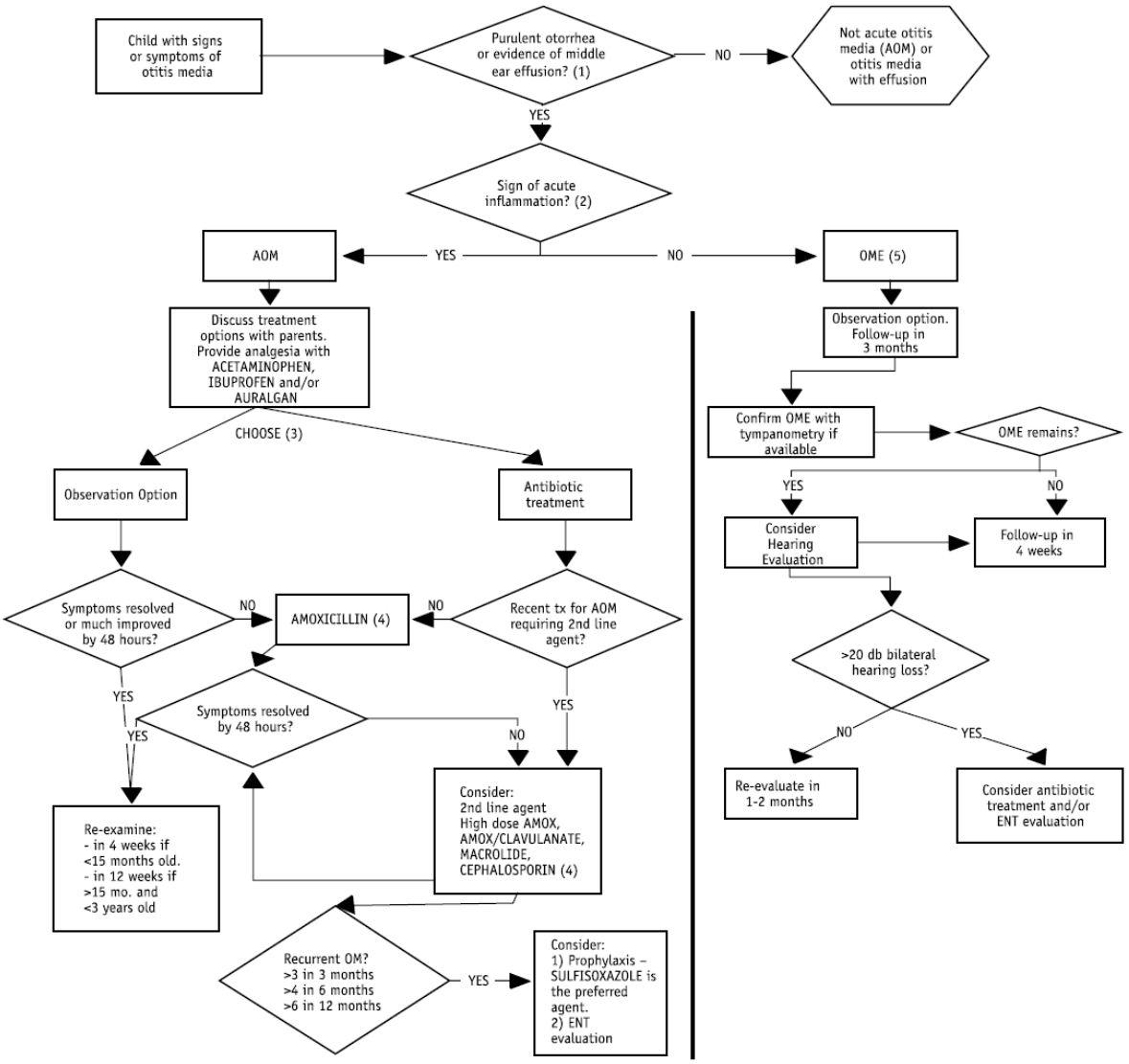


**All information from American Academy of Pediatrics and American Academy of Otolarygology

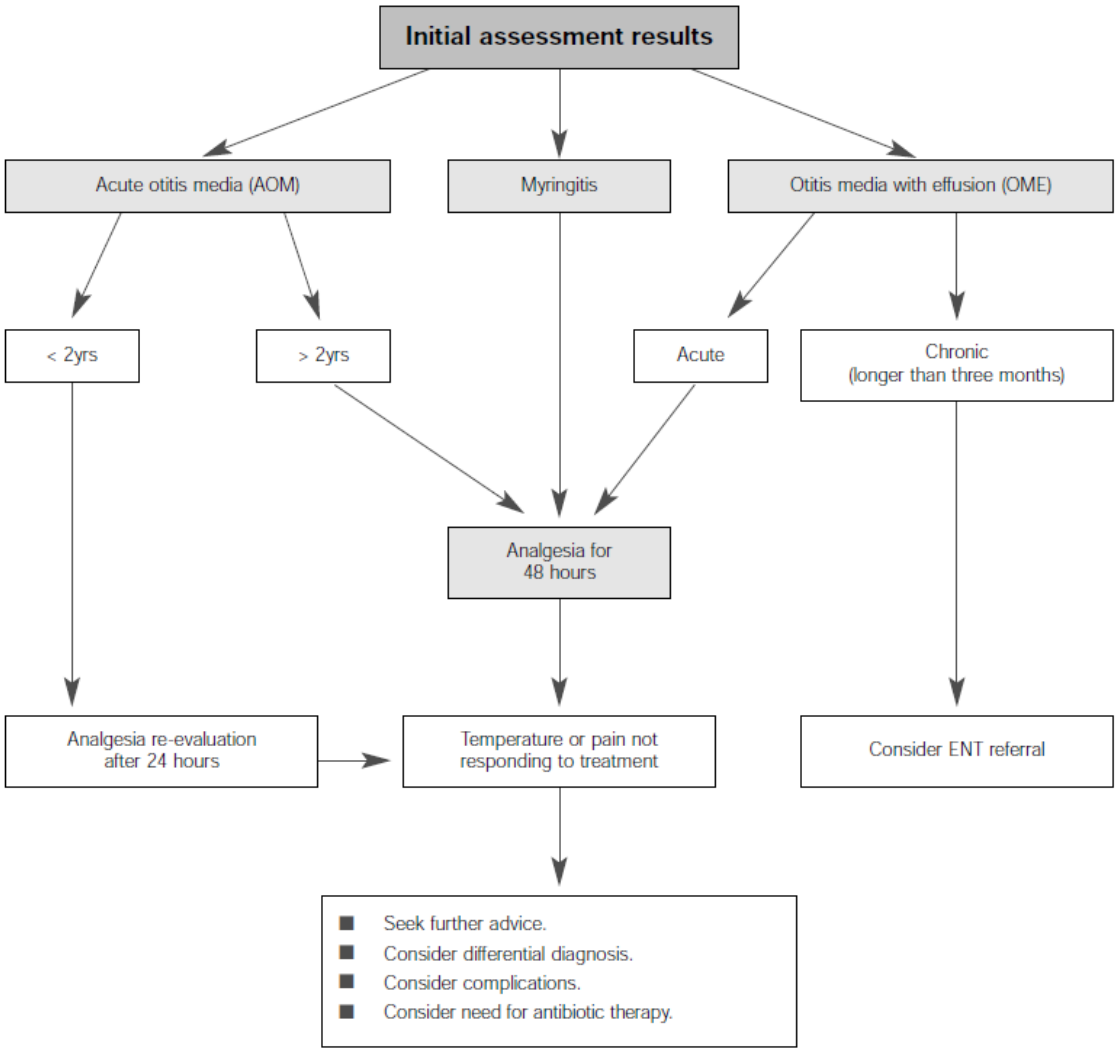
Definitions

- **Acute otitis media (AOM):**
  Inflammation and probable purulent discharge in the middle ear accompanied by symptoms and signs of ear infection such as a bulging, inflamed eardrum (tympanic membrane) which has decreased motility.
- **Myringitis ('red eardrum')**:
  Inflammation of the tympanic membrane alone or in association with otitis external.
- **Otitis media with effusion (OME)**:
  Also known as serous otitis media: fluid in middle ear without symptoms or signs of acute inflammation of the ear.
  Most cases of OME are residual effusions that remain after treatment of AOM. A residual effusion may last 6–16 weeks after the initial diagnosis of AOM.
- **Unresponsive AOM**:
  Characterised by clinical signs and symptoms associated with otoscopic findings of inflammation of the eardrum that continue beyond 48 hours of therapy.
- **Recurrent acute otitis media (RAOM)**:
  Three episodes of AOM within a six-month period.
- **Chronic suppurative otitis media**:
  Persistent inflammatory process associated with a perforated tympanic membrane and draining exudate for more than six weeks.

Issues

