

NEWSLETTER

Supporting the Derbyshire Health Community

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Further in this issue	Page 2	Analgesia in renal colic. ADVANCE Trial
	Page 4	Drug safety update More on 'stormin' metformin
	Page 6	Diclofenac and the risk of MI Dressings for acute and chronic wounds
	Page 7	Dressings for venous leg ulcers
	Page 8	Prescribing antibiotics in primary care New guidance on otitis externa

JAPC Update

A Joint Area Prescribing Committee (JAPC) has now replaced CEPPaC. This is a countywide group covering Derbyshire County PCT and Derby City PCT. It will concentrate on drugs and medicines management issues. NICE implementation and prioritisation will be dealt with separately by the two PCTs.

RED drugs are those where prescribing responsibility would normally lie with a hospital consultant or a specialist. AMBER drugs are those that although usually initiated within a hospital setting, could appropriately become the responsibility of the GP. This would normally be under a shared care agreement. GREEN drugs are regarded as routine for primary care prescribing. BROWN drugs are those that JAPC does not recommend for use (DARK BROWN) or only in restricted circumstances (LIGHT BROWN) due to lack of data on safety, effectiveness, and/or cost-effectiveness.

The most recent updates are in the table below:

Drug	Date considered	Decision
Aliskiren	November 2007	DARK BROWN
Paliperidone	November 2007	DARK BROWN
Stalevo	November 2007	GREEN
Ivradadine	November 2007	LIGHT BROWN
Lidocaine plasters	November 2007	LIGHT BROWN
Nicorandil	October 2007	GREEN (3 rd or 4 th line)
Celluvisc eye drops	September 2007	GREEN (not first line)
Lymecycline 408mg caps	September 2007	GREEN (second line for acne)
N-acetylcysteine 600mg tabs	September 2007	RED
Minocycline	September 2007	DARK BROWN

Use of Nicorandil

The appropriate positioning of nicorandil in the management of angina was discussed at CEPPaC. It was agreed that nicorandil is appropriate to initiate in primary care but only as a 3rd or 4th line drug. These are appropriate circumstances for its prescribing:

- as part of a management plan already communicated by a consultant
- as an alternative to other drugs in case of intolerance (especially to nitrates)
- in patients who are symptomatic despite several drugs and the GP is referring back to secondary care
- in patients who are symptomatic despite several drugs (beta-blocker, calcium channel blocker, nitrate) and who are not candidates for further secondary care intervention due to e.g. co-morbidity or patient choice.

Analgesia in renal colic

The acute pain of renal (ureteric) colic is treated with diclofenac rather than pethidine these days. Diclofenac injection 75mg IM is commonly used but this is painful and can cause aseptic necrosis at the injection site. Diclofenac is just as effective and works as quickly when given by the rectal (PR) route. CEPPaC has agreed that diclofenac 100mg suppository is a suitable option to the IM route.

ADVANCE Trial (Lancet 2007; 370: 829-40)

Blood pressure is an important determinant of the risks of macrovascular and microvascular complications of type 2 diabetes. UKPDS 38 showed us that tight blood pressure control based on captopril or atenolol as the first-line drug significantly reduced the risk of both macro- and microvascular disease¹. Prevention of the vascular complications of type 2 diabetes is a priority and all the main classes of antihypertensive drugs seem to reduce the risks of stroke and CHD in people with diabetes and hypertension.

'Cheap pill cuts deaths from diabetes'² and 'Diabetes treatment that could save 100,000 lives'³ were headlines in national newspapers on 3 September 2007. They were reporting the results of the ADVANCE trial. Are these headlines justified?

Method

ADVANCE assessed the effects of the routine administration of an ACE inhibitor – diuretic combination (perindopril + indapamide) on serious vascular events in people with type 2 diabetes, irrespective of initial blood pressure levels or the use of other blood pressure lowering drugs. The trial was done by 215 collaborating centres in 20 countries.

This was a double blind randomised controlled trial involving 11,140 people with type 2 diabetes. It does not state whether it was allocation concealed. To be eligible, participants needed to have been at least 30 years old when diabetes was first diagnosed, and at least 55 years on entry to the study. All participants also needed to have either a history of major cardiac disease or at least one other risk factor for cardiovascular disease. Participants were not excluded based on their blood pressure.

The primary study outcomes were composites of major macrovascular and microvascular events. Other outcomes of interest, amongst others, included cardiovascular and all cause mortality, non-fatal myocardial infarction, non-fatal stroke and new or worsening renal or eye disease. Analyses were by intention to treat. ADVANCE was funded by grants from Servier and the National Health and Medical Research Council of Australia.

