crisis** — hypotension, shock, or altered mental status in a patient with known hypopituitarism who has missed glucocorticoid replacement or is under physiologic stress — treat with IV hydrocortisone and fluid resuscitation. New severe hyperglycemia or DKA in a patient on **pasireotide** (57–74% hyperglycemia rate)

⚠ RED FLAG — URGENT (24–72 HOURS)[1,23]

- **Contact specialist within 24–72 hours** for: new or progressive **visual field defects** (bitemporal hemianopia) indicating optic chiasm compression — urgent ophthalmology and neurosurgery
    - Rapidly worsening headache with cranial nerve palsies — may represent subacute apoplexy or cavernous-sinus extension
- **Expedited referral (within days)** for: a newly elevated IGF-1 with clinical suspicion — endocrinology for OGTT and pituitary MRI within 1–2 weeks; biochemical evidence of recurrence (rising IGF-1 on surveillance); new cardiac symptoms (dyspnea, edema, arrhythmia) given acromegalic cardiomyopathy risk; and significant weight gain, fatigue, or new hormonal symptoms post-treatment suggesting evolving hypopituitarism

3 MEAT DOCUMENTATION ESSENTIALS

Acromegaly documentation should make the systemic, GH-driven nature of the disease visible in the record . The most common gaps are managing the comorbidities (diabetes, hypertension, sleep apnea, carpal tunnel syndrome, arthropathy) in isolation while **E22.0 is never recorded**, omitting the underlying pituitary adenoma (**D35.2**), coding nonspecific terms such as ‘hyperglycemia’ or ‘arthropathy’ instead of the GH-linked etiology, and dropping **E22.0** once disease is ‘controlled’ after treatment even though monitoring continues. Each gap obscures the clinical picture and weakens coordination with endocrinology, cardiology, and rheumatology.

Case: 58-year-old woman, Medicare Advantage, with bilateral carpal tunnel syndrome (third recurrence in 5 years), new-onset T2DM (HbA1c 8.2%), worsening snoring with daytime somnolence, and progressive shoe/ring size increase over 3 years. Exam: prognathism, macroglossia, enlarged doughy hands, skin tags, wide dental diastema. PMH: HTN, hyperlipidemia, bilateral knee OA

MONITOR: "Weight 187 lbs, BMI 31.2. BP 148/94 (diastolic predominance despite lisinopril). HbA1c 8.2%, fasting glucose 162. TG 210, HDL 38. Epworth 14. Ring size +2, shoe size +1.5 over 3 years. PHQ-9: 6."

EVALUATE: "**IGF-1:** 612 ng/mL (2.6× age-adjusted ULN). **OGTT nadir GH:** 8.4 µg/L (failed suppression). Prolactin 48 (mild elevation). **Pituitary MRI:** 22 mm macroadenoma, left cavernous sinus invasion (Knosp 3); no chiasm compression. Visual fields full. **Pituitary panel:** secondary hypogonadism; ACTH/cortisol and TSH/fT4 normal. **Echo:** concentric LVH, mild AR, grade I diastolic dysfunction. **PSG:** AHI 28 (moderate OSA). **Colonoscopy:** two ascending tubular adenomas removed. **Thyroid US:** multinodular goiter, 1.4 cm dominant nodule — FNA per TI-RADS. **Spine XR:** T11 compression fracture; DXA T-score −1.2 (fracture despite near-normal BMD — characteristic of acromegaly).

ASSESS: "Acromegaly due to GH-secreting pituitary macroadenoma (**E22.0**), Knosp 3. Associated: T2DM from GH-driven insulin resistance (**E11.9**); diastolic HTN (**I10**); moderate OSA (**G47.33**); hypogonadotropic hypogonadism (**E23.0**); acromegalic cardiomyopathy with LVH (**I42.8**); colonic adenomas — high-risk surveillance (**K63.5**); multinodular goiter pending FNA (**E04.2**); pathologic vertebral fracture (**M80.08XA**). Estimated diagnostic delay 6–10 years."

TREAT: "TSS referral placed (first-line); Knosp 3 predicts ~40–60% remission — adjuvant medical therapy anticipated. Post-op: IGF-1, GH, pituitary MRI at 12 weeks; OGTT if GH >1 µg/L; assess hypopituitarism. **If persistent:** first-gen SRL (octreotide LAR or lanreotide); if inadequate, add pegvisomant or cabergoline; pasireotide reserved for SRL-resistant cases with close glucose monitoring. **Comorbidities:** metformin + GLP-1 RA for diabetes (avoid pasireotide given HbA1c 8.2%); uptitrate lisinopril ± amlodipine for HTN (<130/80 target); CPAP for OSA; defer HRT until post-op pituitary assessment; colonoscopy in 5 years (sooner if IGF-1 remains elevated); thyroid FNA per TI-RADS. Surveillance: IGF-1/GH q6mo then annually; pituitary MRI annually × 5 years; echo q1–2y; HbA1c q3mo. ACP documented (CPT 99497). **Follow-up:** endocrinology q3–6mo; neurosurgery per operative plan; PCP co-management."