- It is critical to differentiate between AOM, myringitis and OME. AOM is a bacterial infection, which may require specific antibiotic therapy.
- The overuse of antibiotics in ill-defined ear infections has led to increasing antimicrobial resistance. Antibiotic therapy can result in unpleasant side effects in some children and hence should be prescribed in very specific situations where the indication is clear.
- The need for antibiotics in AOM is controversial.
- Many children with viral upper respiratory tract infection have accompanying mild inflammation of the middle ear, with visible reddening and dullness of the tympanic membrane.
- Antibiotics provide only modest benefit mainly related to a decrease in pain in a small proportion of children.
- Complications such as mastoiditis are rare in untreated otitis media.

Sore ear/otitis media – paediatric management flowchart



Acute otitis media (AOM)

- Pain, fever, irritability.
- On direct otoscopy, bulging injected inflamed eardrum.
- Routine cultures of ear drainage offer no diagnostic advantage in identifying potential pathogens.

Myringitis

- Mild redness of the eardrum which may be peripheral or focal redness of the eardrum.
- Antibiotics are not indicated.
- If in doubt about precise diagnosis, follow-up is essential.

Otitis media with effusion (OME)

- Lack of acute inflammation despite visible fluid.
- Antibiotics are not indicated.

General issues

- Pain and fever should be controlled with paracetamol or ibuprofen.
- Auralgin otic solution (a combination product of antipyrine, benzocaine and glycerin) – in children with AOM-associated ear pain who are treated with paracetamol or ibuprofen, topically applied Auralgin appears likely to provide additional relief in varying degrees within 30 minutes.
- Decongestants and antihistamines are not beneficial in the treatment of AOM.
- Topical antibiotic/corticosteroid preparations are not recommended.

Antibiotic therapy

- Myringitis
  - Antibiotics are not indicated.
- Otitis media with effusion
  - Antibiotics are not indicated.
- Acute otitis media

  Children six months to two years:

  - Symptomatic treatment for first 24 hours, however mandatory contact (visit or telephone) after 24 hours at which time further observation, antibiotics or referral should be considered.

  Children aged two years or older:

  - Most cases of AOM resolve with symptomatic treatment alone and do not require antibiotics.
  - Treat symptomatically for 48–72 hours from onset of symptoms if pain and fever are manageable with systemic analgesics, providing adequate follow-up can be assured.
  - If symptoms worsen or fail to respond to symptomatic treatment with systemic analgesics after 48–72 hours, treat with antibiotics.