Potentially eligible participants entered a 6-week pre-randomisation run-in period during which they received a fixed combination tablet consisting of perindopril (2 mg) and indapamide (0.625 mg). All other treatments were continued at the discretion of the responsible physician, with the exception of ACE-inhibitors; participants taking an ACE-inhibitor other than perindopril had this treatment withdrawn and were offered substitution with open-label perindopril at a dose of 2 mg or 4 mg a day. **Those who adhered to, and tolerated, the run-in study drugs** were randomly assigned in a double-blind fashion, to combined perindopril (2 mg) and indapamide (0.625 mg) or matching placebo. After 3 months, the doses of randomised therapy were doubled to 4 mg for perindopril and 1.25 mg for indapamide, or matching placebo.

The use of concomitant treatments during follow-up, including blood pressure lowering therapy, remained at the discretion of the responsible physician with two exceptions - the use of thiazide diuretics was not allowed, and open-label perindopril, to a maximum of 4 mg a day was the only ACE-inhibitor allowed, thus ensuring that the maximum recommended dose of 8 mg for perindopril could not be exceeded by patients randomly assigned to active treatment. However, if at any time another ACE inhibitor or a thiazide diuretic was thought to be definitely indicated, study treatment could be withdrawn and alternate open-label treatment provided.

Participants were seen 3, 4, and 6 months after randomisation, and subsequently, every 6 months. Mean follow-up of participants was 4.3 years.

Results

- Of the eligible participants who were registered, **13.5% withdrew during the 6-week active run-in period.**
- In the active arm, 45% were receiving additional perindopril at the end of follow-up and 3% additional thiazides. At the end of follow-up, 55% of the placebo arm were receiving perindopril and 5% received thiazides.
- Overall participants who received perindopril and indapamide had significantly lower blood pressure than participants who received placebo, with a mean difference between the groups of 5.6mm Hg in systolic and 2.2mm Hg in diastolic blood pressure.
- Only 61.5% of these high-risk patients were receiving aspirin or other antiplatelet at the end of follow-up and only 44.5% a statin. Metformin was prescribed to 69% in the active arm and 72% in the placebo arm.
- 1799 participants had a major macrovascular or microvascular event during follow-up: 15.5% in the active arm and 16.8% in the placebo arm; HR 0.91 (95% CI 0.81 to 1.00); p=0.041. The absolute risk reduction is 1.3% and the NNT is 77.
- The proportional effects of active treatment on major macrovascular outcomes and major microvascular outcomes were similar, though not separately significant.
- During the study 879 participants died: 7.3% in the active arm and 8.5% in the placebo arm; HR 0.86 (0.75 to 0.98); p=0.025. The ARR is 1.2% and the NNT is 83.
- There was no significant difference between randomised groups in non-CV deaths but a RRR of 18% (2 to 32%; p=0.027) in CV deaths (3.8% vs 4.6%). This is an ARR 0.8% and a NNT of 125.
- There was no significant difference between the groups in either total cerebrovascular events or heart failure.
- There was a significant reduction in the development of microalbuminuria (19.6% vs 23.6%, RRR 21% [14-27%]; p<0.0001). This is an ARR of 4% and a NNT of 25.
- There was no significant difference between the groups in the rate of new or worsening retinopathy, including the need for retinal photocoagulation, new or worsening neuropathy, cognitive function, dementia, or total hospitalisations.

Discussion/implications

- The run-in period is likely to have weeded out those with intolerable ACEI-induced cough.
- The authors conclude that ADVANCE indicates that the routine administration of a fixed combination of perindopril and indapamide to a broad range of patients with diabetes reduces the risks of death and major macro- or microvascular complications, irrespective of initial blood pressure level or ancillary treatment with the many other preventive treatments typically provided to diabetic patients today.
- The primary endpoint was only just statistically significant and the confidence interval includes 1. A hazard ratio of 1 means that there was no difference between the two interventions.
- Mortality was a secondary endpoint and the study is unlikely to have been appropriately powered for mortality, allowing a greater play of chance. A p-value of 0.027 is the same as that for throwing a double six and we would regard that as lucky!
- Any treatment effect is most likely the result of the lower blood pressure achieved and/or the lack of thiazide use in the placebo arm (only 5%).
- The results of ADVANCE are not sufficiently robust to change practice. We know that blood pressure should be aggressively managed in those with type 2 diabetes. Thiazides and ACEIs are both suitable options for first-line use and many will need both to control their blood pressure.

