

What are effective strategies for reducing the risk of steroid-induced osteoporosis?

EVIDENCE-BASED ANSWER Calcium, in combination with vitamin D, prevents bone loss and is recommended in all patients. (Grade of recommendation: A, based on systematic reviews of randomized controlled trials [RCTs]). Alendronate and risedronate prevent fractures and should be considered for all patients at increased risk of fracture (5 mg of prednisone or equivalent, daily for longer than 3 months). (Grade of recommendation: A, based on RCTs) Replacement of sex hormones in hypogonadal patients prevents bone loss and increases bone mineral density (BMD). (Grade of recommendation: A for women, based on RCTs; B for men, based on one randomized, crossover trial.) Calcitonin prevents bone loss for up to 1 year. (Grade of recommendation: A, based on systematic review.)

EVIDENCE SUMMARY A systematic review of 5 RCTs (N=274) confirmed clinically and statistically significant prevention of bone loss at the lumbar spine for patients receiving glucocorticoids who also received calcium (500–1000 mg daily) and vitamin D (400–800 IU) daily.¹ A systematic review found that patients receiving steroids longer than 3 months gained bone mass when placed on a bisphosphonate.² A two-year RCT of 208 patients receiving steroids who also received alendronate or placebo demonstrated an incidence of vertebral fracture of 0.7% and 6.8% (NNT=16; RRR=90%; ARR = 5.9%; $P = .026$), respectively.³ A 48-week RCT involving 477 patients receiving steroids who also received alendronate or placebo demonstrated a 2.3% and 3.7% in incidence of vertebral fracture, respectively (RRR = 38%; ARR = 1.4%; $P = NS$).⁴ A 1-year RCT of 184 men on or off steroids using risedronate found an 82.4% decreased incidence of vertebral fractures compared with those who received placebo (NNT = 5; $P = .008$).⁵

In hypogonadal patients, several small studies have shown that replacement of sex hormones (estrogen in women and testosterone in men) increases lumbar spine BMD (women 2% and 3–4%; men 5%; all $P < .05$). Fracture reduction and risk of long-term use were not studied.^{6–8} In a sys-

tematic review of 9 RCTs, including 441 patients, calcitonin preserved bone mass in the lumbar spine but not the femoral neck during the first year of steroid therapy. Lumbar spine BMD values with calcitonin were significantly higher than with placebo at 6 and 12 months, but were similar at 24 months.⁹

RECOMMENDATIONS FROM OTHERS The American College of Rheumatology recommends calcium and vitamin D be offered to all patients initiating a regimen of prednisone 5 mg/d or its equivalent with expected duration of longer than 3 months. Bisphosphonates should be prescribed for all patients starting steroids and for patients receiving steroids with a T-score less than -1.0; however they should be used with caution in premenopausal women.⁸ A leading researcher states the rank order for prevention is a bisphosphonate followed by a vitamin D metabolite or hormone replacement.¹⁰

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What are the indications for urodynamic testing in older adults with incontinence?

EVIDENCE-BASED ANSWER Urodynamic testing is indicated for older adults with incontinence when the underlying cause remains unclear (Grade of Recommendation: B, based on multiple well designed, but inconsistent, randomized controlled trials [RCTs]). Simple cystometry—specifically, measuring post void residual and bladder capacity—is helpful in the evaluation of urinary incontinence when the cause has remained unclear. It may also offer benefit when surgery is under consideration, when there is a history of genitourinary surgery, or when a conservative therapeutic trial has not had an adequate response (Grade of Recommendation: C, based on a small number of RCTs, retrospective cohort studies and systemic reviews).

EVIDENCE SUMMARY Current studies regarding urodynamic testing in older adults with incontinence are limited by multiple factors, including inherent gender bias, poor reproducibility, and small study populations. Moreover, the lack of a reference standard has contributed to difficulty in assessing outcome measures. No published study to date has convincingly supported a role for advanced urodynamic testing (leak point pressure measurement, pressure flow studies, electromyography, etc.) in the evaluation of routine urinary incontinence. Simple cystometry, (measuring post-void residuals and determining bladder capacity), has proved particularly useful in detecting abnormalities of detrusor compliance and contractility, especially when the cause of incontinence is unclear.^{1,2}

One well designed retrospective cohort study of 950 women found that the positive predictive value of clinical symptoms in urinary incontinence alone (74% in the context of a 53% prevalence of incontinence) was not accurate enough to rely on for decisions about surgery.³ This study supports the need for urodynamic evaluation in most women prior to surgical incontinence treatment.

Another recent small RCT (n=87) found that, of patients with previous genitourinary surgery or more severe stress incontinence, about one quarter were more likely to have their management revised after urodynamic studies.⁴ Patients who demonstrated little or no improvement during the first few months of conservative treatment also ran a higher risk of misdiagnosis. Despite these findings, no difference in treatment outcomes was detected for women randomized to urodynamic testing.

