NICE National Institute for Health and Care Excellence

Public Health England

NICE guideline

Human and animal bites: antimicrobial prescribing

NICE guideline

Published: 4 November 2020

www.nice.org.uk/guidance/ng184

Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

Overview

This guideline sets out an antimicrobial prescribing strategy for human and animal bites (excluding insect bites) in adults, young people and children aged 72 hours and over. It aims to optimise antibiotic use and reduce antibiotic resistance.

See a 3-page visual summary of the recommendations, including tables to support prescribing decisions.

The recommendations in this guideline were developed before the COVID-19 pandemic.

For treating infections associated with other bites and stings, see the NICE webpage on bites and stings. We have also produced NICE guidelines on cellulitis and erysipelas and antimicrobial stewardship: systems and processes for effective antimicrobial medicine use.

Who is it for?

- Healthcare professionals
- People with a human or animal bite, their families and carers
- It may also be relevant for veterinary professionals

Recommendations

1.1 Managing human and animal bites

Assessment

1.1.1 For people with a human or animal bite:

- assess the type and severity of the bite, including what animal caused the bite, the site and depth of the wound, and whether it is infected (see the recommendation on taking a swab in the section on treating infected bites)
- assess the risk of tetanus, rabies or a bloodborne viral infection and take appropriate action
- manage the wound with irrigation and debridement as necessary
- be aware of potential safeguarding issues in vulnerable adults and children, for example, as outlined in NICE's guidelines on child maltreatment, challenging behaviour and learning disabilities and domestic violence and abuse.

  Also see the recommendations on referral and seeking specialist advice.

1.1.2 Seek specialist advice from a microbiologist for bites from a wild or exotic animal (including birds and non-traditional pets) because the spectrum of bacteria involved may be different, and there may be a risk of other serious non-bacterial infections.

1.1.3 Consider seeking specialist advice from a microbiologist for domestic animal bites (including farm animal bites), that you are unfamiliar with.

For a short explanation of why the committee made these recommendations, see the rationale and impact section on assessment.

For more details, see the evidence review.

Antibiotic prophylaxis for uninfected bites

Human bites

1.1.4 Do not offer antibiotic prophylaxis to people with a human bite that has not broken the skin.

1.1.5 Offer antibiotic prophylaxis (see the recommendations on choice of antibiotic) to people with a human bite that has broken the skin and drawn blood.

1.1.6 Consider antibiotic prophylaxis for people with a human bite that has broken the skin but not drawn blood if it:

- involves a high-risk area such as the hands, feet, face, genitals, skin overlying cartilaginous structures or an area of poor circulation **or**
- is in a person at risk of a serious wound infection because of a comorbidity (such as diabetes, immunosuppression, asplenia or decompensated liver disease).

Cat bites

1.1.7 Do not offer antibiotic prophylaxis to people with a cat bite that has not broken the skin.

1.1.8 Offer antibiotic prophylaxis (see the recommendations on choice of antibiotic) to people with a cat bite that has broken the skin and drawn blood.

1.1.9 Consider antibiotic prophylaxis for people with a cat bite that has broken the skin but not drawn blood if the wound could be deep.

Bites from a dog or other traditional pet (excluding cat bites)

1.1.10 Do not offer antibiotic prophylaxis to people with a bite from a dog or other traditional pet (excluding cat bites) that:

- has not broken the skin **or**
- has broken the skin but not drawn blood.

1.1.11 Offer antibiotic prophylaxis (see the recommendations on choice of antibiotic) to people with a bite from a dog or other traditional pet (excluding cat bites) that has broken the skin and drawn blood if it:

- has penetrated bone, joint, tendon or vascular structures **or**
- is deep, is a puncture or crush wound, or has caused significant tissue damage **or**
- is visibly contaminated (for example, if there is dirt or a tooth in the wound).

1.1.12 Consider antibiotic prophylaxis (see the recommendations on choice of antibiotic) for people with a bite from a dog or other traditional pet (excluding cat bites) that has broken the skin and drawn blood if it:

- involves a high-risk area such as the hands, feet, face, genitals, skin overlying cartilaginous structures or an area of poor circulation **or**
- is in a person at risk of a serious wound infection because of a comorbidity (such as diabetes, immunosuppression, asplenia or decompensated liver disease).