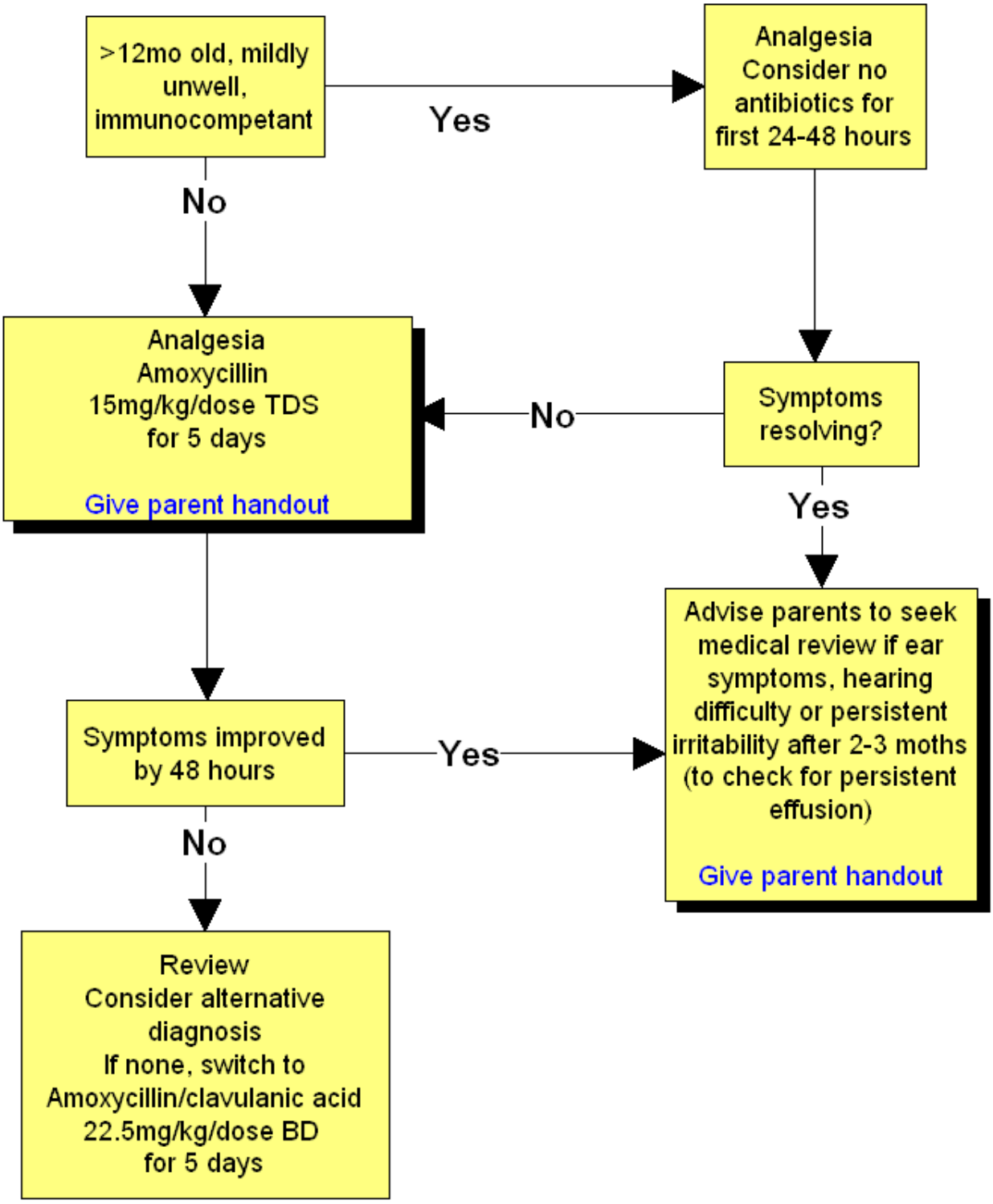
Follow-up

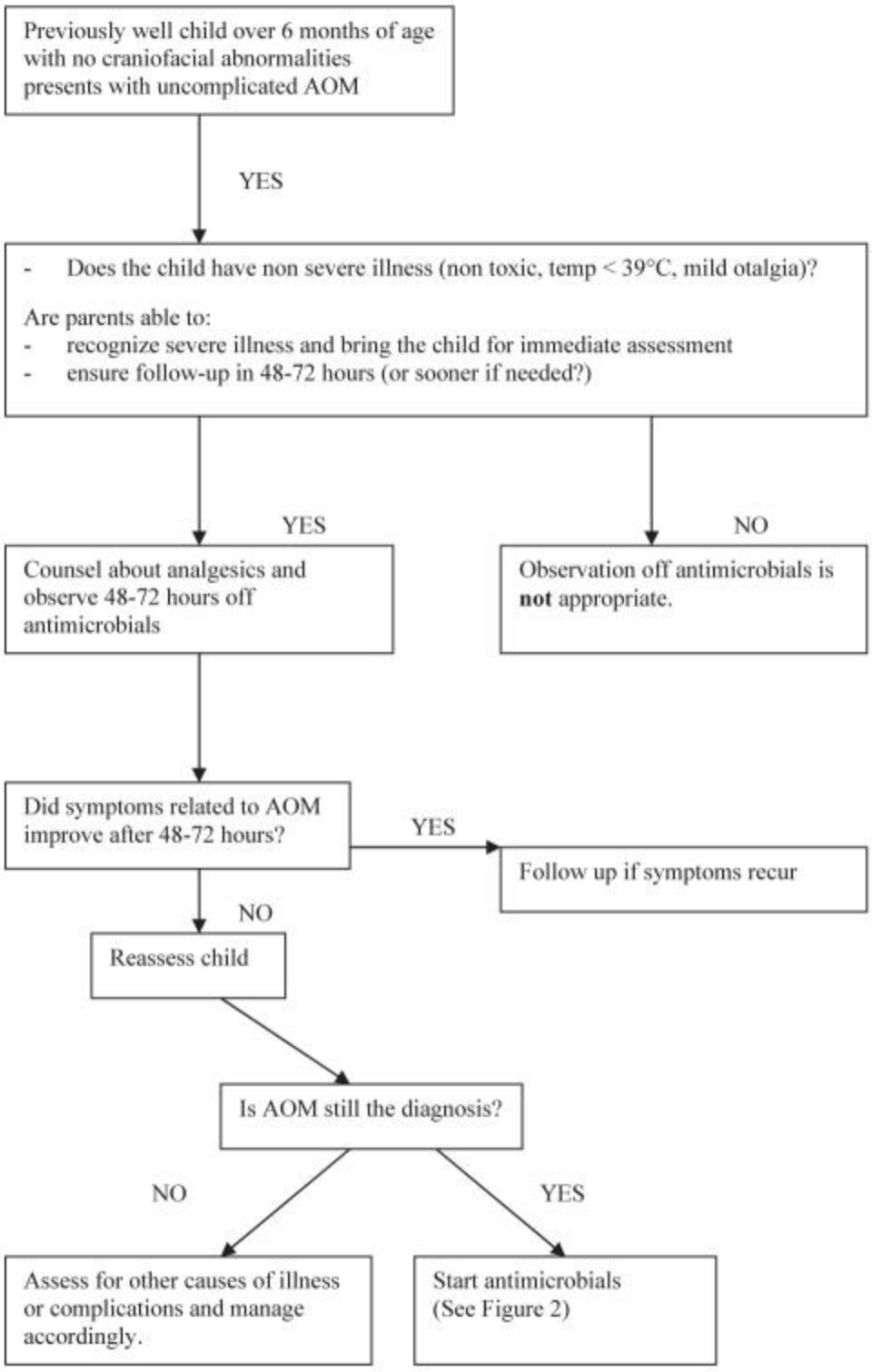
- If patient remains symptomatic at 48–72 hours following symptomatic analgesic treatment or clinical condition is deteriorating, follow-up is recommended.
  Reassess patient for:
  - acute complications of AOM (eg mastoiditis, meningitis, facial paralysis)
  - other diagnoses
  - compliance with medications.
- Note:
  - up to 50 per cent of children will have an effusion one month post AOM.
  - up to 10 per cent of children will have an effusion three months post AOM.

Referral

Referral to an ear, nose and throat consultant for consideration of myringotomy and tympanostomy tubes is recommended if:

- OME for three months or more with evidence of hearing loss
- three episodes or more of AOM in six months or four episodes or more of AOM in 12 months
- retracted tympanic membrane.