Clinical Documentation Elements

- Record **E22.0** at every encounter where acromegaly is managed — including post-surgical, post-radiation, and ‘controlled’ visits where monitoring continues
- Code the underlying pituitary adenoma (**D35.2**) alongside **E22.0** whenever the adenoma is documented (>95% of cases)
- Document each comorbidity to its true etiology and specificity: type 2 diabetes (**E11.**- with complications, not **R73.09**), OSA with macroglossia (**G47.33**, not **G47.9**), bilateral CTS (**G56.03**), acromegalic arthropathy (**M14.8-**), cardiomyopathy/heart disease (**I42.-/I11.-**)
- State the causal link between each comorbidity and GH/IGF-1 excess in the clinical note to support etiology-based coding
- Avoid **E22.9** (unspecified) by default — it maps to no HCC; document ‘acromegaly’ or ‘pituitary gigantism’ explicitly
- Document biochemical status (IGF-1, GH), tumor status (size, Knosp grade where available), and the surveillance plan (colonoscopy, echocardiogram, thyroid ultrasound, DXA)
- In post-treatment patients with normalized IGF-1/GH, document the history, the ongoing monitoring rationale, and any persistent comorbidities — these patients still carry **E22.0**

- Document the geriatric and functional assessment when treatment intensity is individualized for frailty or polypharmacy

Reframing Common Documentation Shortcuts

INSTEAD OF...	DOCUMENT...
'Pituitary hyperfunction' (E22.9)	'Acromegaly due to a GH-secreting pituitary macroadenoma (**E22.0 + D35.2**)'
'Hyperglycemia' (R73.09)	'Type 2 diabetes mellitus due to GH-induced insulin resistance (**E11.**-with complication subcode)'[6]
'Sleep disorder' (G47.9)	'Obstructive sleep apnea (**G47.33**) with macroglossia and pharyngeal soft-tissue hypertrophy as anatomical drivers'[9]
'Bilateral carpal tunnel' in isolation	'Bilateral carpal tunnel syndrome (**G56.03**) — soft-tissue manifestation of GH excess; IGF-1 checked'[1,6]
'Osteoarthritis/joint pain'	'Acromegalic arthropathy (**M14.8-**) with E22.0 as the underlying cause; polyarticular, thick cartilage on MRI'[9]
'On octreotide'	'Octreotide LAR 20 mg IM every 4 weeks (endocrinology-managed); monitoring GI tolerance, gallbladder, and glycemia'
'Acromegaly, resolved' after surgery	'Acromegaly, post-transsphenoidal resection, in biochemical remission; lifelong IGF-1/GH surveillance ongoing (**E22.0** retained)'[15]
'Heart problem'	'Acromegalic cardiomyopathy (**I42.-**)/hypertensive heart disease (**I11.-**); baseline echocardiogram; causal link to GH excess documented'
'History of pituitary tumor' only	'Acromegaly (**E22.0**) with benign pituitary adenoma (D35.2); active monitoring for recurrence'[6]
'Vertebral fracture — osteoporosis'	'Vertebral fracture with normal/near-normal BMD — acromegalic bone disease; FRAX unreliable in acromegaly'[1]

ABBREVIATIONS: BMD = bone mineral density; CTS = carpal tunnel syndrome; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; GI = gastrointestinal; IGF-1 = insulin-like growth factor-1; IM = intramuscular; LAR = long-acting release; MRI = magnetic resonance imaging; OSA = obstructive sleep apnea ***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

DOCUMENTATION REMINDER IS COMPREHENSIVE CODING

Every acromegaly encounter should record **E22.0** with the underlying adenoma (**D35.2**), the biochemical status (IGF-1, GH) and tumor status, and the **full comorbidity burden coded to its GH-driven etiology** — diabetes, hypertension and cardiomyopathy, sleep apnea, carpal tunnel syndrome, arthropathy, and bone disease. Keep **E22.0** on the problem list even when disease is 'controlled,' because surveillance for recurrence and comorbidities continues for life.

4 TREATMENT AND REFERRAL QUICK GUIDE

Acromegaly treatment is driven by tumor size and location, biochemical activity, comorbidity burden, and in older adults frailty and surgical risk. Surgery and medical therapy are directed by endocrinology and neurosurgery, but the **PCP's highest-value contributions are shortening diagnostic delay through IGF-1 screening, managing the persistent comorbidity burden, monitoring medication effects, and sustaining lifelong surveillance**. In a geriatric value-based population the goal shifts from strict biochemical normalization toward functional stability and quality of life: pursuing perfect IGF-1 targets in frail older adults can add polypharmacy and harm that outweigh the benefit of treating a mildly elevated level.

Therapy Escalation Criteria

TRIGGER[1,5]	ACTION
Comorbidity cluster (bilateral CTS, refractory diabetes, OSA, arthropathy)	**Check serum IGF-1 (age-normalized)**; do not wait for overt acral change
Elevated IGF-1 with clinical suspicion	Confirm with **OGTT (GH suppression <0.4 µg/L**); order pituitary MRI; refer to endocrinology within 1–2 weeks
Biochemically confirmed acromegaly, surgical candidate	**Transsphenoidal surgery** is first-line; remission ~80–90% for microadenomas, 40–60% for macroadenomas
High surgical/anesthesia risk or unlikely surgical cure	Consider **primary medical therapy** (somatostatin receptor ligand) rather than surgery, especially without chiasmal compression
Persistent disease after surgery, or primary medical therapy	First-line medical: **octreotide LAR** 20 mg IM q4wk or **lanreotide** depot 90 mg SC q4wk; titrate to GH/IGF-1 response at 3 months

TRIGGER[1,5]	ACTION
Mild GH/IGF-1 elevation	**Cabergoline** ([OFF-LABEL]) 0.5–3.5 mg/week orally controls ~one-third of mild cases; monitor for impulse-control disorders
Controlled on injectable SRL, prefers oral	**Oral octreotide capsules** or **paltusotine** (oral SST2 agonist, FDA-approved 2025) are options
Refractory to first-line SRL	Second-line: **pasireotide LAR** (higher control but 57–74% hyperglycemia) or **pegvisomant** (GH-receptor antagonist; highest single-agent efficacy)
Inadequate monotherapy response	Combination therapy (SRL + cabergoline, SRL + pegvisomant, or cabergoline + pegvisomant)
Surgery and medical therapy insufficient	Third-line **stereotactic radiosurgery** (biochemical remission ~59%, mean ~38 months); rising hypopituitarism risk over time
Pituitary apoplexy or chiasmal compression	**Emergent neurosurgery, stress-dose glucocorticoids,** urgent MRI (apoplexy); urgent referral for new visual field defects