For a short explanation of why the committee made these recommendations, see the rationale and impact section on antibiotic prophylaxis for uninfected human and animal bites.

For more details, see the evidence review.

Treating infected bites

1.1.13 Take a swab for microbiological testing to guide treatment if there is discharge (purulent or non-purulent) from the human or animal bite wound.

1.1.14 Offer an antibiotic (see the recommendations on choice of antibiotic) for people with a human or animal bite if there are symptoms or signs of infection, such as increased pain, inflammation, fever, discharge or an unpleasant smell.

For a short explanation of why the committee made these recommendations, see the rationale and impact section on treating infected human and animal bites.

For more details, see the evidence review.

Advice

1.1.15 Give advice to people with a human or animal bite about:

- possible adverse effects of antibiotics (if they have been offered antibiotics)
- seeking medical help if symptoms or signs of infection develop or worsen rapidly or significantly at any time, or do not start to improve within 24 to 48 hours of starting treatment.

Reassessment

1.1.16 Reassess the human or animal bite if:

- symptoms or signs of infection develop or worsen rapidly or significantly at any time, or do not start to improve within 24 to 48 hours of starting treatment **or**
- the person becomes systemically unwell **or**
- the person has severe pain that is out of proportion to the infection.

1.1.17 Be aware that people who have difficulty communicating may have non-verbal signs of pain, such as a change in behaviour.

1.1.18 If a skin swab has been sent for microbiological testing, review the choice of antibiotic based on the swab results. If a change of antibiotic is needed, use a narrow-spectrum antibiotic if possible.

For a short explanation of why the committee made these recommendations, see the rationale and impact section on reassessment.

For more details, see the evidence review.

Referral and seeking specialist advice

1.1.19 Refer people with a human or animal bite to hospital if they have:

- symptoms or signs suggesting a more serious illness or condition (these include severe cellulitis, abscess, osteomyelitis, septic arthritis, necrotising fasciitis or sepsis) **or**
- a penetrating wound involving arteries, joints, nerves, muscles, tendons, bones or the central nervous system.

1.1.20 Consider referral or seeking specialist advice for people with a human or animal bite if:

- they are systemically unwell **or**
- they have developed symptoms or signs of infection after taking prophylactic antibiotics **or**
- they have lymphangitis **or**
- they are at risk of a serious wound infection because of a pre-existing medical condition **or**
- they cannot take oral antibiotics (in which case, explore with the specialist whether locally available options for parenteral antibiotics at home or in the

community, rather than in hospital, are appropriate) **or**

- the bite is infected and is not responding to oral antibiotics **or**
- the bite is in an area of poor circulation.

For a short explanation of why the committee made these recommendations, see the rationale and impact section on referral and seeing specialist advice.

For more details, see the evidence review.

1.2 Choice of antibiotic

1.2.1 When prescribing an antibiotic for a bite from a human, cat, dog or other traditional pet:

- follow table 1 for adults aged 18 years and over
- follow table 2 for children and young people under 18 years.

1.2.2 Give oral antibiotics if the person can take oral medicines, and the severity of their condition does not need intravenous antibiotics.

1.2.3 If intravenous antibiotics are given, review within 48 hours and consider switching to oral antibiotics if possible.

Table 1 Antibiotics for prophylaxis and treatment in adults aged 18 years and over

Prophylaxis and treatment	Antibiotic, dosage and course length for prophylaxis (3 days) and treatment (5 days)
First-choice oral antibiotic	**Co-amoxiclav**: 250/125 mg or 500/125 mg three times a day