Two additional RCTs suggest that, despite the wide use of urodynamic testing, reproducibility is limited and may lack sufficient sensitivity and

specificity to identify underlying pathology.^{5,6} Specific concerns raised in these studies included test-retest variation, as well as concerns about possible interpretation error of urodynamic testing.

RECOMMENDATIONS FROM OTHERS In its 1996 Clinical Practice Guideline Update, the Agency for Healthcare Research and Quality (AHRQ) recommended a focused history and targeted examination (including urinalysis and post-void residual measurement) in order to detect reversible causes of urinary incontinence.¹ The guideline stresses that uro-

TABLE

Indications for urodynamic evaluation in older adults

- Unclear diagnosis and inability to develop a reasonable treatment plan based on basic diagnostic evaluation.
- Consideration of surgical intervention, particularly if previous surgery failed or the patient is a high surgical risk.
- Patient dissatisfaction after an adequate therapeutic trial or desire to pursue further therapy

Table adapted from Reference 1.

dynamic testing is invasive and expensive, and it should be reserved for those situations when the patient desires such evaluation and the information gathered would potentially change management. Although AHRQ considers this guideline too old to direct current medical practice, we found little recent evidence to refute these recommendations.

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What is the best diagnostic approach to paresthesias of the hand?

EVIDENCE-BASED ANSWER There have been no good studies comparing different strategies for the evaluation of the patient with hand paresthesias. A reasonable strategy is to first evaluate for carpal tunnel syndrome (CTS), the most common condition associated with hand paresthesias. If the patient does not have findings consistent with CTS, then consider other diagnoses (Table). (Grade of recommendation: D, based on expert opinion.)

Findings consistent with CTS include a history of repetitive hand work, asymmetric paresthesias in the distribution of the median nerve, hypoalgesia, weak thumb abduction, or latency of nerve conduction studies. Tingling in the median nerve distribution or on the entire palmar surface also supports the diagnosis. Common conditions associated with CTS are pregnancy, obesity, and hypothyroidism. (Grade of recommendation: B, systematic review of case control studies).

EVIDENCE SUMMARY The only studies of hand paresthesias that we found pertained to of CTS. A consensus statement on CTS listed intermittent numbness, tingling, and pain along the sensory distribution of the median nerve as diagnostic criteria for CTS.¹ Patients often report that these symptoms awaken them at night. Shaking the hand may relieve the discomfort. Commonly, the pain is burning in nature and worsens with use during the day. Repetitive trauma or mechanical stress related to workplace tasks is associated with CTS.

A meta-analysis of studies reviewing the precision and accuracy of the history and physical examination in the diagnosis of CTS in adults found that hypoalgesia (LR+, 3.1), classic or probable hand diagram results (LR+ 2.4, LR- 0.2), and weak thumb abduction strength (weakness of resisted movement of the thumb at right angles to the palm; LR+ 1.8, LR- 0.5) best distinguish

those with and those without CTS.² A hand diagram is a graphical depiction of the distribution of tingling created by the patient; a classical distribution is in that of the median nerve, while a probable distribution involves the entire palmar surface. The reference standard for these studies was a nerve conduction study. Nocturnal paresthesias, Phalen and Tinel signs, and thenar atrophy had little or no diagnostic utility.

RECOMMENDATIONS FROM OTHERS Collins³ recommends the following approach to paresthesias of the upper extremity. If the paresthesias are symmetric, consider peripheral neuropathy, Raynaud's, or multiple sclerosis. If asymmetric, evaluate for radiculopathy with a neurological examination. If pain is radicular, and neurologic findings are consistent, consider spinal cord or nerve root compression. If the examination is normal, consider a plexopathy or herpes zoster. If there is no radiculopathy, the following maneuvers may suggest a cause. A positive Adson's maneuver is consistent with thoracic outlet syndrome, a Tinel's or Phalen's sign at the wrist suggests carpal tunnel syndrome, or Tinel's sign at the elbow suggests ulnar neuropathy. Note that the latter signs are not well validated by good quality diagnostic test studies.

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TABLE

Markers for diagnoses other than carpal tunnel

Symptoms or signs	Conditions	Initial tests
Point tenderness and/or a history of trauma	Fracture	Wrist radiographs
Systemic signs, including fever, weight loss, or malaise	Collagen vascular disease, neoplasm, multiple sclerosis, diabetes, hypothyroidism, hypocalcemia, B12 deficiency	CBC, comprehensive metabolic panel, TSH, ESR
Claudication, unilateral edema	Vascular disease	Doppler studies
Symmetrical paresthesias	Peripheral neuropathy, Raynaud's disease, and multiple sclerosis	Based on further information from history or physical
Radicular pain	Cervical herniation or spondylolithesis, spinal tumor	Cervical spine imaging
Exacerbation with neck/shoulder movement	Thoracic outlet syndrome, brachial plexopathy	Adson's test
Ulnar nerve distribution	Ulnar neuropathy	Tinel's at elbow