ABBREVIATIONS: CTS = carpal tunnel syndrome; FDA = Food and Drug Administration; GH = growth hormone; IGF-1 = insulin-like growth factor-1; IM = intramuscular; LAR = long-acting release; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea; SC = subcutaneous; SRL = somatostatin receptor ligand; SST2 = somatostatin receptor subtype 2
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Endocrine Society/2024 Consensus–Aligned Treatment by Setting and Patient Profile

SETTING/CLASS[1,5,21]	PREFERRED OPTION(S)	KEY NOTES
First-line definitive therapy	**Transsphenoidal surgery**	**Remission ~80–90% microadenomas,** 40–60% macroadenomas; reassess IGF-1, GH (OGTT), and MRI at ~12 weeks
First-line medical (post-surgical or primary)	**Octreotide LAR** 20 mg IM q4wk (10–40 mg); **lanreotide** depot 90 mg SC q4wk (60–120 mg)	**Biochemical control in 30–50% of unresected patients**; monitor GI effects, gallbladder, glycemia
Dopamine agonist (adjunct/mild disease)	**Cabergoline** ([OFF-LABEL]) 0.5–3.5 mg/week orally	**Controls ~one-third of patients with mild elevation**s; oral and inexpensive; monitor impulse control
Oral SRL options	**Oral octreotide** capsules; **paltusotine** (oral SST2 agonist, FDA-approved 2025)	**Alternatives** for patients controlled on injectable SRLs or **for whom surgery is not an option**

SETTING/CLASS[1,5,21]	PREFERRED OPTION(S)	KEY NOTES
Second-line/ refractory	**Pasireotide LAR** 40–60 mg IM q4wk; **pegvisomant** 10–30 mg SC daily	**Pasireotide: 57–74% hyperglycemia — caution in diabetes;** pegvisomant does not shrink tumor (continue MRI surveillance)
Combination therapy	SRL + cabergoline; SRL + pegvisomant; cabergoline + pegvisomant	For inadequate monotherapy response
Third-line	**Stereotactic radiosurgery**	**Biochemical remission ~59**%, mean time ~38 months; rising hypopituitarism risk; less favorable in frail elderly
Frail older adults/VBC	Individualized targets; medical therapy often preferred over surgery	Functional stability may take priority over strict IGF-1 normalization; updated normative data have lowered the ULN

ABBREVIATIONS: FDA = Food and Drug Administration; GH = growth hormone; GI = gastrointestinal; IGF-1 = insulin-like growth factor-1; IM = intramuscular; LAR = long-acting release; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; SC = subcutaneous; SRL = somatostatin receptor ligand; SST2 = somatostatin receptor subtype 2; ULN = upper limit of normal; VBC = value-based care
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

CLINICAL PEARL — FUNCTION AND DISEASE CONTROL > STRICT LAB TARGETS[1,20]

Treat acromegaly by function and disease control, not by lab value alone. The Endocrine Society recommends age-adjusted serum IGF-1 as the primary biochemical target, with IGF-1 levels above the age-specific ULN being 90–95% sensitive and 90–95% specific for acromegaly.

However, IGF-1 values decline continuously with age — representative normative data from a 15,014-subject multicenter cohort show that the ULN falls substantially from young adulthood through senescence, and median IGF-1 in adults ≥60 years is approximately 103 ng/mL (2.5th–97.5th percentile: ~35–220 ng/mL), compared with ~206 ng/mL in the 25–39 age range and ~147 ng/mL in the 40–59 range.

Non-Pharmacologic Care and Supportive Interventions

INTERVENTION[2,5,21]	TARGET/RECOMMENDATION	NOTES
Aggressive vascular-risk management	Blood pressure to goal; **manage lipids and glycemia**	**Hypertension rarely reverses with GH normalization (only ~6% remit**) — sustained control is essential

INTERVENTION[2,5,21]	TARGET/RECOMMENDATION	NOTES
Diabetes self-management	Glucose monitoring, diet, activity; intensify if on pasireotide	**GH-driven insulin resistance**; pasireotide markedly worsens glycemia
CPAP and weight management for OSA	**Continue CPAP**; pursue GH control for the anatomical driver	**CPAP alone is insufficient if GH excess is untreated**
Colonoscopy surveillance	**At diagnosis, then every 24 months (high-risk)**	Colon cancer OR 4.35; a required, not optional, part of care
Bone health and falls	**DXA with vertebral fracture assessment**; calcium/vitamin D; PT for balance	Fractures occur with **normal BMD**; do not rely on FRAX
Physical and occupational therapy	Maintain joint function and mobility in acromegalic arthropathy	Supports function in older adults with multidimensional impairment
Multidimensional geriatric assessment	Physical, cognitive, nutritional, psychological evaluation	Older patients show worse physical and cognitive performance vs controls; assess beyond labs
Lifelong follow-up after treatment	**Annual IGF-1 and GH even after** 'successful' treatment	Acromegaly can recur; monitoring is required regardless of treatment status

ABBREVIATIONS: BMD = bone mineral density; CPAP = continuous positive airway pressure; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; IGF-1 = insulin-like growth factor-1; OR = odds ratio; OSA = obstructive sleep apnea; PT = physical therapy