Prophylaxis and treatment	Antibiotic, dosage and course length for prophylaxis (3 days) and treatment (5 days)
Alternative first-choice oral antibiotics for penicillin allergy or if co-amoxiclav is unsuitable	**Doxycycline**: 200 mg on first day, then 100 mg or 200 mg daily **with** **Metronidazole:** 400 mg three times a day
Alternative first-choice oral antibiotics in pregnancy for penicillin allergy or if co-amoxiclav is unsuitable	Seek specialist advice
First-choice intravenous antibiotic (if unable to take oral antibiotics or severely unwell)	**Co-amoxiclav**: 1.2 g three times a day
Alternative first-choice intravenous antibiotics for penicillin allergy or if co-amoxiclav is unsuitable	**Cefuroxime** (caution in penicillin allergy): 750 mg three times a day (increased to 750 mg four times a day or 1.5 g three or four times a day if infection is severe) **with** **Metronidazole**: 500 mg three times a day **Ceftriaxone** (caution in penicillin allergy) 2 g once a day **with** **Metronidazole**: 500 mg three times a day
If cephalosporin is not appropriate	Seek specialist advice

See the BNF and summary of product characteristics for appropriate use and dosing in specific populations, for example, for people with hepatic or renal impairment, in pregnancy and breastfeeding, and when administering intravenous (or, if appropriate, intramuscular) antibiotics.

A 5-day course is appropriate for treating most human or animal bites, but course length

can be increased to 7 days (with review) based on clinical assessment of the wound, for example, if there is significant tissue destruction or it has penetrated bone, joint, tendon or vascular structures.

Table 2 Antibiotics for prophylaxis and treatment in children and young people under 18 years

Prophylaxis and treatment	Antibiotic, dosage and course length for prophylaxis (3 days) and treatment (5 days)
Choice for children under 1 month	Seek specialist advice
First-choice oral antibiotic for children aged 1 month and over	**Co-amoxiclav**: 1 month to 11 months: 0.25 ml/kg of 125/31 suspension three times a day 1 year to 5 years: 0.25 ml/kg or 5 ml of 125/31 suspension three times a day 6 years to 11 years: 0.15 ml/kg or 5 ml of 250/62 suspension three times a day 12 years to 17 years: 250/125 mg or 500/125 mg three times a day Co-amoxiclav 400/57 suspension may also be considered to allow for twice-daily dosing
Alternative first-choice oral antibiotic for children under 12 years for penicillin allergy or if co-amoxiclav is unsuitable	**Co-trimoxazole** (off-label use): 6 weeks to 5 months: 120 mg or 24 mg/kg twice a day 6 months to 5 years: 240 mg or 24 mg/kg twice a day 6 years to 11 years: 480 mg or 24 mg/kg twice a day See the BNF for Children for information on monitoring
Alternative first-choice oral antibiotics for young people aged 12 to 17 years for penicillin allergy or if co-amoxiclav is unsuitable	**Doxycycline**: 200 mg on first day, then 100 mg or 200 mg daily **with** **Metronidazole**: 400 mg three times a day

Prophylaxis and treatment	Antibiotic, dosage and course length for prophylaxis (3 days) and treatment (5 days)
Alternative first-choice oral antibiotics in pregnancy for penicillin allergy or if co-amoxiclav unsuitable	Seek specialist advice
First-choice intravenous antibiotic (if unable to take oral antibiotics or severely ill)	**Co-amoxiclav**: 1 month to 2 months: 30 mg/kg twice a day 3 months to 17 years: 30 mg/kg three times a day (maximum per dose 1.2g)
Alternative first-choice intravenous antibiotics for penicillin allergy or if co-amoxiclav is unsuitable	**Cefuroxime** (caution in penicillin allergy): 1 month to 17 years: 20 mg/kg three times a day (maximum 750 mg per dose), which can be increased to 50 mg/kg to 60 mg/kg three or four times a day (maximum per dose 1.5 g) **with** **Metronidazole**: 1 month: loading dose 15 mg/kg, then (after 8 hours) 7.5 mg/kg three times a day 2 months to 17 years: 7.5 mg/kg three times a day (maximum per dose 500 mg) **Ceftriaxone** (caution in penicillin allergy): 1 month to 11 years (up to 50 kg): 50 mg/kg to 80 mg/kg once a day (maximum 4 g per day) 9 years to 11 years (50 kg and above) and 12 years to 17 years: 1 g to 2 g once a day **with** **Metronidazole**: 1 month: loading dose 15 mg/kg, then (after 8 hours) 7.5 mg/kg three times a day 2 months to 17 years: 7.5 mg/kg three times a day (maximum per dose 500 mg)
If a cephalosporin is not appropriate	Seek specialist advice

See the BNF for Children and summary of product characteristics for appropriate use and dosing in specific populations, for example, for people with hepatic or renal impairment, in pregnancy and breastfeeding, and when administering intravenous (or, if appropriate, intramuscular) antibiotics.

