

Supplementary Table 1. Articles of Final Inclusion for Systematic Review

| <b>Author(s) and Year</b>          | <b>Title</b>  | <b>Methodology</b>                          | <b>Main Findings</b>   | <b>Population size (n)</b> |                           |
|------------------------------------|---|---|--|----------------------------|---------------------------|
| <b>Basco et al., 2020 [3]</b>      | Age- and Sex-Related Differences in Nonfatal Dog Bite Injuries Among Persons Aged 0-19 Treated in Hospital Emergency Departments, United States, 2001-2017. | Retrospective database cohort               | During 2001-2017, an estimated 2,406,109 persons aged 0-19 were treated in EDs for nonfatal dog bite injuries. The estimated number of nonfatal dog bite injuries declined significantly, from 181,090 in 2001 to 118,800 in 2017. The highest rate was among children aged 5-9. Males were significantly more likely to be treated than females.  | 48,166                     | Dog bite characterization |
| <b>Cook et al., 2020 [4]</b>       | An Epidemiological Analysis of Pediatric Dog Bite Injuries Over a Decade.   | Retrospective database cohort               | Average age at time of injury was 6.4 years with children under age 5 years old most affected. Most bites were to the head/neck and significantly increased from 53.9% in 2000 to 60.1% in 2009. Overall, 50% of patients underwent a procedure.   | 6308                       | Dog bite characterization |
| <b>Hurst et al., 2020 [35]</b>     | Children Have an Increased Risk of Periorbital Dog Bite Injuries.   | Retrospective cohort                        | The sample consisted of pediatric and adult patients. Isolated periorbital injuries were more common in the pediatric group as was injury to both the periorbital and central target area (nose, lips, cheeks) regions. Isolated central target area injury was the most common injury pattern overall in both children and adults.  | 313                        | Dog bite characterization |
| <b>Essig et al., 2019 [36]</b>     | Treatment of Facial Dog Bite Injuries in the Emergency Department Compared to the Operating Room.   | Case series with retrospective chart review | Patients treated in the ED underwent repair more promptly than patients treated in the OR. Patients treated in the OR were more likely to have longer lacerations, lacerations of the, involvement of multiple regions of the face, and multiple indicators of severe injury. There were no differences in surgical site infections or reoperation rates.  | 165                        | Dog bite characterization |
| <b>McLoughlin et al., 2019 [2]</b> | Hospitalizations for pediatric dog bite injuries in the United States.  | Retrospective database cohort               | Patients were predominately male, non-Hispanic white, resided in the South, and in an urban environment. Almost one third underwent a surgical procedure. Open wounds of the head, neck and trunk were the most common injury and decreased in prevalence with increasing age. Children aged 1-4 and 5-10 years were both more than three times more likely to be admitted than those $\geq 11$ years old. | 6323                       | Dog bite characterization |
| <b>Abraham et al., 2019 [32]</b>   | Pediatric Dog Bite Injuries in Central Texas.   | Retrospective chart review                  | The mean age was 5.8 years. Parental presence was reported in 44% of cases, and most attacks occurred in the evening. Injuries often involved the head-neck region and were of major severity. Pet dogs were responsible for 42% of injuries,  | 102                        | Dog bite characterization |

