Bites in Children

Prepared by Dorthe Swaby-Larsen

- The bite location and the affected populations vary by animal.
- Overall, most dog bites occur on the extremities. Facial bites, when they occur, are most common in small children.
- Up to two-thirds of cat bite injuries occur on the upper extremities, typically the hand

Spencer & Banerjee, 2021

- Dogs can exert >3103 kPa (>450 pounds per square inch) of pressure with their jaws, causing significant crush injury and tissue devitalisation, in addition to laceration, puncture, and avulsion (tearing away of tissue) injury

- Cats have weaker biting force than dogs. They have thin, sharp teeth; 85% of cat bite wounds are puncture wounds, which inoculate organisms deep into the tissue.

- Injuries to the clenched fist can be particularly serious. Due to the high forces involved and thin skin, bites to the fist can lead to tendon tear, joint disruption, or fracture.

- Mortality from animal attacks is uncommon. The major cause of death from a dog attack is exsanguination following carotid trauma, in children <10 years old.

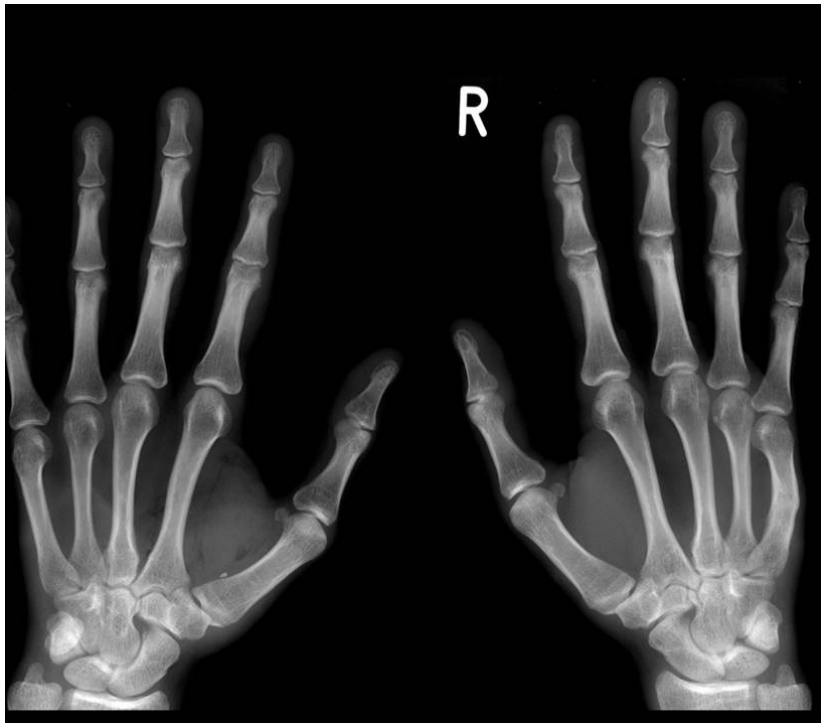
Spencer & Banerjee, 2021

Infection risk of bite wounds

- Poly microbial with broad mixture of microorganism with median of 5 isolates per wound.
- Over 50% of cat and dog bites involve mixed aerobic and anaerobic bacteria.
- An estimated 3% to 18% of dog bites become infected, and the median time from bite to infection is 24 hours.
- Due to the high rate of puncture wounds, infection rates after cat bites may be as high as 50%, with a median time of 12 hours before first signs of infection.
- Human bites have an overall infection rate ranging from 10% to 50%.

Bites/contaminated wounds

- Primary closure is controversial …..
  - If adequately irrigated ,infection rates are same for smaller wounds primary closure and delayed.
  - BUT THINK COSMETICALLY
  - NEVER close puncture wounds
- Irrigation +++
- Inadine dressing
- Antbiotics
- Tetanus



Wound cleaning: the evidence (NICE, 2015)

- Disinfect the skin around the wound with an antiseptic, but avoid getting antiseptic into the wound.
- Keep hair out of the wound — minimize hair removal by clipping with scissors around the wound edges and by applying simple ointment to flatten the hair away from the wound
- Anaesthetize the laceration before cleaning if debriding or exploring the wound
- Debride devitalized tissue and pick out as much foreign material as possible — if glass may be present, refer for radiography.
- Irrigate the wound with normal saline, drinking-quality water, or cooled boiled water.
  - For lacerations that are not visibly contaminated, low-pressure irrigation using a syringe is sufficient.
  - For lacerations that are visibly contaminated, irrigate at high pressure with a syringe and a green needle, to remove visible debris from the wound.