>12mo old, mildly unwell, immunocompetant
Yes
Analgesia
Consider no antibiotics for first 24-48 hours
No
Analgesia
Amoxycillin
15mg/kg/dose TDS
for 5 days
Give parent handout
No
Symptoms resolving?
Yes
Advise parents to seek medical review if ear symptoms, hearing difficulty or persistent irritability after 2-3 moths (to check for persistent effusion)
Give parent handout
Symptoms improved by 48 hours
Yes
No
Review
Consider alternative diagnosis
If none, switch to
Amoxycillin/clavulanic acid
22.5mg/kg/dose BD
for 5 days


Previously well child over 6 months of age with no craniofacial abnormalities presents with uncomplicated AOM
YES
- Does the child have non severe illness (non toxic, temp < 39°C, mild otalgia)?
Are parents able to:
- recognize severe illness and bring the child for immediate assessment
- ensure follow-up in 48-72 hours (or sooner if needed?)
YES
NO
Counsel about analgesics and observe 48-72 hours off antimicrobials
Observation off antimicrobials is **not** appropriate.
Did symptoms related to AOM improve after 48-72 hours?
YES
Follow up if symptoms recur
NO
Reassess child
Is AOM still the diagnosis?
NO
YES
Assess for other causes of illness or complications and manage accordingly.
Start antimicrobials (See Figure 2)