Medication Safety and Key Interactions

DRUG/CLASS[5,26]	INTERACTION/TOXICITY	CLINICAL ACTION
Octreotide LAR/ lanreotide (SRLs; approved)	**GI intolerance, gallbladder sludge/stones**, altered glycemia; suppress insulin and may lower or raise glucose	Monitor GI symptoms, gallbladder imaging, and glucose; adjust antidiabetic agents as GH falls
Pasireotide LAR (approved; second-line)	**57–74% hyperglycemia** rate (vs ~22% with octreotide); can precipitate DKA[6]	Use with **extreme caution in pre-existing diabetes**; frequent glucose monitoring; urgent endocrine review for severe hyperglycemia
Pegvisomant (GH-receptor antagonist; approved)	**Hepatotoxicity**; does not shrink tumor; may lower insulin requirements	**Monitor liver enzymes**; continue MRI tumor surveillance; adjust antidiabetic therapy

DRUG/CLASS[5,26]	INTERACTION/TOXICITY	CLINICAL ACTION
Cabergoline ([OFF-LABEL] for acromegaly)	**Impulse-control disorders**; additive **hypotension** with antihypertensives/vasodilators; reduced effect with dopamine antagonists	Counsel on impulse-control symptoms; monitor blood pressure; review interacting psychotropics
Paltusotine/oral octreotide (approved 2025)	SRL-class GI and glycemic effects	Monitor as for injectable SRLs; confirm formulary access
High-dose glucocorticoid replacement (post-treatment hypopituitarism)	**Supraphysiologic replacement** is associated with **increased mortality**	**Use lowest effective replacement dose**; stress-dosing education; monitor adrenal axis
Polypharmacy in older adults	Somatostatin analogues add to complex regimens; GI and glycemic burden compound[9]	Medication reconciliation each visit; deprescribe where possible; weigh treatment burden vs benefit

ABBREVIATIONS: DKA = diabetic ketoacidosis; GH = growth hormone; GI = gastrointestinal; LAR = long-acting release; MRI = magnetic resonance imaging; SRL = somatostatin receptor ligand
*__Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions__

When to Refer

CRITERION	SPECIALIST	URGENCY
Pituitary apoplexy (sudden headache, visual loss, ophthalmoplegia)	Emergency department/ neurosurgery	**Emergent**
Acute adrenal crisis in known hypopituitarism	Emergency department	**Emergent**
Severe hyperglycemia/DKA on pasireotide	Emergency department/ endocrinology	**Emergent**
New or progressive visual field defect (chiasmal compression)	Ophthalmology/neurosurgery	**Urgent (24–72 hours)**
Worsening headache with cranial nerve palsy	Neurosurgery/endocrinology	**Urgent (24–72 hours)**
Newly elevated IGF-1 with clinical suspicion	Endocrinology (after IGF-1 ± OGTT)	**Expedited (1–2 weeks)**
Rising IGF-1 on surveillance (recurrence)	Endocrinology	**Expedited (within days)**

CRITERION	SPECIALIST	URGENCY
New cardiac symptoms (dyspnea, edema, arrhythmia)	Cardiology	**Expedited (within days)**
Suspected colon neoplasia/ surveillance due	Gastroenterology	**Routine (high-risk interval)**
Refractory arthropathy or functional decline	Rheumatology/rehabilitation	**Routine**

ABBREVIATIONS: DKA = diabetic ketoacidosis; IGF-1 = insulin-like growth factor-1; OGTT = oral glucose tolerance test

Follow-Up Timing

CATEGORY[5,21]	FREQUENCY	LABS/MONITORING
Biochemical surveillance (all patients)	**Annual IGF-1 and GH**; more often after treatment changes	**Age-normalized IGF-1; OGTT-GH** where indicated; required even after 'successful' treatment
Pituitary MRI	Per endocrinology; **postoperatively at ~12 weeks**, then as indicated	**Tumor size and residua**l; continue on pegvisomant (no tumor shrinkage)
Diabetes/glycemia	HbA1c per diabetes care; very frequent if on pasireotide	**Fasting glucose/HbA1c**; intensify monitoring on pasireotide
Blood pressure/cardiac	Every visit; **echocardiogram** at diagnosis and with new symptoms	BP to goal; TTE for cardiomyopathy/ valvular disease/LVH
Colon surveillance	**Colonoscopy every 24 months** (high-risk)	High-risk interval given colon cancer OR 4.35
Thyroid	**Thyroid Ultrasound** at diagnosis, then periodic	Nodule OR 3.6; thyroid cancer OR 7.9
Bone health[1]	**DEXA** with vertebral fracture assessment periodically	**Fractures with normal BMD**; FRAX unreliable
Pituitary axes (post-treatment)[6,9]	Per endocrinology	**Cortisol, thyroid, gonadal axes for evolving hypopituitarism; avoid supraphysiologic steroid replacement**

ABBREVIATIONS: BP = blood pressure; BMD = bone mineral density; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; HbA1c = hemoglobin A1c; IGF-1 = insulin-like growth factor-1; LVH = left ventricular hypertrophy; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OR = odds ratio; TTE = transthoracic echocardiogram