Anti-microbial dressings* (Inadine)

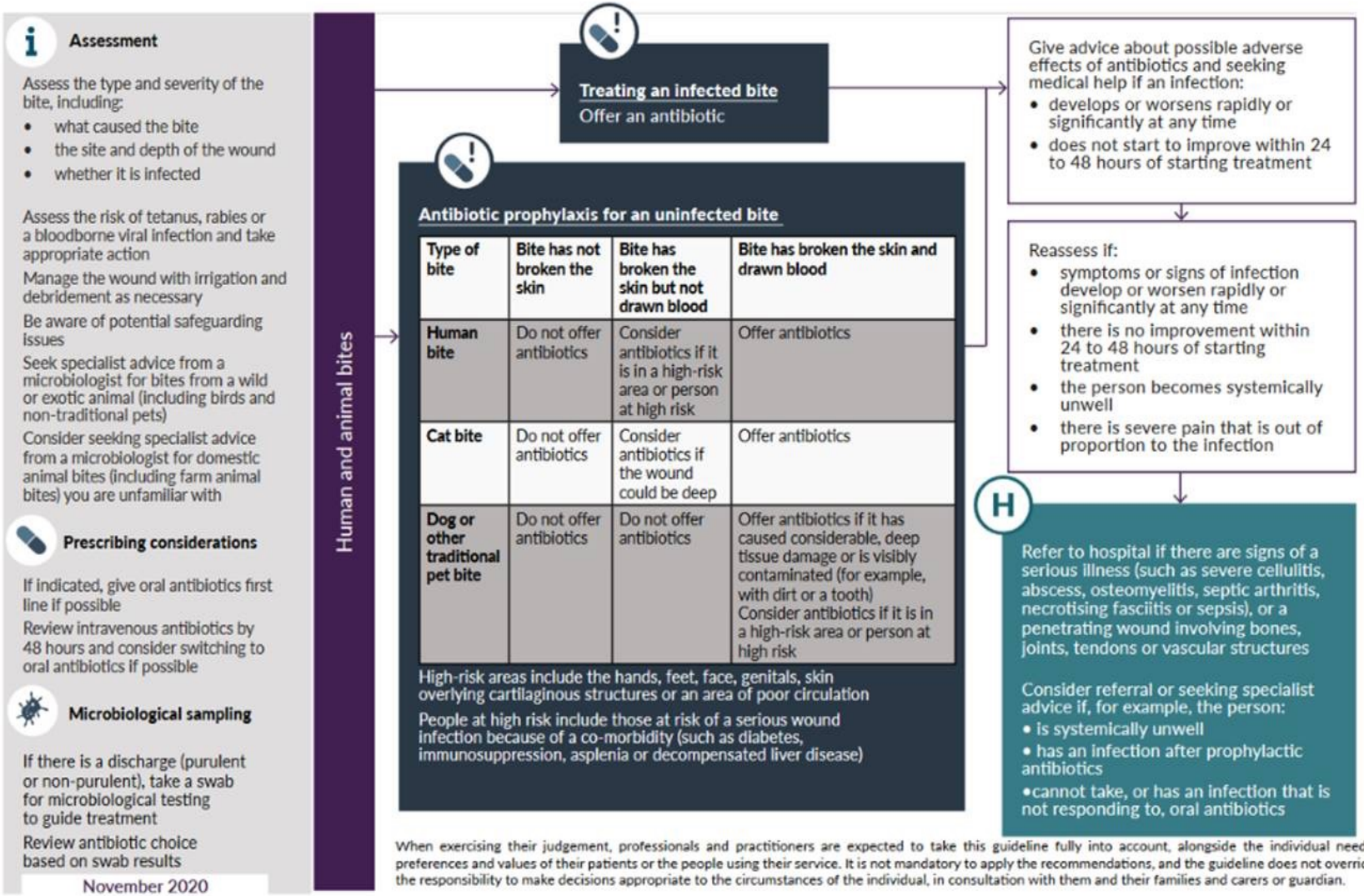
- Iodine has been used in wound care for more than 170 years.
- Iodine products reduce bacterial load and are active against bacteria, mycobacterium, fungi, protozoa and viruses, and can be used to treat both acute and chronic wounds
- Iodine is used both to clean and prepare the wound bed and to manage wound infection
- Topical application is known to provide effective antibacterial prophylaxis in wound care, particularly burns
- Iodine-based antiseptics are relatively cheap; but there are concerns about allergic reactions – and prolonged use should be avoided as may cause systemic toxicity
- Iodine is available in different formulations, but most places stock only 2 sizes wound dressing
- Change when dressing is 'white'

- Caution on skin tears as can dry out skin

* Reference: Wound Care today

Human and animal bites: antimicrobial prescribing

NICE National Institute for Health and Care Excellence



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.