|                                   |  |                            |   |      |                           |
|-----------------------------------|--|----------------------------|---|------|---------------------------|
|                                   |  |                            | and pit bull was the most-identified breed. Most injuries occurred while the child was at home and was petting or playing with the dog. Intervention in the operating room was required in 34% of patients.   |      |                           |
| <b>Fein et al., 2019 [33]</b>     | Pediatric dog bites: a population-based profile.   | Retrospective cohort       | Most children were 6-12 years old and female, but a similar number fell into the range of 0-2 years old. Injuries in the younger group frequently occurred at home, on the face/head, and with minor severity. Age of the child predicts the location of incident, the severity of injury, and the body region of the injury.   | 7912 | Dog bite characterization |
| <b>Bykowski et al., 2019 [31]</b> | Pediatric Dog Bite Prevention: Are We Barking Up the Wrong Tree or Just Not Barking Loud Enough? | Retrospective cohort       | A total of 1017 bite injuries were treated, representing a 25% increase compared with 10 years prior. Comparing the 1997 and 2007-2011 cohorts, patient demographics, bite rate among children <5 years old, rate of dog breed documentation, and setting of injury were similar.   | 1017 | Dog bite characterization |
| <b>Smith et al., 2018 [34]</b>    | Characteristics of Dog Bites in Arkansas.  | Retrospective chart review | Of patients across two institutions 37% required some form of repair, with 30% receiving closure in the emergency department. Children <5 years were more than 8 times as likely to require an operative repair, more than 4 times as likely to be bitten on the head/neck and, and up to 3 times as likely to be bitten by a family dog. Children older than age 12 years were more than 3 times as likely to be bitten on an extremity. | 740  | Dog bite characterization |
| <b>Ramgopal et al., 2018 [30]</b> | Dog bites in a U.S. county: age, body part and breed in paediatric dog bites.                    | Retrospective cohort       | There was a negative correlation between age and bite frequency. Children 0-3 years had a higher odds ratio of bites to the face 'Pit bulls' accounted for 27% of dog bites and were more common in children 13-18 years. Shih-Tzu bites were more common in children ≤3 years old.   | 4195 | Dog bite characterization |
| <b>Bratton et al., 2018 [29]</b>  | Ophthalmic Manifestations of Facial Dog Bites in Children.                                       | Retrospective chart review | Dog bites to the face occurred in most patients, and 16% suffered ophthalmic manifestations. The average age was 4.3 years. Eyelid injuries occurred in 99% of children, 20% sustained canalicular system injuries, 1% suffered corneal abrasions, and 2 patients sustained facial nerve injury. No patients suffered vision loss.  | 230  | Dog bite characterization |
| <b>Golinko et al., 2017 [28]</b>  | Characteristics of 1616 Consecutive Dog Bite Injuries at a Single Institution.                   | Retrospective chart review | 58% of all patients required laceration repair, primarily in the emergency department. Infants were more than 4 times as likely to be bitten by the family dog and more than 6 times as likely to be bitten in the head/neck region. Children ≤5 years old  | 1616 | Dog bite characterization |