1. UKPDS 38. BMJ 1998; 317: 703-13
2. Daily Telegraph, 3 September 2007, p 6
3. Daily Mail, 3 September 2007, p 12

Costs for one year's supply (DT and Mims September 07)

Coversyl plus (4mg/1.25mg), one daily	£176.30
Coversyl plus (4mg/1.25mg), two daily	£352.60
Ramipril 5mg + bendroflumethiazide 2.5mg daily	£46.67
Ramipril 5mg + indapamide 2.5mg daily	£63.44

Drug safety update

This monthly newsletter from the MHRA has replaced the publication 'Current Problems in Pharmacovigilance' which used to be posted to all doctors and pharmacists. 'Drug Safety Update' is only available electronically and you can register for e-mail alerts. It can be found at www.mhra.gov.uk/mhra/drugsafetyupdate These are some of the highlights from the October issue:

Ketoprofen and ketorolac: gastrointestinal risk

Ketorolac and ketoprofen have been associated with a higher gastrointestinal risk than most other NSAIDs in the class; prescribing advice should be followed carefully, particularly recommended upper dose limits.

Dose

- *Ketorolac*: treatment should be initiated only in hospital. Maximum duration of treatment should not exceed 7 days for tablets, or 2 days for continuous daily dosing with intravenous or intramuscular formulations
- *Ketoprofen*: recommended maximum daily dose range is 100-200 mg in divided doses. The balance of risks and benefits should be considered carefully before commencing treatment with 200 mg daily.

Contraindications

Ketoprofen and ketorolac are contraindicated in patients with active peptic ulcer, or with any history of gastrointestinal bleeding, ulceration, or perforation.

Inhaled corticosteroids: pneumonia

- Physicians should remain vigilant for the development of pneumonia and other infections of the lower respiratory tract (i.e. bronchitis) in patients with COPD who are treated with inhaled drugs that contain steroids because the clinical features of such infections and exacerbation frequently overlap.
- Any patient with severe COPD who has had pneumonia during treatment with inhaled drugs that contain steroids should have their treatment reconsidered.

Bisphosphonates: osteonecrosis of the jaw

- Dental examination, with appropriate preventive dentistry, should be considered before bisphosphonate treatment in patients with concomitant risk factors (eg, cancer, chemotherapy, corticosteroids, and poor oral hygiene)
- During bisphosphonate treatment, patients with concomitant risk factors should avoid invasive dental procedures if possible. For patients who develop osteonecrosis of the jaw during bisphosphonate treatment, dental surgery may exacerbate the condition.
- Whether discontinuation of bisphosphonate treatment in patients who need dental procedures reduces the risk of osteonecrosis of the jaw is not known. Clinical judgement should guide the management of every patient on the basis of an individual benefit-risk assessment.

More on 'stormin' metformin

A recent systematic review has compared the effectiveness and safety of oral medications for type 2 diabetes¹. 216 controlled trials and cohort studies and two systematic reviews that addressed benefits and harms were selected.

The strength of evidence was moderate to high that most oral agents (metformin, glitazones, and repaglinide) improved glycaemic control to the same degree as sulphonylureas (a decrease in HbA_{1c} level of about 1%). Nateglinide and acarbose may have slightly weaker effects on HbA_{1c} levels on the basis of indirect comparisons of placebo-controlled trials. There was moderate evidence that most agents, other than metformin, increased body weight by about 1 to 5 kg. Metformin had no effect on body weight in placebo-controlled trials.

Glitazones were associated with adverse effects on LDL-C levels and a higher risk for congestive heart failure, with an absolute risk of 1% to 3% (NNH of 33 to 100). The review did not find evidence of an elevated risk for lactic acidosis in patients taking metformin compared with other oral diabetes agents. The authors comment that the evidence for metformin-induced lactic acidosis stems mainly from about 300 case reports and most reported cases were associated with severe underlying illnesses. "We suspect that apparent cases of 'metformin-induced lactic acidosis' may have been over reported. However, we could not rule out the possibility that metformin conferred additional risk in the presence of severe underlying cardiac or renal disease".

The authors conclude that metformin has the best profile of benefit to risk and should be initial pharmacotherapy for type 2 diabetes. Second-generation sulphonylureas also fared well against other agents, apart from the increased risk for hypoglycaemia, and remain an alternative as second-line therapy. They comment “compared with newer agents, metformin and second-generation sulphonylureas share three additional advantages: lower cost, longer use in practice, and more intensive scrutiny in long-term trials with clinically relevant end points”.

