**Management of paediatric otalgia in out-of-hours General Practice**

**Authors**

S.J. Fisher\*, L Jonker+

\*Dr Stacey J Fisher MBBS MRCGP, General Practitioner, Cumbria Health On Call, Hilltop Heights, London Rd, Carlisle, CA1 2NS, United Kingdom.

+Dr Leon Jonker PhD, R&D Manager, North Cumbria University Hospitals NHS Trust, Cumberland Infirmary, Carlisle, CA2 7HY, United Kingdom.

**Corresponding Author**

Stacey J. Fisher

General Practitioner, Cumbria Health On Call, Hilltop Heights, Carlisle, CA1 2NS, United Kingdom

e-mail: drstaceyfisher@yahoo.co.uk

**Lead Consultant**

Dr Stacey J Fisher MBBS, General Practitioner, Cumbria Health On Call, Hilltop Heights, London Rd, Carlisle, CA1 2NS, United Kingdom.

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**Aims** – Audit the management, by both general practitioners and nursing staff, of paediatric patients who present with earache and are subsequently diagnosed with otitis media in out-of-hours General Practice.

**Methods** – The standards contained within NICE Clinical Guideline 69, ‘respiratory tract infections’, were measured. A data collection sheet was devised and used for both rounds of audits. Staff were informed of results of the initial audit, and a patient information sheet, also aimed to remind staff, was designed and distributed before the re-audit was conducted.

**Results** – In the initial audit, 25 out of 40 cases (65%) were managed correctly. This increased to 26/40 (70%) for the re-audit sample. Prescription of antibiotics, when not indicated, occurred in 14/40 (35%) and 11/40 (28%) cases respectively. In the re-audit, two patients were issued with deferred prescriptions for antibiotics, one of the guideline recommendations. Diagnostic evidence of otorrhoea in the external auditory canal and/or tympanic membrane perforation were recorded in only 11 out of 40 cases (28%) for the audit and 18 / 40 (45%) for the re-audit. First line recommended amoxicillin was prescribed in virtually all cases, although during each audit, 3 / 40 (8%) cases had no details recorded regarding the type of antibiotic and dosage prescribed.

**Conclusions** – Compliance to NICE guidelines is sub-optimal. Antibiotics are prescribed too often for patients with symptoms of otitis media that have persisted for less than four days. In addition, based on lack of recording in patients, the ears are often not examined rigorously enough. Highlighting this issue to staff, and provision of an educational tool for patients, has led to marginally improved patient management.

**Management of paediatric otalgia in out-of-hours General Practice**

**Introduction**

Earache, predominantly diagnosed as acute otitis media, is one of the most common symptoms that children present with in out-of-hours general practice (OOH GP). In the past, otitis media used to be treated directly with antibiotics due to the risk of complications such as mastoiditis. However, complication rates in developed countries have dropped and clinical guidelines, including those by the National Institute for Clinical Excellence (NICE CG69) [1], the Scottish Intercollegiate Guidelines Network (SIGN guideline 66) [2], and also systematic reviews such as one published on otitis media by Cochrane [3], now recommend prudent use of antibiotics for the treatment of otitis media. Resistance to antibiotics by bacteria that cause otitis media poses a significant public health issue and supports the notion that antibiotics should only be prescribed when likely to have a positive impact.

**Aims**

To investigate, through a retrospective audit, whether paediatric patients with acute otalgia are examined and managed in line with NICE Guidelines, as evidenced by recordings in electronic medical notes, followed by re-audit to measure the impact of increasing staff awareness and the introduction of patient information leaflets.

**Audit Standards**

The standards measured and presented here were taken from NICE Clinical Guideline 69, Respiratory Tract Infections [1]. However, most of the audit criteria are also outlined in SIGN Guideline 66 – management of acute otitis media in children [2] and Cochrane Review – antibiotics for acute otitis media in children [3], and can be found online at NHS Evidence (<http://www.evidence.nhs.uk/> ). NICE recommends that antibiotics should not be prescribed routinely. However, antibiotics can be prescribed if:

* Patient is under the age of 3 months, or it concerns a premature baby who is now less than 1 year old

*or*

* Patient is under the age of 2 years and otitis media is bilateral.

*or*

* The patient presents with perforation and/or otorrhoea

*or*

* Patient is systemically unwell with evidence of other otitis media related Centor criterium, namely history of fever (fever classified as 37.6 or higher but who do not require admission) [4].

*or*

* The otitis media symptoms are present for 4 days or more (usual natural course of viral otitis media is 4 days)

*or*

* The patient is at high risk of serious complications because of significant heart, lung, renal, liver, or neuromuscular disease, immunosuppression, or cystic fibrosis.