Comorbidity Management

COMORBIDITY[1,2,6,20,27]	PCP APPROACH	CAUTION
Type 2 diabetes (E11.-)	**Treat to glycemic goal**; coordinate with the SRL/ pegvisomant choice	GH-driven; **pasireotide markedly worsens glycemia**, pegvisomant may improve it
Hypertension/hypertensive heart disease (I11.-)	Treat to goal at every visit	**Rarely reverses with GH control** (~6% remit); sustained control is essential
Acromegalic cardiomyopathy/valvular disease (I42.-)	Baseline and symptom-driven **echocardiography**; manage heart failure per guideline	**Cardiomyopathy may not reverse with biochemical control**; leading cause of death in elderly acromegaly
Obstructive sleep apnea (G47.33)	**CPAP plus treatment of GH excess**	Document **macroglossia/jaw enlargement** as anatomical drivers
Colon neoplasia	**High-risk colonoscopy every 24 months**	Colon cancer OR 4.35; do not defer surveillance
Acromegalic arthropathy (M14.8-)	**Physical therapy**, analgesia; treat the GH excess	~70% of patients; distinct from primary osteoarthritis
Bone disease/vertebral fractures	**DEXA** + vertebral assessment; calcium/vitamin D; PT	Fractures with normal BMD; FRAX unreliable
Hypopituitarism after treatment (E23.0)	**Replace deficient axes;** coordinate with endocrinology	**Supraphysiologic glucocorticoid replacement raises mortality**

ABBREVIATIONS: BMD = bone mineral density; CPAP = continuous positive airway pressure; DXA = dual-energy X-ray absorptiometry; FRAX = Fracture Risk Assessment Tool; GH = growth hormone; OR = odds ratio; PT = physical therapy; SRL = somatostatin receptor ligand
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Cost-Smart Options

BRAND[5,26,28]	BRAND COST (EST./ MONTH)	GENERIC/ ALTERNATIVE	GENERIC/ALT COST (EST./ MONTH)	EST. SAVINGS	COST-SMART TIP
Sandostatin LAR (octreotide LAR 20–30 mg IM q4wk)	~$3,000–$5,000/ month	Generic octreotide LAR where available	~$1,500–$3,000/month	$2,000-$3,000	Confirm formulary and generic availability; injectable SRLs are high-cost specialty agents; dose titration to lowest effective dose reduces cost
Somavert (pegvisomant 10–30 mg SC daily)	~$10,000–$23,000/ month (dose-dependent)	Low-dose SRL + weekly pegvisomant combination	~$9,800/month (low-dose SRL + weekly pegvisomant)	Up to ~$12,700/ month vs. daily pegvisomant monotherapy	High cost and reduced real-world adherence limit IGF-1 normalization to ~70% vs. ~90% in trials; combination SRL–pegvisomant achieves 50% pegvisomant-sparing effect and is the most cost-effective regimen
Signifor LAR (pasireotide LAR 40–60 mg IM q4wk)	~$5,000–$8,000/ month	Reserve for SRL-refractory disease	—	Avoids unnecessary use	High hyperglycemia rate (42–57% new-onset) adds downstream diabetes management cost — use selectively; 24% develop new-onset diabetes

BRAND[5,26,28]	BRAND COST (EST./ MONTH)	GENERIC/ ALTERNATIVE	GENERIC/ALT COST (EST./ MONTH)	EST. SAVINGS	COST-SMART TIP
Dopamine agonist add-on	—	Cabergoline (off-label, oral)	~$30–$150/ month (generic)	Substantial vs. injectables	Oral, inexpensive, well-tolerated; reasonable add-on for mild GH/IGF-1 elevation (<1.5× ULN); IGF-1 normalization in ~30% as monotherapy; efficacy may decrease over time
Mycapssa (oral octreotide 40–80 mg/ day)	~$5,000–$8,000/ month	Paltusotine (Palsonify, oral, once daily)	Pricing not yet established (FDA approved 2025)	Variable; may reduce injection-related visit costs	Oral SRLs eliminate injection burden and office visits for administration; paltusotine maintained IGF-1 control in ~83% vs. 3.6% placebo; NMA ranks paltusotine highest for efficacy and tolerability
Avoidable HCRU	$24,900 mean annual healthcare cost; cardiovascular complications add $13,331/year	Stable disease control via biochemical normalization	—	Reduces hospitalizations/ED visits	Cardiovascular complications nearly triple hospitalization odds (OR 2.93); uncontrolled disease adds $93,000 in lifetime comorbidity costs vs. controlled; reducing hospitalizations and ED visits is the primary VBC lever

ABBREVIATIONS: ED = Emergency Department; EST. = Estimated; FDA = Food and Drug Administration; GH = Growth Hormone; HCRU = Healthcare Resource Utilization; IGF-1 = Insulin-Like Growth Factor 1; IM = Intramuscular; NMA = Network Meta-Analysis; OR = Odds Ratio; q4wk = Every 4 Weeks; SC = Subcutaneous; SRL = Somatostatin Receptor Ligand; ULN = Upper Limit of Normal; VBC = Value-Based Care
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

Patient Education and Adherence

Acromegaly education touchpoints should cover the diagnosis in plain language and the fact that GH excess, not aging, drives the connected comorbidities; the importance of taking monthly somatostatin injections on schedule, since missed or delayed doses allow hormone levels to rise; blood-sugar vigilance, especially on pasireotide, with frequent home monitoring; that colonoscopy every two years is required, not optional, because of elevated colon-cancer risk; and that lifelong follow-up with annual IGF-1 and GH is needed even after a 'successful' surgery because acromegaly can return.[15] Document the topics covered, the patient's understanding (teach-back when appropriate), and caregiver involvement per the patient's preference.

DOCUMENTATION REMINDER — PATIENT EDUCATION

Document the education topics covered (the GH-driven nature of the comorbidities, injection adherence, blood-sugar monitoring, colonoscopy surveillance, and lifelong follow-up after treatment), the patient's understanding (teach-back when appropriate), and any caregiver involvement. Education documentation supports continuity and signals to other clinicians that the plan is patient-aligned.