Another systematic review examined the relation between antidiabetic treatment and outcomes in people with heart failure and diabetes². Eight studies were included in the review. Three of four studies found that insulin use was associated with increased risk for all cause mortality, but the authors comment that it is difficult to tell whether this is a true adverse effect of insulin or whether it is confounding by indication.

Metformin was associated with significantly reduced all cause mortality in two studies and a similar trend was seen in a third. Metformin was not associated with increased hospital admission for any cause or for heart failure specifically. No study found an increase in adverse events with metformin and the results of both studies that evaluated all cause hospital admissions in metformin users suggested that it is associated with a lower rate than other antidiabetic drugs.

The pooled effect of four studies that assessed the effect of glitazones on all cause mortality suggested that treatment may be associated with reduced all cause mortality. However, glitazones were associated with increased risk of hospital admission for heart failure.

The authors conclude that of the current antidiabetic agents, metformin is the only one **not** associated with any measurable harm in people with diabetes and heart failure and is associated with reduced mortality.

The UK prospective diabetes study (UKPDS) showed that metformin was associated with reduced all cause mortality, which was not seen in patients with equally well controlled blood glucose, treated with sulphonylureas or insulin³. Hence, the title of ‘stormin’ metformin. Despite the evidence base for the benefits of metformin, concerns remain about its side effects and especially the perceived risk of lactic acidosis in the presence of renal, hepatic, respiratory, or cardiac failure. Perhaps as a result of this, some patients with type 2 diabetes are denied metformin treatment. A recent review⁴ asks the question “Metformin, heart failure, and lactic acidosis: is metformin absolutely contraindicated?”

An increasing body of evidence challenges the so-called ‘contraindications’ to metformin. Most of the evidence for the association between metformin and lactic acidosis is historical data for phenformin (withdrawn in 1977). Metformin and phenformin have different pharmacological characteristics that could explain the much lower incidence of lactic acidosis with metformin.

Several reports found that physicians have increasingly ignored contraindications to prescribing metformin and yet the incidence of lactic acidosis has remained very low. A study in Scotland found that 24.5% of patients receiving metformin had contraindications to its use, including MI, cardiac failure, renal impairment, or chronic renal disease. Despite this, only one episode of lactic acidosis occurred in 4600 patient years, and this was in a 72 year old patient with acute MI complicated by acute renal failure.

Another study found that 73% of metformin treated patients had at least one contraindication to its use. None the less, no cases of lactic acidosis were seen. The evidence from these reports reinforces the viewpoint that metformin is an extremely rare cause of lactic acidosis in patients with type 2 diabetes, even in the presence of contraindications including renal, hepatic, and cardiac failure.

The authors make the following conclusions:

an increasing body of evidence suggests that metformin treatment alone will not result in lactic acidosis unless other contributing factors coexist. More importantly, treatment with metformin is not absolutely contraindicated in patients who have isolated heart failure, and it may be beneficial. The risk of lactic acidosis due to metformin is negligible in these patients and is unrelated to the plasma concentration of metformin. The presence of other organ failure, such as renal failure, in addition to heart failure might still pose a risk of lactic acidosis. Metformin provides a greater degree of cardiovascular protection than would be expected from its antihyperglycaemic actions alone and is the first drug of choice for the treatment of type 2 diabetes. The decision to stop or continue metformin in the presence of heart failure should be individualised to the particular patient until further evidence is available.

1. Ann Intern Med 2007; 147:386-99
2. BMJ 2007; 335:497-506
3. Lancet 1998; 352:854-65
4. BMJ 2007; 335:508-12

Diclofenac and the risk of MI

Further to the article in the August issue of this newsletter, another study suggesting an increased risk of MI with the use of diclofenac has been published¹. The study was designed to assess the relation between long-term use (>10 months) of diclofenac, ibuprofen and naproxen and the risk of MI in patients who had no prior recorded clinically important risk factors for acute MI. Using the General Practice Research Database, they identified all patients from the study base population of diclofenac, ibuprofen and naproxen users, who had a first time MI, and compared their NSAID exposure with that of the controls who did not have an MI.

There was no statistically significant increased risk for MI at any level of ibuprofen or naproxen use. The adjusted relative risk (RR) estimate for risk of MI with diclofenac was increased, with the risk rising progressively with increasing duration of use.