First line antibiotics to be used for treatment of otitis media in children is daily dosage of amoxicillin three times 0 - 90 mg/kg/day for five days,

**Methods**

Cumbria Health On Call Ltd (or CHOC) provides OOH GP services for Cumbria. Service provision runs from 6.30pm to 8am on weekdays, plus weekends. April 2012 was randomly chosen as the first audit period; the re-audit was conducted in April 2013. A data collection sheet was designed in Excel and data was collected from patient contact sheets that CHOC Ltd uses. Only patients who were over 3 months old and under 5 years old, and who presented with at least the symptom ‘earache’ were included in this audit – this age range originated from an audit conducted on the same patient group [5]. Telephone consultations were excluded because examination of the ear could not be audited. This audit was not designed to draw inferences regarding any relationship between patient management and the type of healthcare professional assessing the patient.

Appendix 1 shows a copy of the patient information leaflet that was produced and disseminated amongst staff, and also distributed to the treatment centres covered by CHOC. The source of the information contained in the leaflet originates from the recent Cochrane review on this topic [3] and a paper by Cates in 1999 [6]. Because of the set-up of OOH GP services, staff education was conducted via a staff meeting and by publishing a summary of NICE guidance and the results of the original audit in the staff newsletter. Paper copies of the patient information leaflet were distributed to the treatment centres covered by CHOC. This initiative took place in February to March 2013.

**Results**

Patients, or their parents/guardians, usually contact OOH GP services via telephone in the first instance. The patient is then triaged and classed as either: routine, urgent or needing immediate attention. Patients can either visit a clinic at one of various locations around Cumbria, be seen by a doctor at home or have a consultation over the phone. As mentioned in the Methods section, we excluded telephone consultation. Table 1 shows that routine calls, with patients seen at one of the clinics, are by far the most common type of consultation for children with earache. In this audit cycle, most patients presented during the day.

Because of the nature of OOH GP services, patients can be seen by different types of healthcare professionals. In both the audit and re-audit the patients were seen by a nurse in 48% of cases, a GP in 38% (audit) / 35% (re-audit) of cases and both a nurse and GP in 15% (audit) / 18% (re-audit) of cases.

*Table 1: Demographics of patient population*

|  |  |  |
| --- | --- | --- |
|  | **Audit** | **Re-Audit** |
| Number of patients (n) | 40 | 40 |
|  |
| Median patient age (in months) | 21 | 25 |
| Mean patient age (in months) | 23 | 30 |
| Youngest patient (in months) | 5 | 5 |
| Oldest patient (in months) | 59 | 58 |
|  |
| Routine calls | 39 | 38 |
| Urgent calls | 1 | 2 |
| Immediate calls | 0 | 0 |
|  |
| Patient seen at base | 39 | 40 |
| Patient seen at home | 1 | 0 |
|  |
| Mean time of the day call was logged (hr:min) | 14:37 | 12:40 |
| Nr of calls between midnight and 6 a.m. | 0 | 1 |

The NICE guideline recommends the patient’s ears are examined for evidence of a change in colour of the tympanic membrane (typically red, yellow or cloudy), presence of discharge (otorrhoea) in the external auditory canal, tympanic membrane perforation and/or bulging with loss of normal landmarks. Figures 1 and 2 show the health professionals’ recording for three of these parameters. Otorrhoea in the external auditory canal and tympanic membrane perforation were combined because each symptom is an indication for antibiotic use. Bulging of the tympanic membrane was recorded less often than otorrhoea in the external auditory canal and tympanic membrane perforation – less than 10% of cases in each audit. The recorded diagnosis was otitis media in 28/40 and 34/40 cases in the audit and re-audit respectively, with the remainder either not recorded or labelled as otalgia (2/40 & 2/40), ear infection (5/40 & 3/40), and otitis externa (4/40 & 1/40). The latter should initially be treated with analgesia and external antibiotics/corticosteroid drops or spray, or flucloxacillin in severe refractory cases. In this audit cycle, the cases of otitis externa were either not treated with antibiotics (one case), treated with oral amoxicillin (two cases), oral co-amoxiclav (one case) or – in one single case - correctly with topical Otomize spray.

*Figure 1, Recording of patient examination (change in colour of tympanic membrane)*

*Figure 2, Recording of patient examination (otorrhoea in the external auditory canal or tympanic membrane perforation)*

Although the prescription of antibiotics for acute otitis media is discouraged in several guidelines, nearly all patients were prescribed amoxicillin. Table 2 summarises those cases meeting the criteria for antibiotic treatment. Advice on general pain relief and the prescription of analgesia is recommended in children with otitis media. Pain relief discussion or prescription was recorded in 27 / 40 cases in the audit and 29 / 40 cases in the re-audit.