Human and animal bites: antimicrobial prescribing

NICE National Institute for Health and Care Excellence

Choice of antibiotic for prophylaxis and treatment: 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; see the BNF for Children for information on monitoring): 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 For off-label use, 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 information.
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
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 If a cephalosporin is not appropriate, seek specialist advice	**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)

See the BNF for Children and summary of product characteristics for appropriate use and dosing in specific populations, for example, for hepatic or renal impairment, in pregnancy, when 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

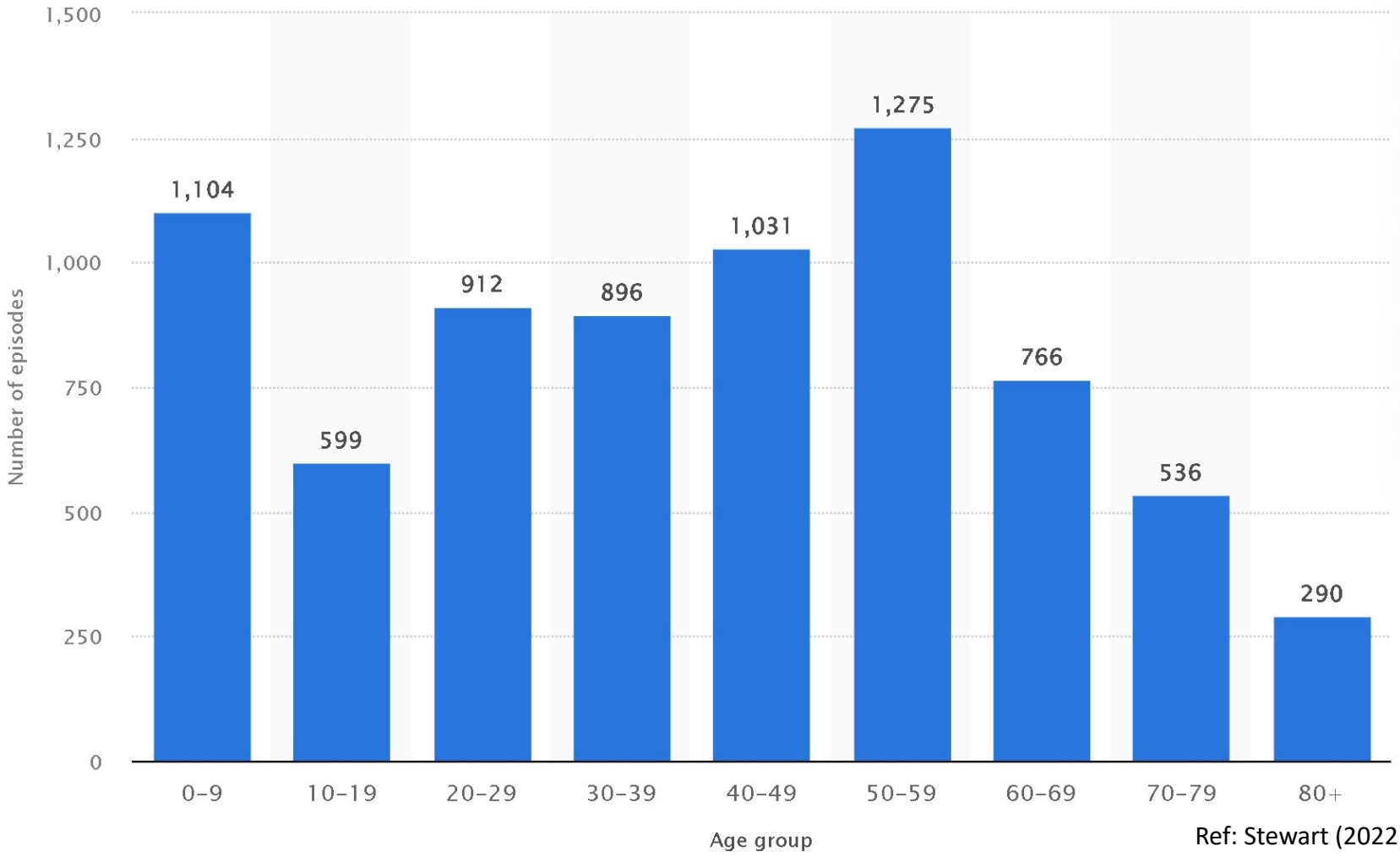
Dog Bites

- Approx. 9 million dogs in the UK with 25% of households owning a domestic dog
  - 70% of dog bites, the dog is owned by a family member
- Significant regional variations
  - In England, highest rates is seen in more deprived areas (Merseyside 27.0 per 100.000)
- Under 9 year old age are disproportionately affected (17.6 per 100,000 population)
  - 2 groups identified as being bitten most often
    - Under 2 year olds
    - Aged 9-12