Quality Metrics Tie-In

MEASURE (MY2026)[29]	STANDARD	APPLICABILITY TO ACROMEGALY CARE
Endocrine Society: Comorbidity Evaluation at Diagnosis	**Denominator:** patients with acromegaly **Numerator**: evaluated for HTN, DM, CVD, osteoarthritis, and sleep apnea at diagnosis	All patients should be screened for the full comorbidity spectrum at diagnosis. **HTN prevalence 33–46%, DM 15–38%, OSA ~69%.** Cardiovascular and cerebrovascular events are the primary cause of death — risk factors should be optimized aggressively[1]
Endocrine Society: Longitudinal Comorbidity Monitoring	**Denominator:** patients with acromegaly **Numerator:** comorbidities longitudinally monitored and rigorously managed (ungraded recommendation)	**HTN rarely reverses with GH normalization**; up to 40% with controlled acromegaly have persistent sleep apnea. Lifelong monitoring of BP, glucose, lipids, cardiac function, and sleep is essential regardless of biochemical control[1]
Endocrine Society: Colonoscopy Screening at Diagnosis	**Denominator:** patients with acromegaly **Numerator:** colonoscopy performed at or near diagnosis	Colonic polyps RR 6.21; colorectal cancer IRR 1.78 vs. general population. Repeat q5y if polyp found or IGF-1 elevated; q10y if no polyp and IGF-1 normal. Acromegalic colon is elongated and tortuous — experienced endoscopist and rigorous bowel prep required[1]

MEASURE (MY2026)[29]	STANDARD	APPLICABILITY TO ACROMEGALY CARE
Endocrine Society: Thyroid Ultrasound	**Denominator:** patients with acromegaly and palpable thyroid nodularity **Numerator:** thyroid ultrasound performed	Thyroid nodules OR 3.6; thyroid cancer OR 7.9 and IRR 3.68 in population-based data. **Thyroid ultrasound at diagnosis if palpable nodularity**; periodic surveillance thereafter[1]
Endocrine Society: Hypopituitarism Assessment	**Denominator:** patients with acromegaly (especially post-surgery or post-radiation) **Numerator:** assessed for hypopituitarism with hormone deficits replaced (Grade 1 recommendation)	Post-TSS and post-radiation hypopituitarism is common. **Annual assessment of cortisol, thyroid, gonadal, and GH axes.** Unrecognized adrenal insufficiency is life-threatening[1,21]
Endocrine Society: Biochemical Target Goals	**Denominator:** patients with acromegaly on treatment **Numerator:** age-normalized IGF-1 and random GH <1.0 µg/L documented	Biochemical control normalizes excess mortality (SMR 1.90–1.98 when uncontrolled → normalized with control). In older adults, strict IGF-1 normalization may add polypharmacy without proven benefit — individualize targets based on symptoms, comorbidities, and QOL[1,5]
Endocrine Society: Echocardiography	**Denominator:** patients with acromegaly with suggestive cardiac findings or perioperative status **Numerator:** echocardiography performed	LVH OR 3.0 in elderly acromegaly. **Valvular disease (aortic/mitral regurgitation), arrhythmias, and conduction disorders are frequent.** GH normalization may improve cardiomyopathy early but is unlikely to reverse HTN or valvulopathy[22]
HEDIS COA: Care for Older Adults — Medication Review	**Denominator:** MA/SNP enrollees ≥66, continuously enrolled **Numerator:** medication review documented annually **Exclusions:** hospice, ESRD	**Polypharmacy is common** (SRLs, pegvisomant, cabergoline, antihypertensives, diabetes medications, CPAP). Reconcile: pasireotide-induced hyperglycemia requiring new diabetes agents, SRL GI side effects, pegvisomant hepatotoxicity monitoring (LFTs), and Beers Criteria medications[30,31]
HEDIS COA: Care for Older Adults — Functional Status Assessment	**Denominator:** MA/SNP enrollees ≥66 **Numerator:** functional status assessment documented annually **Exclusions:** hospice, ESRD	**Acromegaly-specific tools (ACRODAT, SAGIT, AcroQoL)** can satisfy this sub-measure. Track arthropathy-related functional decline, CTS-related hand function, and OSA-related fatigue. **Document QOL at every visit**[2,30]

MEASURE (MY2026)[29]	STANDARD	APPLICABILITY TO ACROMEGALY CARE
HEDIS COA: Care for Older Adults — Pain Assessment	**Denominator:** MA/SNP enrollees ≥66 **Numerator:** pain assessment documented annually **Exclusions:** hospice, ESRD	**Arthropathy affects ~70% of patients**; headache is common from both GH excess and tumor mass effect. CTS precedes diagnosis by a mean of 5.7 years. Document pain type, location, severity, and functional impact[2,30]
CMS Star: Controlling Blood Pressure (CBP)	**Denominator:** enrollees 18–85 with HTN diagnosis **Numerator:** most recent BP <140/90 mmHg	**HTN prevalence 33–46% in acromegaly with diastolic predominance**; precedes diagnosis by a mean of 6.6 years. HTN rarely reverses with GH normalization — aggressive pharmacologic control is essential. Balance against orthostatic hypotension in elderly[1,6]
CMS Star: Diabetes Care — HbA1c Control (<8%)	**Denominator:** enrollees 18–75 with diabetes **Numerator:** most recent HbA1c <8.0%	GH excess causes insulin resistance (HR 4.0 for diabetes); **15–38% have DM at diagnosis.** Pasireotide worsens glycemia (42–57% new-onset hyperglycemia) — monitor closely when initiating. Pegvisomant may improve glucose metabolism[1,6]
CMS Star: Statin Therapy for Patients with Cardiovascular Disease (SPC)	**Denominator:** enrollees with clinical ASCVD **Numerator:** received statin therapy of any intensity during measurement year	**Acromegaly-associated dyslipidemia** (elevated triglycerides, small dense LDL) increases cardiovascular risk. Cardiovascular events are the primary cause of death. Statin therapy is indicated when ASCVD criteria are met[32]
HEDIS DAE: Use of High-Risk Medications in Older Adults	**Denominator:** enrollees ≥67 **Numerator:** received ≥1 high-risk medication per Beers Criteria **Lower rate** = better performance	Anticholinergics worsen cognitive dysfunction; benzodiazepines compound OSA-related respiratory depression; opioids for arthropathy pain carry fall and sedation risk. Document Beers review at each visit[33]
CMS Star: Plan All-Cause Readmissions (PCR)	30-day readmission rate; lower is better; risk-adjusted	Cardiovascular complications nearly triple hospitalization odds (OR 2.93). Post-TSS readmissions driven by hyponatremia, adrenal crisis, and CSF leak. Proactive post-discharge monitoring (sodium, cortisol) and comorbidity management reduce readmissions[5]

