and 50 mg every other day), and alpha-tocopherol (50 mg daily) supplementation alone or in combination for 4 to 12 years (median 6.1 years).

There was no observed difference in the risk of developing AMD in patients taking any antioxidants compared with patients taking placebo (risk ratio [RR] 0.98; 95% CI, 0.89–1.1). Similar results were found when looking at advanced AMD (RR 1.1; 95% CI, 0.80–1.4). Additionally, results remained consistent when analyses were confined to beta-carotene alone (2 trials, N=21,589; AMD RR 1.0; 95% CI, 0.89–1.2; advanced AMD RR 0.97; 95% CI, 0.69–1.4) or alpha-tocopherol alone (3 trials, N=40,887; AMD RR 0.97; 95% CI, 0.85–1.1; advanced AMD RR 1.3; 95% CI, 0.84–2.1). The authors concluded otherwise healthy individuals will not benefit from antioxidant supplements to prevent or delay AMD.

A 2007 systematic review evaluated the effects of dietary antioxidant consumption on the development of early and late AMD in 12 trials with nearly 173,000 adults aged 40 years and older. Data from 9 prospective cohort trials (1 published only as an abstract) and 3 RCTs (1 published only as an abstract) were analyzed. The mean duration of follow-up in the cohort trials was 9 years. Follow-up ranged from 4 to 12 years in the RCTs.

Of the dietary antioxidants examined—including vitamins A, C, E, zinc, lutein, zeaxanthin, alpha- and beta-carotene, beta-cryptoxanthin, and lycopene—none provided a protective effect against AMD. In pooled data from the 2 highest quality trials, vitamin E demonstrated a protective effect (5,879 patients; OR 0.75; 95% CI, 0.59–0.94); however, this benefit was not seen when pooling the results of all included studies (OR 0.83; 95% CI, 0.69–1.0). Results regarding dietary antioxidants and late AMD could not be pooled as each of the studies evaluating this endpoint used a different antioxidant. The authors concluded that dietary antioxidants have minimal or no effect on the development of early AMD in well-nourished Western populations.

A 2004 Cochrane systematic review of 26 RCTs with 1,826 children, aged 4 months to 18 years examined the effectiveness of the second-generation antihistamine, ketotifen, in the long-term treatment of asthma. Children were more than twice as likely to stop or decrease their use of inhaled bronchodilators when treated with ketotifen (risk ratio [RR] 2.4; 95% CI, 1.6–3.5). Ketotifen was associated with an increased risk of sedation (RR 1.7; 95% CI, 1.1–2.6) and weight gain (RR 1.4; 95% CI, 1.0–2.0). Despite these adverse events, there was no increased risk of stopping ketotifen due to adverse effects (RR 1.2; 95% CI, 0.30–4.9).

A 2011 systematic review discussed 5 RCTs of second-generation antihistamines (desloratadine and cetirizine) in children and adult patients with both asthma and allergic rhinitis. A total of 1,637 patients were included, and most trials lasted only 4 weeks.

### Do antihistamines improve asthma symptoms in patients with seasonal allergies?

#### Evidence-Based Answer

The first-generation antihistamine oxatomide does not relieve asthma symptoms, whereas certain second-generation antihistamines might. However, current consensus guideline recommendations are to not treat asthma symptoms with antihistamines (SOR: C, inconsistent systematic reviews, single RCT, and expert opinion).

A 2003 Cochrane systematic review of 6 RCTs with 494 patients examined the effectiveness of the first-generation antihistamine, oxatomide, in asthma treatment. The review was unable to pool pulmonary function tests or symptom scores. None of the individual studies found a significant difference in peak expiratory flow between oxatomide and placebo. Measurements of FEV1 and FEV1/FVC showed variability among the studies. The review was able to analyze adverse events and determined significantly more patients receiving oxatomide had adverse effects such as drowsiness and weight gain (OR 3.0; 95% CI, 1.7–5.2) than patients receiving placebo. The number needed to harm was 7 for any adverse event and 8 for drowsiness.

