Background

Acute otitis media is an infection of the middle ear. NICE Clinical Knowledge Summaries1 (CKS) provide the following definitions:

* **Acute otitis media (AOM)**- middle ear effusion associated with the acute onset of symptoms and signs of middle ear inflammation.
* **Recurrent AOM**- three or more episodes of AOM in 6 months, or four or more episodes in a year, with an absence of middle ear disease between episodes. However, there is no universal definition.
* **Persistent AOM (treatment failure)**- when people return for medical advice with the same episode of AOM, either because symptoms persist after initial management (no-antibiotics, delayed-antibiotics, or immediate-antibiotics prescribing strategy), or because symptoms are worsening.

Aim

To audit antibiotic prescribing for acute otitis media symptoms against:

1. [NICE Guidelines NG91](https://www.nice.org.uk/guidance/ng91)2: Otitis media (acute): antimicrobial prescribing
2. [NICE Summary of antimicrobial prescribing guidance](https://www.bnf.org/news/2021/07/29/bnf-hosts-antimicrobial-summary-guidance-on-behalf-of-nice-and-phe/)3 - managing common infections

|  |  |  |  |
| --- | --- | --- | --- |
| **Key Points** | **Medication**  | **Dosage** | **Duration** |
| Regular paracetamol or ibuprofen for pain (rightdose for age or weight at the right time and maximum doses for severe pain).Consider ear drops containing an anaesthetic and an analgesic for pain if an immediate antibiotic is not given and there is no ear drum perforation or otorrhoea.**Otorrhoea or under 2 years with infection in both ears:** no, back-up or immediate antibiotic.**Otherwise:** no or back-up antibiotic.**Systemically very unwell or high risk of complications:** immediate antibiotic.For detailed information click on the [NICE visual summary](https://www.nice.org.uk/guidance/ng91/resources/visual-summary-pdf-4787282702)  | If no immediate oral antibiotic given and no eardrum perforation:Phenazone with lidocaine  | 40mg/g with 10mg/g Apply 4 drops two or three times a day | up to 7 days |
| **First choice:** amoxicillin  | **1 to 11 months:** 125 mg three times a day **1 to 4 years:** 250 mg three times a day **5 to 17 years:** 500 mg three times a day  | 5 to 7 days |
| **Penicillin allergy:**clarithromycin **OR** | **1 month to 11 years:**Under 8 kg: 7.5 mg/kg twice a day 8 to 11 kg: 62.5 mg twice a day12 to 19 kg: 125 mg twice a day 20 to 29 kg: 187.5 mg twice a day 30 to 40 kg: 250 mg twice a day **12 to 17 years**: 250 mg to 500 mg twice a day  | 5 to 7 days |
| erythromycin (preferred if pregnant) | **8 to 17 years:** 250 mg to 500 mg four times a day **OR** 500 mg to 1,000 mg twice a day  |
| **Second choice:** co-amoxiclav | **1 to 11 months:** 0.25 ml/kg of 125/31 suspension three times a day **1 to 5 years:** 5 ml of 125/31 suspension three times a day or 0.25 ml/kg of 125/31 suspension three times a day **6 to 11 years:** 5 ml of 250/62 suspension three times a day or 0.15 ml/kg of 250/62 suspension three times a day **12 to 17 years:** 250/125 mg three times a day or 500/125 mg three times a day for 5 to 7 days | 5 to 7 days |

**How to use this audit**

This audit tool can be modified to follow local infection management guidelines.

This audit is only assessing patients that present with AOM and recurrent AOM under the age of 18 years. Each episode of recurrent AOM should be managed in the same way as a presentation of AOM. Patients with persistent AOM (treatment failure) are excluded from this audit because further antibiotic prescription may vary depending upon whether antibiotics had already been used in the initial management.