MEASURE (MY2026)[29]	STANDARD	APPLICABILITY TO ACROMEGALY CARE

ABBREVIATIONS: ACRODAT = Acromegaly Disease Activity Tool; AcroQoL = Acromegaly Quality of Life Questionnaire; ASCVD = atherosclerotic cardiovascular disease; AWV = Annual Wellness Visit; BP = blood pressure; CBP = Controlling Blood Pressure; CMS = Centers for Medicare & Medicaid Services; COA = Care for Older Adults; CPAP = continuous positive airway pressure; CPT = Current Procedural Terminology; CSF = cerebrospinal fluid; CTS = carpal tunnel syndrome; CVD = cardiovascular disease; DAE = Use of High-Risk Medications in Older Adults; DM = diabetes mellitus; DMS-E = Depression Monitoring and Follow-Up (Electronic Clinical Data Systems); ECDS = Electronic Clinical Data Systems; ESRD = end-stage renal disease; GH = growth hormone; GI = gastrointestinal; HbA1c = glycated hemoglobin; HEDIS = Healthcare Effectiveness Data and Information Set; HR = hazard ratio; HTN = hypertension; IGF-1 = insulin-like growth factor 1; IRR = incidence rate ratio; LDL = low-density lipoprotein; LFTs = liver function tests; LVH = left ventricular hypertrophy; MA = Medicare Advantage; MY = measurement year; OR = odds ratio; OSA = obstructive sleep apnea; PCR = Plan All-Cause Readmissions; PHQ-9 = Patient Health Questionnaire-9; q5y = every 5 years; q10y = every 10 years; QOL = quality of life; RR = relative risk; SAGIT = Signs and symptoms, Associated comorbidities, GH levels, IGF-1 levels, Tumor profile; SMR = standardized mortality ratio; SNP = Special Needs Plan; SPC = Statin Therapy for Patients with Cardiovascular Disease; SRL = somatostatin receptor ligand; TSC-E = Tobacco Use Screening and Cessation Intervention (Electronic Clinical Data Systems); TSS = transsphenoidal surgery; ULN = upper limit of normal
***Consult FDA labels for the most up-to-date dosage information, contraindications, and drug-drug interactions**

QUALITY OUTCOME

When primary care shortens diagnostic delay by checking IGF-1 on the comorbidity cluster, documents **E22.0** with full comorbidity specificity, coordinates timely endocrinology referral and treatment, and sustains lifelong comorbidity management and surveillance . Patients with acromegaly spend more time in stable disease control, with **fewer hospitalizations and ED visits**, the most feasibly collected value-based indicators in this rare but high-burden condition.

5 CODING REMINDERS AND CASE EXAMPLES

Coding Specificity

ELEMENT	DOCUMENTATION REQUIREMENT
Primary code at highest specificity	Document **E22.0** (acromegaly and pituitary gigantism); avoid E22.9 (unspecified), which maps to no HCC
Underlying pituitary adenoma	Code **D35.2** alongside **E22.0** whenever the adenoma is documented (>95% of cases)
Code E22.0 at every encounter	Acromegaly is a lifelong condition; record **E22.0** each year, including post-treatment ‘controlled’ visits where monitoring continues
Comorbidities to true etiology	Type 2 diabetes (**E11.-** with complications, not **R73.09**), OSA (**G47.33**), cardiomyopathy (**I42.-**)/hypertensive heart disease (**I11.-**), bilateral CTS (**G56.03**), acromegalic arthropathy (**M14.8-**)

ELEMENT	DOCUMENTATION REQUIREMENT
Document the causal link	State that each comorbidity is driven or exacerbated by GH/IGF-1 excess to support etiology-based coding
Avoid the most common undercoding trap	Coding the comorbidities (diabetes, hypertension, OSA, CTS, arthropathy) without **E22.0** loses HCC 51 entirely
Hypopituitarism after treatment	Code **E23.0** when post-surgical or post-radiation pituitary insufficiency is present
Post-treatment/'remission' language	Do not document 'resolved' without context; in remission, patients still require monitoring and may still carry **E22.0**

ABBREVIATIONS: CTS = carpal tunnel syndrome; GH = growth hormone; HCC = Hierarchical Condition Category; ICD-10 = International Classification of Diseases, 10th Revision; IGF-1 = insulin-like growth factor-1; OSA = obstructive sleep apnea

Annual Clinical Review and Confirmation

Annual review: Acromegaly is a chronic condition that remains current every year; it must be reassessed annually with MEAT documented, including **biochemical status (IGF-1, GH)**, tumor status, treatment, and the active comorbidity burden.