- Limited and conflicting evidence regarding specific breed or age of dog as being risk factors
- Supervision of dog-child interacting is key in preventing dog bites
  - Ability to interpret dogs behaviour
- Increase in attendance for paediatric dog bites seen during COVID-
  - Increased time at home and with dog
  - Pandemic puppies & no puppy classes
  - Change in day to day routine for the dog -more time with children & less socialisation with other dogs
    - Shorter walks due to fear of Covid
  - Increase in domestic violence also rose during this time

Re : Jakeman et al, 2020) and Tulloch et al,2021

Total number of hospital admission episodes for dog bites and strikes in England from in 2020/21, by age group



Ref: Stewart (2022)

Safeguarding Children From Dog Bites

Cwm Taf Morgannwg Bwrdd Diogelu Safeguarding Board

1) Background

Over the past 10 years, there has been an increase of 76% of hospital admissions for children due to dog bites.

This guidance provides information to those working with families and children and explains:

- The situations where children are most likely to be vulnerable.
- The advice to be given to families with regard to dog and child safety and to prevent dog bite or attack.
- The basis for an effective assessment of risk and the criteria that should prompt a referral to Children's Social Care or other agencies.

7) Further information

Blue Cross
www.bluecross.org.uk

Keeping your toddler safe around dogs leaflet

RSPCA
www.rspca.org.uk

Dogs and children – a guide to staying safe leaflet

Reporting Cruelty to the RSPCA

- 24-hour cruelty line - call 0300 1234 999 to report cruelty or an animal in distress (sick, injured or trapped animal).

Adapted from 7 minute briefing created by Hywel Dda University Health Board

2) Situations where children are most likely to be vulnerable

Bites on 0-4 year olds are usually on the face and head and by a familiar dog in family setting.

Older children are more likely to be bitten on the hand or arm, by an unfamiliar dog out in the open.

In a number of cases death from dog attack has occurred when the child is in the care of another (e.g. grandparent).

Serious dog bites or attacks, requiring hospitalisation, are more frequent among children from more deprived areas than children from less deprived areas.

The owner of the dog is often not present when the fatal attack occurs and in some cases the attack has occurred when the dog has had unsupervised access to the child.

6) When to refer to Children's Services

The child/young person is under 18 years of age, injuries have required medical treatment and initial information suggests the dog responsible could be prohibited and/or dangerous or the parents have acted irresponsibly.

Where parents/carers are believed to be exposing a child to or failing to protect a child from a dog who is believed to be dangerous or prohibited.

3) Preventing bites and attacks

The most important advice is to **never leave a baby or young child unsupervised with a dog**, no matter how well known the dog is. This must be emphasised by practitioners to families with dogs and the advice to be recorded.

The Blue Cross and RSPCA have produced resources on keeping children safe from dogs and practitioners should give or direct any families with a dog or have contact with a dog, towards these resources.

4) Effective assessment of risk

Dogs that have been ill-treated/abused or kept in inappropriate conditions are more likely to be aggressive.

Dogs that are kept and/or bred for the purpose of fighting, defending or threatening are likely to present more risks than genuine pets.

Families, who experience high levels of aggression and domestic tensions including domestic violence, are more likely to trigger excitement and possible attacks by dogs.

Very young children living in chaotic or dysfunctional families are likely to be especially vulnerable to attack from dogs through lack of supervision and care.

5) When to refer to Children's Services

There are clear links between animal cruelty and the capacity for child cruelty.

Where parents/carers have been advised not to leave a baby or young child unattended with a dog and continue to do so.

A child injured by dog bite is under five years of age.

SAFEGUARDING Considerations

- NICE (2021) guidelines on dog bites, advise that a dog bite to a child in the context of inadequate supervision , should raise a suspicion of neglect

- Audit of 160 paediatric dog bites in an ED (Bradford) found only 3 safeguarding referrals to social services and 4 referrals to health visitors.
  - Notes reviewed by Paediatric Liaison Nurses : additional32 referrals to school nurses and 21 referrals to health visitors were made

Ref: van Hasselt, 2015

Prevention

- The Blue Dog Scheme : The Blue Dog Trust is a not-for -profit organisation aiming to promote the education of children in their relationships with dogs – several material available
  - https://thebluedog.org/en/
- Be dog Smart (Dogs Trust) Be Dog Smart is the Dog Trust's safety Education Campaign aimed at keeping children, and their families, safe around dogs while at home and out and about in the community.
  - https://www.learnwithdogstrust.ie/be-dog-smart/
- Be safe with Dogs(Blue Cross) Has quiz and other interactive learning material. https://www.bluecross.org.uk/advice/dog/be-safe-with-dogs
- The Safe and Sound Scheme (the Kennel Club) An online resource to promote safe interaction between children and dogs
  - https://www.thekennelclub.org.uk/dog-training/safe-and-sound/

Ref: Jakeman et al,2020

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