**Step 1**: Search for 20-40 consultations (minimum 20) relating to AOM in patients under the age of 18. The Read/Snomed codes below are a sample of codes that can be used but consider adding codes that you or your colleagues are likely to use when you see patients with acute otitis media. Searching for just a few Read codes that you usually use may identify all the consultations you require for the audit.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Read Codes** | **SNOMED Codes** | Infection | **Read Codes** | **SNOMED Codes** | Infection |
| **2D94.00** | **300149008** | O/E - tympanic membrane pink | **F510011** | **359609001** | Acute secretory otitis media |
| **2D95.00** | **164236006** | O/E - tympanic membrane red | **F510100** | **59275002** | Acute serous otitis media |
| **2D96.00** | **164237002** | O/E - tympanic membrane bulging | **F510200** | **52353000** | Acute mucoid otitis media |
| **F51..00** | **275481002** | Nonsuppurative otitis media + eustachian tube disorders | **F510z00** | **359609001** | Acute nonsuppurative otitis media NOS |
| **F510.00** | **359609001** | Acute non suppurative otitis media | **F514.00** |  | Unspecified nonsuppurative otitis media |
| **F510000** | **270490007** | Acute otitis media with effusion | **F514100** | **80327007** | Serous otitis media NOS |
| **F514200** | **29350000** | Catarrhal otitis media NOS | **F520z00** | **194281003** | Acute suppurative otitis media NOS |
| **F514300** | **78868004** | Mucoid otitis media NOS | **F524.00** | **39288006** | Purulent otitis media NOS |
| **F514z00** | **275481002** | Nonsuppurative otitis media NOS | **F524000** | **194286008** | Bilateral suppurative otitis media |
| **F52..00** | **39288006** | Suppurative and unspecified otitis media | **F526.00** | **194288009** | Acute left otitis media |
| **F520.00** | **194281003** | Acute suppurative otitis media | **F527.00** | **194289001** | Acute right otitis media |
| **F520000** | **14948001** | Acute suppurative otitis media tympanic membrane intact | **F528.00** | **194290005** | Acute bilateral otitis media |
| **F520100** | **86279000** | Acute suppurative otitis media tympanic membrane ruptured | **F52z.00** | **65363002** | Otitis media NOS |
| **F520300** | N/A | Acute suppurative otitis media due to disease EC | **F52z.11** | **129127001** | Infection ear |

**Step 2**: Compete the data collection table below for each selected patient.

|  |
| --- |
| **Data Collection Sheet: ACUTE OTITIS MEDIA Audit** |
| **Compliance with NICE Guidance for Management of ACUTE OTITIS MEDIA** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** | **26** | **27** | **28** | **29** | **30** | **31** | **32** | **33** | **34** | **35** | **36** | **37** | **38** | **39** | **40** | **% of Total with acute otitis media** | **Your target % for good practice**  |
| 1. No antibiotic given
 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Back-up/delayed antibiotic given with advice about how to access
 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Immediate antibiotic given with advice on compliance
 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. **Management appropriate for clinical presentation?**
 |  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Advice given on natural history and average length of illness

*3 – 7 days* |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Advice given about managing symptoms including fever

*Self-care advice* |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Information about when to re-consult *safety netting advice*
 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Information shared on antibiotic use and resistance
 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. [Shared the TARGET Treating Your Infection RTI leaflet](http://www.rcgp.org.uk/clinical-and-research/toolkits/~/link.aspx?_id=9FCF9DA4B4A045519593320478DFD9E7&_z=z)
 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| **If antibiotics prescribed** (N=\_\_\_\_\_\_ ) |
| 1. Antibiotic choice correct

*1st line: Amoxicillin**Penicillin allergy: Clarithromycin OR if pregnant, Erythromycin**2nd choice: Co-amoxiclav* |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Dose/frequency correct

*See guidance table* |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1. Course length correct

*All choices: 5 - 7d* |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

For ease of use you can now summarise your data the Summary table below.