A 5-day course is appropriate for treating most human or animal bites, but course length can be increased to 7 days (with review) based on clinical assessment of the wound, for example, if there is significant tissue destruction or it has penetrated bone, joint, tendon or vascular structures.

For off-label use, the prescriber should follow relevant professional guidance, taking full responsibility for the decision. Informed consent should be obtained and documented. See the General Medical Council's good practice in prescribing and managing medicines and devices for further information.

For a short explanation of why the committee made these recommendations, see the rationale section on choice of antibiotic.

For more details, see the summary of the evidence.

Rationale and impact

The recommendations in this guideline are based on the evidence identified and the experience of the committee.

Assessment

Why the committee made the recommendations

Recommendations 1.1.1 to 1.1.3

The committee agreed that it was good practice to assess and manage the wound in line with NICE's clinical knowledge summary on human and animal bites. They also agreed that, for human and animal bites, healthcare professionals should also consider potential safeguarding issues for vulnerable adults and children in line with NICE guidelines.

There was only evidence on managing bites from humans, dogs and cats; no evidence was identified for bites from other animal species. The committee agreed that it was reasonable to extrapolate this evidence to bites from other animals traditionally kept as pets, such as rabbits and hamsters. The committee agreed that specialist advice should be sought for bites from wild and exotic animals (including birds and non-traditional pets), such as snakes, lizards, monkeys or bats. This was because there may be a different spectrum of bacteria involved and a risk of other serious non-bacterial infections. For example, monkey bites are associated with herpes B virus, which may have serious consequences if not treated early, including fatal encephalomyelitis or severe neurological impairment. Healthcare professionals may also wish to seek specialist advice for domestic animal bites (including farm animal bites) they are not familiar with.

Return to the recommendations

Antibiotic prophylaxis for uninfected human and animal bites

Why the committee made the recommendations

Recommendations 1.1.4 to 1.1.12

Evidence was only identified for antibiotic prophylaxis after a dog, cat or human bite, and it was limited and of low quality. The committee agreed that, if a bite has not broken the skin, antibiotic prophylaxis is not needed. Many bites are superficial abrasions, meaning that they break the skin but do not draw blood. These bites are at low risk of infection because the dermis will not have been penetrated, so do not always need antibiotic prophylaxis.

The committee went on to discuss and agree when antibiotic prophylaxis should either be offered, considered, or not offered for a human, cat or dog (or other traditional pet) bite, based on the evidence and their knowledge of the risk of infection.

The committee discussed the pooled evidence on human bites, which suggested that antibiotic prophylaxis was more effective than placebo at reducing the incidence of infection. They discussed that a human bite that has broken the skin is at high risk of infection and other serious consequences because of the associated oral bacteria. However, they also discussed that the site and depth of a bite affects the risk of infection. In a study of human bites to the hand, antibiotic prophylaxis was particularly effective. The committee discussed that wounds to the hand have a higher risk of infection because of the multiple small compartments and number of joints. The same high level of infection risk applies to the feet and skin overlying cartilaginous structures.

The committee went on to discuss the evidence for human bites that are at lower risk of infection, as outlined in Broder et al. (2004). These bites penetrated only the epidermis (that is, they broke the skin but did not draw blood) and did not involve the high-risk areas of the hands, feet, or skin overlying joints or cartilaginous structures. For this study, there was a very low rate of infection; signs of infection were seen in 1 of 62 people in the placebo group and none of the 63 people taking antibiotics.

The committee agreed that, if a human bite has not broken the skin, antibiotic prophylaxis should not be offered. If it has broken the skin and drawn blood, antibiotic prophylaxis

should be offered. The committee agreed that, for people with a human bite that has broken the skin but not drawn blood, antibiotic prophylaxis is not routinely needed. However, they agreed that it can be considered for bites in high-risk areas or in people at risk of a serious wound infection because of a comorbidity.