A 2004 Cochrane systematic review of 26 RCTs with 1,826 children, aged 4 months to 18 years examined the effectiveness of the second-generation antihistamine, ketotifen, in the long-term treatment of asthma. Use of other asthma control medications in addition to ketotifen was allowed in all trials, but there was no standardization of types of asthma-control medications among the RCTs.

Children were more than twice as likely to stop or decrease their use of inhaled bronchodilators when treated with ketotifen (risk ratio [RR] 2.4; 95% CI, 1.6–3.5). Ketotifen was associated with an increased risk of sedation (RR 1.7; 95% CI, 1.1–2.6) and weight gain (RR 1.4; 95% CI, 1.0–2.0). Despite these adverse events, there was no increased risk of stopping ketotifen due to adverse effects (RR 1.2; 95% CI, 0.30–4.9).

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Total Asthma Severity Scores (TASS; range 0–11) decreased in all studies (by 0.8–2.0 points). All improvements were statistically significant. No improvement was found in pulmonary function testing in any of these trials. However, in a 10-week RCT of 117 patients randomized to loratadine plus montelukast or just montelukast, the combination therapy increased FEV1 more than monotherapy (14% vs 9.7%; P = .001). The 2010 Allergic Rhinitis and its Impact on Asthma (ARIA) evidence-based guidelines and its 2012 update do not support using antihistamines as a treatment for asthma. The ARIA working group found minimal evidence to support the effectiveness of antihistamines, especially considering the significant potential for adverse effects (based on low-quality evidence).

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When should musculoskeletal ultrasound replace MRI for diagnosing acute meniscal tears?

Evidence-Based Answer
Musculoskeletal ultrasound for meniscal tears has a sensitivity ranging from 85% to 100% and a specificity ranging from 69% to 97%. The test is comparable to MRI for ruling in a tear in young adults when conducted by experienced ultrasonographers (SOR: A, consistent comparative studies).

In 2012, a prospective comparative study evaluated ultrasound and MRI for the diagnosis of medial meniscus tears in patients younger than 30 years (group A, mean age 24 years) and older than 30 years (Group B, mean age 44 years). Seventy-four patients, equally divided between the 2 groups, with a clinical suspicion of medial meniscal tear, underwent ultrasound with 2 interpreting radiologists at an orthopedic clinic with 14 mHz linear array transducer, MRI, and arthroscopy. Compared with arthroscopy, ultrasound was as sensitive and specific as MRI for detecting medial meniscal tears in patients younger than 30 years (sensitivity 100%; specificity 89% for both ultrasound and MRI; positive likelihood ratio [LR+] 9.1, negative likelihood ratio [LR–] 0). MRI was more sensitive and specific (97% and 86% respectively; LR+ 6.7, LR– 0.004) than ultrasound (83% and 71%, respectively; LR+ 2.9, LR– 0.23) in patients older than 30 years.

A 2011 prospective study compared ultrasound with arthroscopy for diagnosing meniscal injury. One hundred sixty menisci in 80 patients (mean age 36 years) with clinical suspicion of medial or lateral meniscal tears were examined with ultrasound performed by a single physician with 7 years’ experience in musculoskeletal ultrasound using a 6- to 12-mHz linear array transducer. Ultrasound had a sensitivity of 85% and a specificity of 86% (LR+ 6.1, LR– 0.17) compared with arthroscopy.

A 2008 prospective comparative study examined the accuracy of ultrasonography by radiographers without formal meniscal ultrasound training for detecting medical or lateral meniscal tears in 35 consecutive patients (mean age 47 years) with suspected tears noted on clinical examination by orthopedic surgeon. The presence of meniscal tear was confirmed by MRI and arthroscopy. Ultrasound had a sensitivity of 86% and a specificity of 69% (LR+ 2.7 and LR– 0.2).

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