Number of prescriptions	RR estimate*	95% CI
1	1.0	Reference
2 – 4	1.2	1.0, 1.4
5 – 9	1.4	1.1, 1.9
10 – 19	1.9	1.3, 2.7
20+	2.0	1.3, 3.0

*adjusted for BMI, smoking, rheumatoid arthritis, hyperlipidaemia, and use of other NSAIDs.

The authors conclude that their study has again provided persuasive evidence that prolonged use of diclofenac increases the risk of acute MI in patients with no prior strong risk factors by around twofold. They consider that the public health implications of this are substantial. Diclofenac has the highest COX-2 selectivity among the traditional NSAIDs and it is perhaps not surprising that it has a similar effect on MI risk as has been found for rofecoxib and celecoxib².

It makes sense to review as a priority people taking diclofenac who are at high baseline risk of MI (e.g. the elderly, those with existing CV disease), those who are taking it long-term, and those who are taking a higher dose. In addition, ibuprofen and naproxen should be first- and second-line choices when an NSAID is truly indicated.

1. Br J Clin Pharmacol 2007; 64:662-7
2. Pharmacotherapy 2006; 26:1379-87

Key message: review your practice's prescribing of diclofenac

Dressings for acute and chronic wounds

Despite the widespread use of modern wound care dressings, there are few robust randomised controlled trials showing evidence for improved patient-oriented outcomes (POOs) compared to traditional, cheaper dressings. A recent systematic review has been published to try and address this¹.

This is what the NPCi blog (www.npci.org.uk/blog/?p=19) has to say about it.

What did the study say?

The review included 99 studies published between 1990 and 2006. Unfortunately, it **could not identify one single, high-quality study**; indeed 80% of the studies were considered to have at least one major shortcoming. The only findings of note in the review, bearing in mind the weak evidence, were:

for chronic wounds:

- hydrocolloid dressings were better than saline gauze or paraffin gauze for complete healing.

- alginates, singly or in sequential treatment with hydrocolloid dressings, were better than other modern dressings for debriding necrotic wounds and reducing wound area.

for acute wounds

- hydrofibre (e.g. Aquacel) and foam dressings reduced time to healing in comparison with traditional dressings (paraffin gauze or wet-to-dry gauze dressings).
- hydrofibre and foam dressings reduced time to healing in comparison when compared with modern silver-coated dressings.

The latter finding is extremely interesting given how much the NHS spends on silver dressings – see later.

No evidence was found supporting specific dressings for haemorrhagic or malodorous wounds, fragile skin, or for prevention and treatment of infection. There was no evidence to show a benefit of modern dressings over traditional dressings with respect to pain or other performance factors e.g. ease of use, avoidance of wound trauma on dressing removal.

What does this mean then?

Wound management products are costly to the NHS. FP10 prescriptions alone accounted for £25 million in the first quarter of 2007, with 25% of these costs for silver dressings. Like all therapeutic interventions, the choice of wound care products should be based on clinical safety, efficacy, cost and patient suitability. Given that there is little good evidence to support our choice in terms of efficacy and safety, cost and patient suitability should largely govern our decision-making here. It may be particularly worthwhile looking at the use of silver dressings in your practice.

Wound care professionals are encouraged to participate in conducting well-designed and controlled clinical studies of wound dressings, and to resist the routine use of new dressings, that are usually more expensive, in the absence of good quality clinical evidence for their benefit over existing products.

1. Arch Dermatol 2007; 143:1297-1304

Key message: review your practice's use of dressings, especially silver dressings.

Dressings for venous leg ulcers

Multi-layer compression bandaging has been identified as the gold standard in the treatment of venous leg ulcers. Dressings are usually placed over the ulcer before compression bandages, with the intention of promoting healing and preventing the bandages sticking to the wound. These dressings can contribute significantly to the cost of treating a venous leg ulcer and whether any particular dressing or type of dressing affects the healing of these ulcers needs to be established. A recent systematic review and meta-analysis assessed the effectiveness of wound dressings used in the treatment of venous leg ulcers¹.

The primary outcome was time to complete healing or proportion of ulcers healed. 42 RCTs fulfilled the inclusion criteria. The results showed no statistically significant difference in terms of total ulcers healed between any of the dressing types.