The committee went on to discuss when antibiotic prophylaxis should be offered for a cat bite. The evidence on cat bites, which was based on a very small sample size of 11 did not show a statistically significant difference between antibiotic prophylaxis and placebo in reducing the incidence of infection in cat bites. Based on such limited data, the committee could not judge the certainty of the evidence. However, based on their expertise and experience, they agreed that antibiotic prophylaxis should be offered if a cat bite has broken the skin and drawn blood. Cat bites are at high risk of infection because of cat oral bacteria and because the needle-like nature of the wounds (small, deep punctures) is hard to irrigate. The committee went on to discuss that this type of wound is often deeper than it appears, which can cause assessment difficulties. They also noted that infection in deep skin structures is possible, which has serious consequences such as bone infections. The committee agreed that antibiotic prophylaxis is not needed if a cat bite has not broken the skin. However, it can be considered if the cat bite has broken the skin but not drawn blood if, despite appearances and the lack of blood, the wound could still be deep.

The committee went on to discuss and agree situations when antibiotic prophylaxis should be offered for a dog bite (or a bite from another traditional pet other than a cat). Evidence suggested no difference between antibiotic prophylaxis and placebo in reducing the incidence of infection based on the type and location of the dog bite wound. However, based on their experience, the committee agreed that antibiotic prophylaxis should be offered for a dog bite (or a bite from another traditional pet) if it:

- has broken the skin and penetrated bone, joint, tendon or vascular structures **or**
- is deep, a puncture or crush wound, or has caused significant tissue damage **or**
- is visibly contaminated (for example, if there is dirt or a tooth in the wound).

They also agreed that antibiotic prophylaxis could be considered for a dog bite (or a bite from another traditional pet other than a cat) that has broken the skin and drawn blood if it involves a high-risk area or is in a person at risk of a serious wound infection because of a comorbidity. The committee agreed that the principles of the evidence from Broder et al. (2004) on human bites could be extrapolated to bites from dogs or other traditional pets). The committee discussed that antibiotic prophylaxis would only be considered for a dog

bite (or a bite from another traditional pet) fulfilling these criteria because, in their experience, these bites have a lower risk of infection than human bites. This is supported by the evidence that showed no difference between antibiotic prophylaxis and placebo in reducing the incidence of infection after a dog bite. Antibiotic prophylaxis is not needed for a dog bite (or a bite from another traditional pet) that has not broken the skin, or has only caused a superficial wound that has broken the skin but not drawn blood.

For more details, see the summary of the evidence on antibiotics.

Return to the recommendations

Treating infected human and animal bites

Why the committee made the recommendations

Recommendations 1.1.13 to 1.1.14

There was no evidence on the treatment of human or animal bites. However, the committee agreed that antibiotics should be offered for human or animal bites with symptoms or signs of infection because of the potential consequences of not treating an infected bite.

The committee also agreed that, if there is discharge from the bite wound this should be swabbed and sent for microbiological testing before antibiotics are taken. This includes purulent and non-purulent discharge because certain bacteria associated with a human or animal bite, such as Eikenella, may not form pus.

For more details, see the summary of the evidence on antibiotics.

Return to the recommendations

Reassessment

Why the committee made the recommendations

Recommendations 1.1.16 to 1.1.18

The committee agreed that a human or animal bite should be reassessed if an infection develops or worsens rapidly or significantly at any time or does not start to improve within 24 to 48 hours of starting treatment because of the consequences of complications from an infection. Reassessment is also recommended if the person becomes systemically unwell or has severe pain that is out of proportion to the infection (which can be a symptom of necrotising fasciitis).

The committee agreed that it is good antimicrobial stewardship to review and potentially change the antibiotic used when microbiological testing results are available. A narrow-spectrum antibiotic should be used if appropriate.

They also discussed that reassessment is another opportunity to reconsider potential safeguarding issues for vulnerable adults or children, and to consider non-verbal signs of pain, such as a change in behaviour, in people who have difficulty communicating.

Return to the recommendations

Referral and seeking specialist advice

Why the committee made the recommendations

Recommendations 1.1.19 to 1.1.20

The committee agreed that people with a human or animal bite should be referred to hospital if they have symptoms or signs of a more serious illness or condition, or if they have penetrating wounds with certain features because of the serious consequences of these.