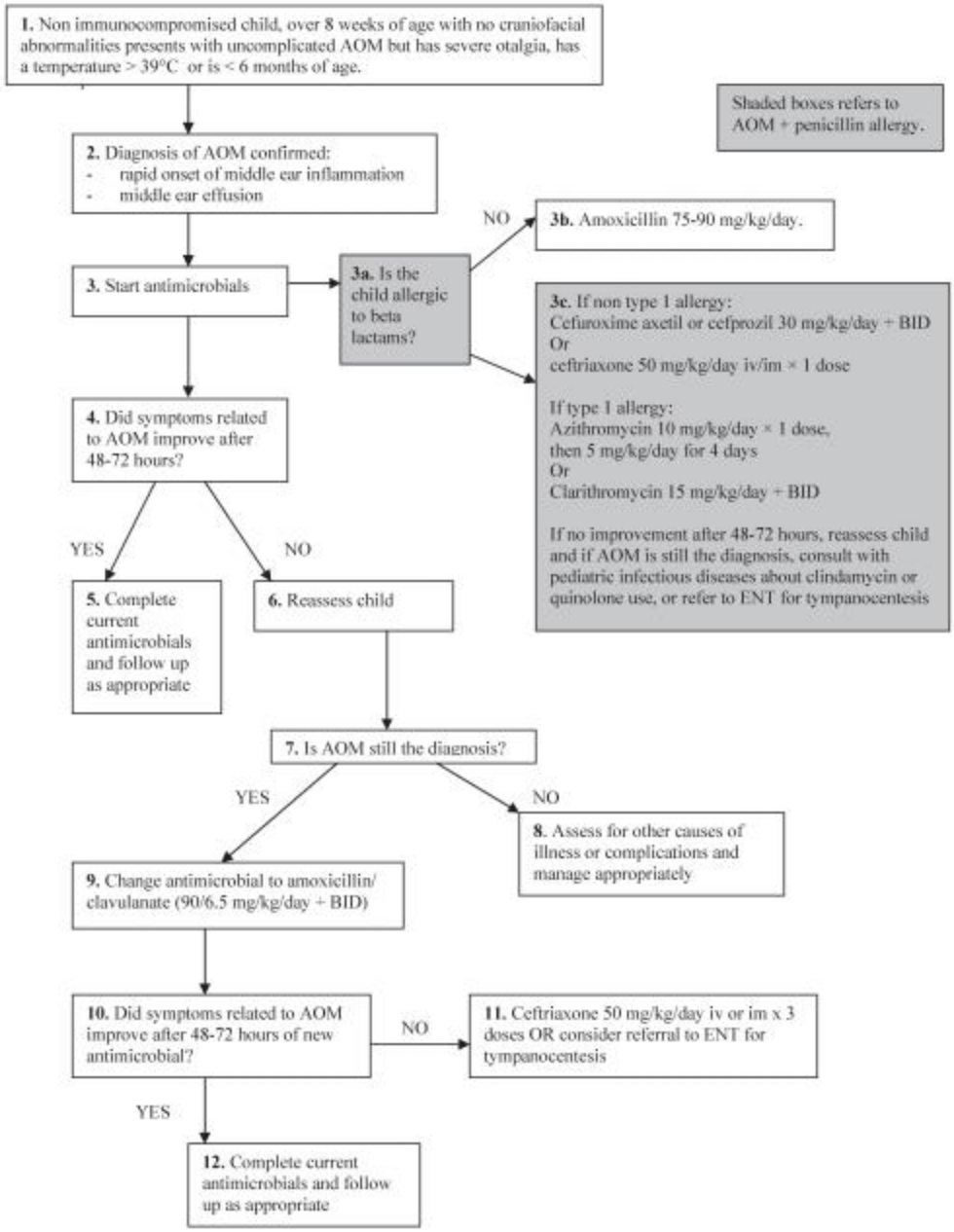

1. Non immunocompromised child, over 8 weeks of age with no craniofacial abnormalities presents with uncomplicated AOM but has severe otalgia, has a temperature > 39°C or is < 6 months of age.
Shaded boxes refers to AOM + penicillin allergy.
2. Diagnosis of AOM confirmed:
- rapid onset of middle ear inflammation
- middle ear effusion
3. Start antimicrobials
3a. Is the child allergic to beta lactams?
NO
3b. Amoxicillin 75-90 mg/kg/day.
3c. If non type 1 allergy:
Cefuroxime axetil or cefprozil 30 mg/kg/day + BID
Or
ceftriaxone 50 mg/kg/day iv/im × 1 dose
If type 1 allergy:
Azithromycin 10 mg/kg/day × 1 dose,
then 5 mg/kg/day for 4 days
Or
Clarithromycin 15 mg/kg/day + BID
If no improvement after 48-72 hours, reassess child and if AOM is still the diagnosis, consult with pediatric infectious diseases about clindamycin or quinolone use, or refer to ENT for tympanocentesis
4. Did symptoms related to AOM improve after 48-72 hours?
YES
NO
5. Complete current antimicrobials and follow up as appropriate
6. Reassess child
7. Is AOM still the diagnosis?
YES
NO
8. Assess for other causes of illness or complications and manage appropriately
9. Change antimicrobial to amoxicillin/clavulanate (90/6.5 mg/kg/day + BID)
10. Did symptoms related to AOM improve after 48-72 hours of new antimicrobial?
NO
11. Ceftriaxone 50 mg/kg/day iv or im x 3 doses OR consider referral to ENT for tympanocentesis
YES
12. Complete current antimicrobials and follow up as appropriate

Table 1 Risk factors for recurrent acute otitis media (AOM)*

Risk factor	Risk of	RR	*P* value
Family history of AOM	AOM	2.6	<0.001
Daycare outside home	AOM	2.5	0.003
Not breastfeeding at all	Recurrent AOM	2.1	<0.001
At least one sibling	Recurrent AOM	1.9	0.001
Child care outside home	Recurrent AOM	1.8	0.004
Parental smoking	AOM	1.7	<0.001
Family daycare	AOM	1.6	0.002
Pacifier use	AOM	1.2	0.008
Breast feeding <3 months	AOM	1.2	0.003

*Source: Uhari M *et al.*[20]