The authors concluded that applying hydrocolloid dressings beneath compression produced no benefit in terms of ulcer healing compared with applying simple low adherent dressings. "The use of hydrocolloid dressings rather than simple, low adherent dressings should be questioned. In the absence of clear evidence of differences in clinical effectiveness, the optimum use of resources demands that the least expensive dressing should be used"

1. BMJ 2007; 335:244, doi:10.1136/bmj.39248.634977.AE

Key message: review the type of dressing used under compression bandaging

Prescribing antibiotics in primary care

A recently published study from general practices in Oxfordshire assessed the effect of community prescribing of an antibiotic for acute respiratory infection on the prevalence of antibiotic resistant bacteria in an individual child¹. They found that prescribing amoxicillin doubles the prevalence of antibiotic resistant bacteria in individual children. The authors concluded that the short-term effect of amoxicillin prescribed in primary care is transitory in the individual child but sufficient to sustain a high level of antibiotic resistance in the population.

The author of the accompanying editorial² comments “antibiotics should be thought of like oil, a non-renewable resource to be carefully husbanded. What we use now cannot be used sometime in the future”. He adds that doctors have new information to help convince patients and themselves that prescribing antibiotics for minor upper respiratory infections should be reserved for occasions when we really need them.

Another study determined the viral aetiology of respiratory infections in children presenting to primary care with ‘more than a cold’³. A viral cause of infection was detected in most (77%) children. One third of children were prescribed on antibiotic, but this made no difference to the rate of parent-assessed recovery. The authors conclude that suspected lower respiratory infections in the community are predominantly viral and, in the absence of any significant respiratory difficulty indicating a need for hospital admission, are self-limiting and do not require antibiotics.

A study using the GPRD assessed whether prescribing antibiotics for respiratory tract infections protects against serious complications⁴. They found that antibiotics are not justified to reduce the risk of serious complications for URTI, sore throat, or otitis media, as the NNT was over 4000. However, antibiotics may reduce the risk of pneumonia after chest infection, particularly in elderly people. The NNT for those aged ≥ 65 was 39 and 96-119 in younger age groups. According to the NPCi blog (www.npci.org.uk/blog/?p=23) this does not mean that antibiotics should be routinely prescribed for chest infection. The advice is that for people presenting with LRTIs it is important to assess their baseline risk of pneumonia, assess the signs and symptoms and their severity and then consider, on the basis of all this, whether an immediate prescription, a delayed prescription, or no prescription (with watchful waiting) is most appropriate.

1. BMJ 2007; 335:429-33

2. BMJ 2007; 335:407-8

3. Arch Dis Child 2007; 92:594-7

4. BMJ ONLINE FIRST doi:10.1136/bmj.39345.405243.BE

New guidance on otitis externa

In the UK, more than 1% of people each year are diagnosed with otitis externa (inflammation of the external ear canal), which may be acute (less than three weeks), or chronic (more than three months). Causes include irritant, allergic or seborrhoeic dermatitis, a bacterial or fungal infection, rarely a malignancy, and, in some cases, there may be no identified cause. Recommendations are largely based on expert opinion. Clinical Knowledge Summaries (CKS, formerly called PRODIGY) has issued updated guidance on this condition.

This CKS topic review provides pragmatic advice on prevention and treatment of otitis externa, what methods to use for cleaning the auditory canal, which patients to follow up, and when to refer or seek specialist advice. The guidance includes the following advice on the treatment of acute diffuse otitis externa:

- Investigations are rarely useful. Consider an ear swab for bacterial/fungal culture if treatment fails, or if otitis externa recurs frequently.
- Identify and remove any precipitating or aggravating factors. Treat any underlying skin condition such as eczema and psoriasis.
- Paracetamol or ibuprofen is usually sufficient for pain relief. Codeine can be added if the pain is severe.
- Prescribe topical ear preparations for seven days, e.g. flumetasone-cloiquinol (Locorten-Vioform) ear drops. Although aminoglycoside ear drops may be used as an alternative, with or without a corticosteroid, their use is contraindicated if the tympanic membrane is perforated. Consider oral antibiotics for severe infection.
- Assess factors that would impede delivery of topical medication to affected areas. Consider cleaning the external auditory canal, if there is sufficient earwax or debris to obstruct topical medication, and/or inserting an ear wick, if there is extensive swelling of the auditory canal (both may require referral).
- Give patients advice on self-care.
- Most cases resolve within a few days of starting treatment and do not need follow up. However, consider follow-up in people with diabetes, with compromised immunity, or with accompanying cellulitis that has spread outside of the auditory canal.

The CKS guidance should be consulted for further details and advice on localised and chronic diffuse otitis externa - www.cks.library.nhs.uk/otitis_externa