Visit modality: A face-to-face or synchronous audio-video telehealth encounter qualifies when it supports meaningful clinical evaluation; chart updates without an encounter do not satisfy MEAT.

Clinical context: Under CMS-HCC V28, acromegaly (**E22.0**) maps to **HCC 51** (Addison's and Cushing's Diseases/Acromegaly/Other Specified Endocrine Disorders) with a CNA RAF of **0.510.**The benign pituitary adenoma (**D35.2**) maps to HCC 23 (CNA RAF 0.186); GH-driven diabetes maps to HCC 36/37/38 (RAF 0.166), and acromegalic cardiomyopathy/heart failure to HCC 227 (0.189) or HCC 226 (0.360).Obstructive sleep apnea (**G47.33**) does not map to an HCC in V28 but still documents complexity. Confirm the payment year and CNA segment against current CMS tables.

Avoid rollover: Do not copy forward last year's note without updating biochemical and tumor status, the treatment and its monitoring, surveillance results (colonoscopy, echocardiogram, thyroid ultrasound, DXA), and the active comorbidity burden.

Good Documentation — EHR Tips

EHR TIP	WHAT TO INCLUDE
Problem list precision	'Acromegaly due to GH-secreting pituitary macroadenoma (**E22.0 + D35.2**), on octreotide LAR, IGF-1 trending down' — not 'pituitary disorder'
Smart phrases/dot phrases	Build macros for Acromegaly Status (IGF-1, GH, tumor, treatment), Comorbidity-to-GH link, and SRL Monitoring (GI, gallbladder, glucose)

EHR TIP	WHAT TO INCLUDE
Lab and imaging linking	Link IGF-1, OGTT-GH, pituitary MRI, echocardiogram, colonoscopy, and thyroid ultrasound to the active **E22.0** problem
Etiology fields	Discrete fields linking diabetes, OSA, cardiomyopathy, CTS, and arthropathy to GH/IGF-1 excess so etiology-based coding stays accurate[6]
Surveillance flags	Recurring reminders for annual IGF-1/GH, colonoscopy every 24 months, periodic echocardiogram, thyroid ultrasound, and DXA
Persistent-diagnosis flag	Flag **E22.0** to recur each year even when disease is 'controlled' post-treatment
Medication-safety templates	Templates for SRL GI/gallbladder/glucose monitoring, pegvisomant liver enzymes, and pasireotide glucose surveillance
Education/teach-back templates	Templates so GH-driven comorbidity education, injection adherence, glucose monitoring, and lifelong follow-up are documented as patient-understood

ABBREVIATIONS: CTS = carpal tunnel syndrome; DXA = dual-energy X-ray absorptiometry; GH = growth hormone; GI = gastrointestinal; IGF-1 = insulin-like growth factor-1; LAR = long-acting release; MRI = magnetic resonance imaging; OGTT = oral glucose tolerance test; OSA = obstructive sleep apnea; SRL = somatostatin receptor ligand

Brief Case Examples

SUCCESS — Comorbidity Cluster Recognized, E22.0 Coded, Care Coordinated

Patient: 71-year-old woman with 6-year hypertension, type 2 diabetes worsening despite escalating therapy, recurrent bilateral carpal tunnel syndrome, and CPAP-treated sleep apnea; reports rings no longer fit and shoe size increased.

Documentation: 'Acromegaly due to a GH-secreting pituitary macroadenoma (**E22.0 + D35.2**). Type 2 diabetes due to GH-induced insulin resistance (**E11.65**). Hypertensive heart disease (**I11.0**). OSA with macroglossia (**G47.33**). Bilateral CTS (**G56.03**). Acromegalic arthropathy (**M14.81**).'

Outcome: IGF-1 elevated; OGTT-GH unsuppressed; endocrinology referral and transsphenoidal surgery arranged. Comorbidities reframed as GH-driven and managed together; high-risk colonoscopy, echocardiogram, thyroid ultrasound, and DXA scheduled. **E22.0** and **D35.2** coded at every visit, including post-operative 'controlled' visits; lifelong IGF-1/GH surveillance documented; no avoidable ED visit over the next year.

PITFALL — Comorbidities Coded in Isolation, E22.0 Omitted

Documentation as written: '72-year-old with diabetes, hypertension, sleep apnea, and carpal tunnel. Continue meds. Pituitary hyperfunction, unspecified (**E22.9**).'

Consequence: Each comorbidity managed in isolation; **E22.0** never recorded and **E22.9** used by default — the most common undercoding pattern. The benign adenoma (**D35.2**) is omitted, so the disease mechanism is undocumented. Diabetes coded as hyperglycemia rather than **E11.-** loses

specificity, and the worsening-despite-treatment pattern that should have triggered IGF-1 is not captured.

RAF Impact: E22.9 maps to no HCC, so HCC 51 (CNA RAF 0.510) is lost entirely, and the pituitary adenoma's HCC 23 (0.186) is missed. Beyond risk adjustment, the unspecified note misrepresents a multi-system disease, omits the GH etiology that should drive comorbidity management, and delays the diagnosis that IGF-1 would have made years earlier.

Fix: Check IGF-1 on the comorbidity cluster; document explicitly: 'Acromegaly (**E22.0**) with benign pituitary adenoma (**D35.2**); type 2 diabetes due to GH excess (**E11.-**)[6]; OSA with macroglossia (**G47.33**);[9] bilateral CTS (**G56.03**)[6] — comorbidities linked to GH/IGF-1 excess; endocrinology referral placed.'

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