*Table 2, Chart of appropriateness patient management*

|  |  |  |
| --- | --- | --- |
|  | **Audit** | **Re-Audit** |
| *Yes* | *No\** | *Yes* | *No\** |
| Patient under age of 2 yrs | 23 | 17 | 18 | 22 |
|  Of which bilateral otitis media  | 12 / 23 |  | 7 / 18 |  |
|  |  |
| Otorrhoea in the external auditory canal and/or tympanic membrane perforation | 8 / 28 # |  20 / 28 # | 13 / 33 # | 20 / 33 #  |
|  |  |
| Fever and systemically unwell?  | 3 / 20  | 17 / 20 | 1 / 20 |  19 / 20 |
|  |  |
| Otitis media for 4 days or more | 2 / 17 | 11 / 17 | 5 / 19 | 11 / 19 |
|  |  |
| Antibiotics indicated?  | 25 / 40  | 15 / 40  | 26 / 40  | 14 / 40  |
| Antibiotics actually prescribed | 24 / 25 | 14 / 15 | 25 / 26 | 11 / 14 |
|  |
| **Managed appropriately** | **25 / 40** **(63%)** | **28 / 40****(70%)** |

\*Either ‘no’ or not recorded; # Leaves out patients having bilateral OM and being under age of 2

**Discussion**

The initiative presented here, consisting of a staff awareness ‘mini campaign’ and the introduction of a patient information leaflet, was based on a paper published in the British Medical Journal in 1999. Christopher Cates showed that prescription rates can be reduced in primary care through this approach, achieving a reduction of 32% in the number of actual amoxicillin prescriptions issued. One key difference between the two audits is the setting: OOH GP services are manned by a small core of salaried doctors and otherwise a diverse workforce is drafted in for individual shifts. This probably makes it harder to get an educational message across and to implement the use of a patient leaflet. In the re-audit we did not find any evidence in the electronic consultation notes that a ‘Antibiotics and Ear Infections’ patient leaflet (see Appendix 1) was handed out by a member of staff. Overall, minor signs of improvement were detected, with e.g. deferred prescriptions used on two occasions in the re-audit sample. The authors of this audit intend to present the results of this audit cycle to the staff to maintain momentum. Sustainability of improved adherence to clinical guidelines is a challenge; an initiative around management of lower urinary tract infections in OOH GP practice showed initial improvement in appropriate management, but this then tailed off again over time [7]. Rashidian et al have suggested that in primary care and OOH GP services it is difficult to increase practitioners’ adherence to clinical guidelines such as those for management of otitis media / earache [8].

Resistance of bacteria to antibiotics is a big driver for national health bodies to discourage the use of antibiotics when not clinically indicated [9]. However, this is not the sole reason for discouraging the use of antibiotics for treatment of otitis media. Antibiotics do not cure otitis media very efficiently due to poor penetration into the middle ear mucosa, and adherence to dosage regimens by patients & carers tends to be poor too [10].

**Conclusions**

This audit cycle shows moderate to poor adherence to clinical guidelines concerning the management of acute otitis media. Both audits show that prescription rates can most probably be reduced by a third. Better examination of the ears should aid in improving diagnosis and subsequent patient management – the incorrect management of both otitis media and otitis externa suggests that either the diagnosis was incorrect in some cases and/or health professionals have insufficient knowledge of otological disorders. In this audit, raising awareness amongst staff and an intended use of a patient information leaflet did not have a significant impact. However, there are some encouraging signs of improvement, including patients being issued with a deferred prescription on two occasions during the re-audit period.

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**Appendix 1, Information Leaflet**



**Antibiotics and**

**Ear Infections**

Treatment with antibiotics only leads to one extra child in sixteen recovering after two to seven days; this means sixteen out of seventeen children will recover anyway, even when antibiotics are not given



Treatment with antibiotics causes one extra child in twenty to experience diarrhoea & vomiting and/or rash



**Change of Policy**

In view of the above evidence we have changed our policy and no longer give antibiotics routinely for ear infections in children. We would recommend treatment with Paracetamol suspension (e.g. Calpol), which will reduce pain and fever. It should be given at the appropriate dose until the earache is gone. We will prescribe antibiotics in specific cases.

*Note:* If the ear infection continues, or the child becomes particularly unwell, then please contact your GP or Out-of-hours services again and antibiotics may be tried. This will be discussed on an individual basis with you during your consultation with the doctor or nurse.