The committee agreed other circumstances when the prescriber may want to refer the person or seek specialist advice.

Return to the recommendations

Choice of antibiotic

Recommendations 1.2.1 to 1.2.3

Why the committee made the recommendations

No evidence was found comparing different antibiotics to inform the choice of antibiotic for human and animal bites. Therefore, the committee based these recommendations on their experience, current practice, antimicrobial resistance, and the need to provide choices that cover the relevant range of likely aerobic and anaerobic pathogens in human and animal bites.

The committee agreed that the same antibiotic choices should be available for both prophylaxis and treatment because the pathogens will be the same.

Oral antibiotics

The committee agreed that the first-choice oral antibiotic for all people with a human or animal bite is co-amoxiclav, which has good activity against the relevant range of likely pathogens.

The committee were aware of the BNF entry for co-amoxiclav. Advice was also sought from the UK Teratology Information Service (UKTIS), which confirmed that the association between co-amoxiclav and necrotising enterocolitis has only been identified in the context of prelabour premature rupture of the membranes (PPROM). Outside of this, there is no evidence to show that general co-amoxiclav use in pregnancy is associated with an increased risk of necrotising enterocolitis. UKTIS advised that there should be no restriction around the use of co-amoxiclav in pregnancy, provided it is not being given for PPROM. It was agreed that human or animal bites are a suitable clinical indication for co-amoxiclav use in pregnancy.

If co-amoxiclav is unsuitable, the alternative first-choice oral antibiotics for adults and young people over 12 years are doxycycline with metronidazole (an antibiotic with high activity against anaerobic bacteria). If co-amoxiclav is unsuitable and a woman is pregnant, specialist advice should be sought for an alternative antibiotic with good activity against Pasteurella.

The committee agreed that if co-amoxiclav is unsuitable, the alternative first-choice oral antibiotic for children under 12 years is co-trimoxazole because this also has good activity against the range of likely pathogens.

Intravenous antibiotics

The committee agreed that intravenous antibiotics should only be used if a person cannot take oral antibiotics or the severity of their condition warrants intravenous antibiotics. The first-choice intravenous antibiotic for all people with a human or animal bite is co-amoxiclav because it has good activity against the relevant range of likely pathogens.

If co-amoxiclav is unsuitable, the alternative first-choice intravenous antibiotics for all people with a human or animal bite are:

- cefuroxime with metronidazole
- ceftriaxone with metronidazole.

The committee agreed that both options have good activity against the relevant likely pathogens. The cephalosporins, cefuroxime and ceftriaxone have a similar spectrum of activity but providing more than 1 option allows for choice to be made locally. If a cephalosporin is not appropriate, for example, in people with a history of immediate hypersensitivity to penicillins, the committee agreed that a local microbiologist should be consulted to suggest a suitable alternative.

Dosage, course length and route of administration

There was no evidence comparing antibiotic dosage, course length and route of administration. Therefore, the recommendations were based on the committee's experience and current practice. The committee agreed that the shortest course that is likely to be effective should be prescribed to reduce the risk of antimicrobial resistance and adverse effects. However, because the type and severity of bites can vary, a longer course may be needed based on clinical assessment of the wound.

The committee agreed that, for both oral and intravenous routes of administration (which would be switched to oral antibiotics when possible), a course length of 3 days should be effective for prophylaxis, and a course length of 5 days should be effective for treatment. However, the committee discussed that because the type and severity of bites can vary, a longer course of up to 7 days (with review) may be needed. This would be based on a clinical assessment of the wound, and whether it has, for example, caused significant tissue destruction or penetrated bone, joint, tendon or vascular structures.

Return to the recommendations

Summary of the evidence

This is a summary of the evidence, for full details see the evidence review.

The evidence included 1 systematic review (Medeiros et al. 2001) and 2 randomised controlled trials (Quinn et al. 2010, Broder et al. 2004). These studies considered various prophylactic antibiotics compared with no antibiotic or placebo for managing animal and human bites. No evidence was identified for choice of antibiotic, course length or route of administration.

