lateralis imbalance. The authors concluded that there was some evidence that exercise is effective in the treatment of PFPS, but again did not single out specific exercises. Four randomized studies (n=179) showed no difference in pain reduction with closed kinetic chain exercises (weight bearing or foot in contact with ground; eg, squats) versus open kinetic chain exercises (non–weight bearing; eg, leg extensions).

In 2008, a randomized controlled pilot study with 14 participants (10 women, 4 men) found that adding hip abductor and external rotator strengthening to knee extensor strengthening improved perceived pain symptoms on a 10-cm visual analog scale during 6 functional activities (mean decrease 3.6 vs 2.01; P<.05).3 No larger RCTs yet exist.

Chris Clemow, MD, FACSM
AnMed Health FMR
Anderson, SC


Is there a role for antibiotics in the treatment of ingrown toenails?

Evidence-Based Answer
Antibiotic therapy yields no benefit in the treatment of an uncomplicated ingrown toenail. (SOR: B, based on heterogeneous RCTs.) Experts may still recommend antibiotics in complex cases where the nail is detached from the nail bed, the patient is at increased risk for endocarditis, or underlying osteomyelitis is suspected. (SOR: C, based on expert opinion.)

Two RCTs evaluated the role of antibiotic therapy in the treatment of onychocryptosis, or ingrown toenails. In the first study, 154 patients were randomized into 3 groups. All 3 groups received nail removal (matrixectomy) with application of phenol to the matrix. Group 1 received the procedure followed by a 7-day course of oral cephalaxin. Group 2 received a 7-day course of cephalaxin prior to the procedure. Group 3 received the procedure and no antibiotic therapy.1

The mean healing times, described as resolution of drainage and inflammatory changes near the nail, for groups 1, 2, and 3 were 1.9, 2.3, and 2.0 weeks, respectively. Healing time was statistically significantly faster in group 1 compared with group 2 (P<.04), but was not faster in group 1 than group 3. No statistically significant difference was noted in postprocedure infection rates among the 3 groups. The authors concluded that the use of antibiotics does not change healing rates, but the delay of matrixectomy may increase healing time.1

In another RCT, 117 patients were randomized into 4 treatment groups: (1) matrixectomy with antibiotics, (2) matrixectomy without antibiotics, (3) matrixectomy followed by phenol application with antibiotic, and (4) matrixectomy followed by phenol application without antibiotic. Antibiotic therapy consisted of a single local application of a soluble gentamicin tablet immediately after the procedure. Patients were seen in office for follow-up 2 days and 1 week after the procedure to evaluate healing. Additionally, patients in all 4 groups completed a questionnaire at 2 days, 1 week, 1 month, 6 months, and 1 year for evaluation of recurrence.2

Infection rates were similar across all 4 groups at 1 week: group 1, 47.6%; group 2, 50%; group 3, 52%; and group 4, 57.6%. The rates of infection were not statistically significantly different at 2 days (P=.989) or 1 week (P=.676) between the groups receiving antibiotics and groups that did not. The authors did not list what criteria they used for signs of infection in the study. The recurrence rates at 1 year were 38.1%, 42.1%, 4%, and 21.2%, respectively. There was a statistically significant difference in the recurrence rates between matrixectomy and application of phenol (P=.002). Again, there was no statistical difference in recurrence rates between the antibiotic groups and the groups that did not receive antibiotics.2

A recent systemic review article proposed an algorithm for antibiotic use in the treatment of onychocryptosis based on a review of recent studies and current guidelines in the field. The authors differentiated onychocryptosis into 5 stages, with stage IV and V being appropriate for antibiotic use. Stage IV was described as infective onychocryptosis with partial onycholysis (painless separation of the nail from the nail bed) of one of the borders and stage V as infective onychocryptosis of both borders and total or partial...
onycholysis of the nail plate. These guidelines also recommended prophylaxis for bacterial endocarditis in high-risk patients prior to matrixectomy as well as an evaluation for osteomyelitis if there is a history of long-term onychocryptosis.3

Michael O’Brien, MD
Jason Crawford, MD, MPH
U of Nevada School of Medicine
Reno, NV


What is the best method of compression to speed healing of venous stasis ulcers?

Evidence-Based Answer
Four-layer elastic bandage systems and compression stockings both result in faster healing than bandage systems with fewer layers or with inelastic components. (SOR: A, based on meta-analyses.)

Compression is effective in promoting the healing of venous stasis ulcers1 and a variety of methods have been developed to provide compression. Four-layer bandages consist of orthopedic wool, crepe bandage, elastic bandage, and a cohesive retaining layer. Compression stockings are another alternative to provide elastic compression. Short-stretch bandages are inelastic and usually applied over orthopedic wool. Unna’s boot is one form of an inelastic paste bandage.

A 2009 systematic review analyzed 39 RCTs (n=3,733) comparing various compression methods in the treatment of venous ulcers.1 The authors examined the effect of the number of component layers, and reported 1 trial (n=245) showing an estimated median time to healing of 78 days for a 4-layer bandage system compared with 168 days for a single-layer system. Another single study (n=109) showed a significant difference in complete healing at 6 months favoring a 4-layer bandage system compared with a 2-layer bandage system (RR=0.56; 95% CI, 0.41–0.77).

In examining the effect of elastic versus inelastic components, pooled data from 2 trials (n=171) revealed significantly more ulcers completely healed at 3 to 4 months with a 3-layer elastic system compared with a 3-layer inelastic system (RR=1.8; 95% CI, 1.3–2.7). There were no consistent findings in the studies comparing 4-layer elastic systems with multilayer inelastic systems, but there was significant heterogeneity among these studies.1

A subsequent meta-analysis from the same group of authors further explored the effectiveness of elastic 4-layer bandage systems compared with inelastic short-stretch bandage systems. The reviewers contacted the authors of the original studies and obtained individual patient data for meta-analysis instead of using the trial data reported in the original papers.2 Seven eligible RCTs were identified (n=887), and patient-level data were retrieved for 5 trials (n=797, 90% of known randomized patients) with a median follow-up ranging from 7 to 54 weeks.

Pooled analysis showed median time to healing was 90 days for elastic 4-layer bandage systems and 99 days for inelastic short-stretch bandages, but statistical significance was not reported. Adjusting for type of bandage within each system, ulcer duration, and ulcer area showed significantly higher probability of healing with a 4-layer bandage compared with an inelastic short-stretch bandage (HR for healing=1.3; 95% CI, 1.1–1.6).2

Another recent meta-analysis assessed 8 RCTs (n=692) comparing compression stockings with bandage systems, predominantly single-layer short-stretch bandages or paste bandages (Unna’s boot).3 Pooled results showed the proportion of ulcers healed in 12 to 16 weeks was 65% with stockings and 47% with bandages (OR 0.44; 95% CI, 0.32–0.61). This translated into an average time to healing that was 3 weeks shorter with compression stockings (12 vs 15 weeks, P=.0002).

Manju Pandey, MD
Thomas Satre, MD
U of MN/St. Cloud Hospital FMR
St. Cloud, MN