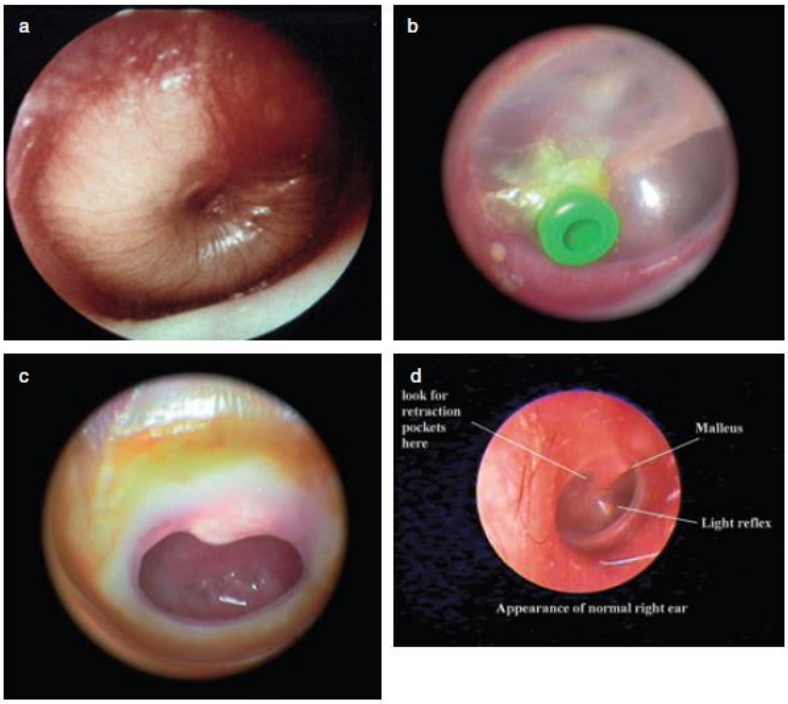


Fig. 1 Typical middle ear appearances. (a) Acute otitis media, (b) Otitis media with effusion with ventilation tube, (c) Chronic suppurative otitis media, (d) Normal middle ear appearance. (Images a, b and c courtesy of Professor Harvey Coates.)

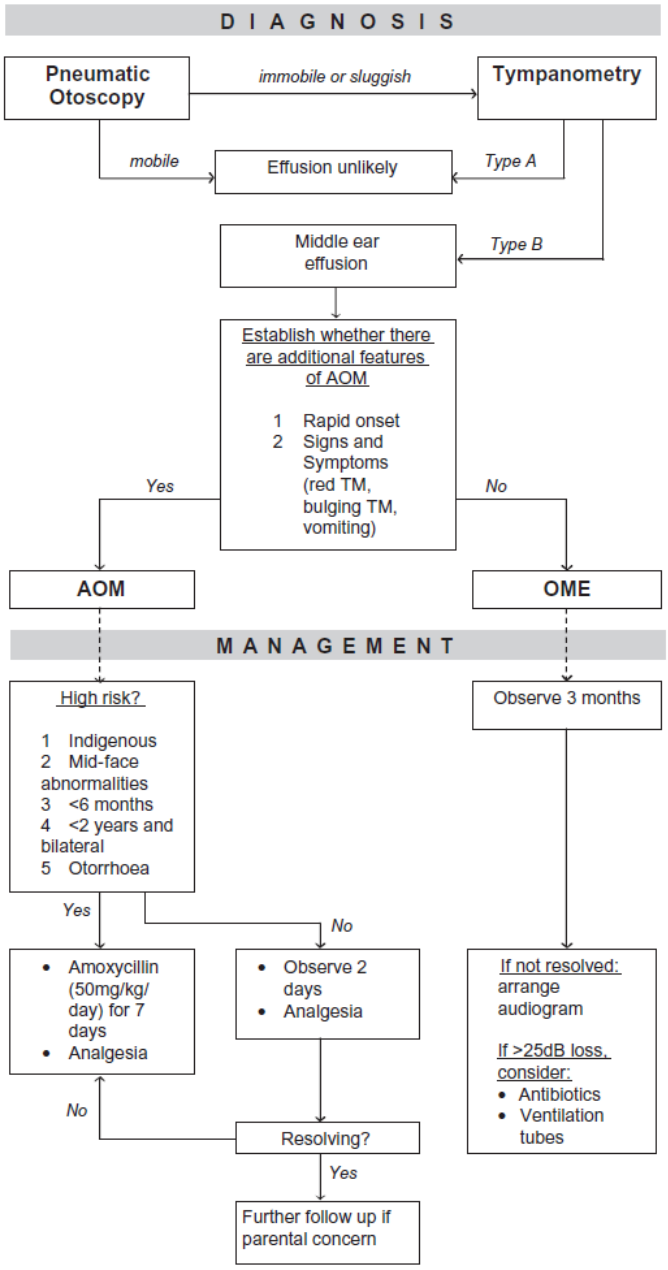


Fig. 3 Simplified flowchart of management options for otitis media with intact tympanic membrane. AOM, acute otitis media; OME, otitis media with effusion (glue ear); TM, tympanic membrane.