Antibiotic efficacy

If no route of administration for an antibiotic is given in the evidence review, no details were reported in the primary study.

For human bites

Prophylactic antibiotics (oral cefaclor, intravenous cefazolin, intravenous benzylpenicillin, and oral cefalexin or penicillin) were shown to be more effective than placebo at reducing signs of infection after human bites in adults.

For animal bites

There was no difference between prophylactic antibiotics (oral phenoxymethylpenicillin, oral dicloxacillin, oxacillin, oral cefalexin, oral erythromycin, co-trimoxazole, cloxacillin and oral co-amoxiclav) and no treatment or placebo in signs of infection after dog bites in adults, young people and children.

One small study suggests that there was no difference between a prophylactic antibiotic (oxacillin) and placebo in signs of infection after cat bites in adults.

By bite type

There was no difference between prophylactic antibiotics (oxacillin, oral phenoxymethylpenicillin, oral dicloxacillin, oral cefalexin and oral erythromycin) and no treatment or placebo in the incidence of infection in adults, young people and children

when treating puncture, laceration or avulsion wounds.

By bite location

There was no difference between prophylactic antibiotics (oral dicloxacillin, oral cefalexin, oral erythromycin, oral phenoxymethylpenicillin, co-trimoxazole, oral cefaclor, intravenous cefazolin and intravenous penicillin) and no treatment or placebo in the incidence of infection in adults, young people and children when treating trunk, head and neck, hand or arm wounds.

Choice of antibiotic

There was no evidence identified about the choice of antibiotic.

Course length

There was no evidence identified about the course length of antibiotics.

Route of administration

There was no evidence identified about the route of administration of antibiotics.

Other considerations

Medicines safety

Antibiotic-associated diarrhoea is estimated to occur in 2% to 25% of people taking antibiotics, depending on the antibiotic used (NICE clinical knowledge summary on diarrhoea – antibiotic associated).

About 10% of the general population claim to have a penicillin allergy; this is often because of a skin rash that occurred while taking a course of penicillin as a child. Fewer than 10% of people who think they are allergic to penicillin are truly allergic. See the NICE guideline on drug allergy: diagnosis and management for more information. People with a history of immediate hypersensitivity to penicillins may also react to cephalosporins and other beta lactam antibiotics (BNF information on phenoxymethylpenicillin).

Cholestatic jaundice can occur with co-amoxiclav, and is more common in people over 65 years and in men; treatment should not usually exceed 14 days (BNF information on co-amoxiclav).

Tetracyclines (for example, doxycycline) can deposit in growing bone and teeth (by binding to calcium) causing staining and occasionally dental hypoplasia. They should not be given to pregnant or breastfeeding women, and use in children under 12 years is either contraindicated or there is a caution for use only in severe or life-threatening infections when there are no alternatives (BNF information on doxycycline).

Co-trimoxazole is associated with rare but serious side effects, including blood disorders and Stevens–Johnson syndrome. There is caution for use in older people because there is an increased risk of serious side effects. There is also caution for use in people with a predisposition to hyperkalaemia. Monitoring of blood counts is recommended with prolonged treatment (BNF information on co-trimoxazole).

See the summaries of product characteristics for information on contraindications, cautions and adverse effects of individual medicines.

Medicines adherence

Medicines adherence may be a problem for some people taking antibiotics that need frequent dosing or longer treatment duration (see the NICE guideline on medicines adherence).

Resource implications

Recommended antibiotics are available as generic formulations. See the NHS Drug Tariff for costs.

See the evidence review for more information.

Context

Human and animal bites are at risk of infection. Human bites are most commonly infected by Streptococcus, *Staphylococcus aureus*, Haemophilus, *Eikenella corrodens*, Bacteroides and other anaerobes. Most infections from animal bites are polymicrobial and contain both aerobic and anaerobic organisms. Causative organisms for infections from cat and dog bites (the most common animal bites) include Pasteurella, Streptococcus, Staphylococcus, Neisseria, Corynebacterium, *Fusobacterium nucleatum* and Bacteroides (Abrahamian et al. 2011).

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on bites and stings.

For full details of the evidence and the guideline committee's discussions, see the evidence review. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

ISBN: 978-1-4731-3900-8