|  |  |
| --- | --- |
| **Total number of patients** | **…………………..** |
| **Row in table below** | **Criteria** | **Number of patients****(N)** | **Total % of Patients** | **Target %** |
| **Management decision** |
| **A** | No antibiotic given |  |  | >70% |
| **B** | Back-up/delayed antibiotic given with advice about how to access |  |  | <40% |
| **C** | Immediate antibiotic given with advice on compliance |  |  | <30% |
| **D** | Management appropriate for clinical presentation? (follows NICE NG91) |  |  | 100% |
| **Providing Advice**  |
| **E** | Advice given on natural history and average length of illness (*3-7 days)* |  |  | 100% |
| **F** | Advice given about managing symptoms (*Self-care advice*) |  |  |
| **G** | Information about when to re-consult (*Safety netting advice*) |  |  |
| **H** | Information given about antibiotic use and resistance  |  |  |
| **I** | [Shared the TARGET Treating Your Infection RTI leaflet](http://www.rcgp.org.uk/clinical-and-research/toolkits/~/link.aspx?_id=9FCF9DA4B4A045519593320478DFD9E7&_z=z) |  |  |
| **If antibiotics were prescribed: (N= …….. )** |
| **J** | Antibiotic choice correct – *1st line: Amoxicillin,* *Penicillin allergy: Clarithromycin/Erythromycin* *2nd line: Co-amoxiclav* |  |  | 100% |
| **K** | Dose/frequency correct – *see guidance table* |  |  |
| **L** | Course length correct – *All choices: 5 – 7days*  |  |  |

## Overall compliance with NICE Guidance

**Step 3**: How did you do? Follow the simple calculations below to see how compliant you were with NICE guidelines.

1. **On whether to prescribe an antibiotic**

$$\left(\frac{Total number of NICE antibiotic prescribing guidance followed (row D)}{Total number of patients in audit}\right) X 100$$

1. **Overall compliance with NICE guidance to share self-help, safety netting advice and antibiotic advice (EFGH) OR if TARGET Treating Your Infection RTI leaflet shared(I)**

$$\left(\frac{\begin{array}{c}Number of patients where self help advice, safety netting advice \\OR the TARGET Treating your infection leafelt was shared\\AVG\left[\left(AVG rows EFGH\right)+Row I\right]\end{array}}{Total number of patients in audit}\right) X 100$$

1. **If antibiotics were used, total number given correct antibiotic, dose/frequency and course length (JKL)**

$$\left(\frac{All parameters of antibiotic prescribing correct (rows J+ K+L)}{Total number of patients prescribed an antibiotic (rows B+C)}\right) X 100$$

**What can you do to improve guidance compliance?**

1. Promote use of NICE [antimicrobial / management of infection guidelines](https://www.nice.org.uk/guidance/health-protection/communicable-diseases/antimicrobial-stewardship) by all in practice
2. Encourage use of TARGET Treating Your Infection – Respiratory Tract infection (TYI-RTI) [leaflet.](https://elearning.rcgp.org.uk/mod/book/view.php?id=12647&chapterid=444)
3. Share TARGET TYI-RTI leaflet on clinical system.
4. Encourage consistent message from different staff and when patients re-attend.
5. Encourage others to perform [audit](https://elearning.rcgp.org.uk/mod/book/view.php?id=12649).
6. Re-audit in 4 months - identify a date when you will repeat the [audit](https://elearning.rcgp.org.uk/mod/book/view.php?id=12649).
7. Record actions required, especially when compliance with primary care guidance is less than 80%.
8. Make use of [TARGET toolkit](https://elearning.rcgp.org.uk/course/view.php?id=553).
9. Consider developing a target for antibiotic prescribing rate. e.g. 1 in 3 immediate, 1 in 3 delayed, 1 in 3 no antibiotic)

**Acknowledgements**

This audit was devised by Dr Imran Jawaid with advice from Dr Cliodna McNulty.

**References**

1. National Institute for Health and Care Excellence. 2022. Otitis media -acute [ONLINE] Available at: [Otitis media - acute | Health topics A to Z | CKS | NICE](https://cks.nice.org.uk/topics/otitis-media-acute/) [Accessed 3rd November 2022].
2. National Institute for Health and Care Excellence. 2018. NICE Guideline NG91. Otitis media (acute): antimicrobial prescribing [ONLINE] Available at: <https://www.nice.org.uk/guidance/ng91>. [Accessed 3rd November 2022].
3. NICE (February 2019). Summary of antimicrobial prescribing guidance – managing common infections. [ONLINE] Available at: [BNF hosts antimicrobial summary guidance on behalf of NICE and PHE - BNF Publications](https://www.bnf.org/news/2021/07/29/bnf-hosts-antimicrobial-summary-guidance-on-behalf-of-nice-and-phe/). [Accessed 3rd November 2022].