|                                   |   |                               |   |     |                           |
|-----------------------------------|---|-------------------------------|---|-----|---------------------------|
|                                   |   |                               | were 62% more likely to require repair. Pit bull bites were implicated in half of all surgeries performed and over 2.5 times as likely to bite in multiple anatomic locations.  |     |                           |
| <b>Alizadeh et al., 2017 [15]</b> | An algorithmic approach to operative management of complex pediatric dog bites: a 3-year review of a level I regional referral pediatric trauma hospital. | Retrospective cohort          | Of 108 patients treated in the ED, the highest incidence occurred in pre-school children. Most commonly, the injury was isolated to the head/neck region (59.2%). Pit bulls accounted for 48.2% of the dog bites, and 47.8% of pit bull bites required OR intervention.   | 108 | Dog bite characterization |
| <b>Sribnick et al., 2016 [9]</b>  | Dog bite injuries in children: Clinical implications for head involvement.  | Retrospective database cohort | Of 236 patients, 174 (73.7%) had head involvement with dog bite injury. Patients with head involvement were more likely to be younger males. Patients with head involvement had similar mean length of stay compared to those without head involvement but required a higher rate of ICU stay. The most common breeds identified (55%) were Pit Bulls (50.4%), Rottweilers (12.2%), Labradors (8.4%), German Shepherds (5.3%), and Chows (4.6%). Infection occurred in 6.8% of the cohort and prophylactic antibiotic therapy varied. | 236 | Dog bite characterization |
| <b>Schwebel et al., 2016 [44]</b> | Evaluating a Website to Teach Children Safety with Dogs: A Randomized Controlled Trial.   | Randomized controlled trial   | About two-thirds of the intervention sample was not adherent to website use at home, so both intent-to-treat and per-protocol analyses were conducted. Intent-to-treat analyses yielded mostly null results. Per-protocol analyses suggested children compliant to the intervention protocol scored higher on knowledge and recognition of safe behavior with dogs following the intervention compared to the control group.  | 69  | Education                 |
| <b>Sadiq et al., 2015 [27]</b>    | Eyelid Lacerations Due to Dog Bite in Children.   | Retrospective chart review    | Of patients sustaining an eyelid laceration due to a dog bite, 36% had damage to the lacrimal apparatus. This was statistically significant when compared to patients who sustained eyelid lacerations from other causes.   | 73  | Dog bite characterization |
| <b>Speirs et al., 2015 [26]</b>   | Dog bites to the upper extremity in children.   | Retrospective chart review    | Among the children with dog bites to the upper extremity, 23% were admitted to the hospital for surgery or parenteral antibiotics. Of the patients presenting with bites to the lower extremities, none were admitted. Compared to those who presented the same day they were injured, the relative risk of hospitalization or surgery in patients who presented 1 and 2 days after their injury was 3.5 and 7.0, respectively.   | 116 | Dog bite characterization |
| <b>O'Brien et al., 2015 [25]</b>  | Dog bites of the head and neck: an evaluation of a  | Retrospective cohort          | The mean patient age was 15 years. Of the more than 8   | 101 | Dog bite characterization |

|                                   |  |                             |   |     |                           |
|-----------------------------------|--|-----------------------------|---|-----|---------------------------|
|                                   | common pediatric trauma and associated treatment.  |                             | different breeds identified, one-third were caused by pit bull terriers which resulted in the highest rate of consultation and had 5 times the relative rate of surgical intervention. Pit bull terriers were also more likely to attack an unknown individual and without provocation.   |     |                           |
| <b>Schwebel et al., 2015 [45]</b> | Evaluating a website to teach children safety with dogs.                                   | Randomized controlled trial | This protocol describes a US government-funded randomized trial which evaluates the efficacy of a newly-developed website to teach young children cognitive skills relevant to behaving safely with pet dogs within the home.   | 68  | Education                 |
| <b>Chen et al., 2013 [6]</b>      | Analysis of pediatric facial dog bites.  | Retrospective chart review  | The average age was 4.6 years, with a slight male preponderance. The majority of dog bites occurred in children ≤5 years old and almost all of the dogs were known to the children. Over half of the cases were provoked. The most common breeds were mixed breed, Labrador retriever, Rottweiler, and German shepherd. Inpatient treatment was required in 23% of patients, with children ≤5 years being more likely to be hospitalized. | 537 | Dog bite characterization |
| <b>Dixon et al., 2013 [43]</b>    | An evaluation of a dog bite prevention intervention in the pediatric emergency department. | Cross-sectional             | Current dog ownership was 77% and only 6% of children had received previous dog bite prevention education. Pre-test pass rate was 58% and 90% after the intervention. The greatest increases in gain of knowledge were in questions involving stray dogs or dogs that were fenced or eating.  | 120 | Education                 |
| <b>Eppley et al., 2013 [37]</b>   | Facial dog bite injuries in children: treatment and outcome assessment.                    | Prospective cohort          | The average children's age was 5.9 years. In cases where the dog was identified, it was known to the victim/family. Events leading to the dog bite were provoked in the majority of cases. The majority of wounds were closed primarily, and complex reconstructions were required in more severe cases. The majority of families opted for scar revision between 9-18 months after initial treatment.                                    | 107 | Dog bite characterization |
| <b>Bjork et al., 2013 [23]</b>    | Dog bite injuries among American Indian and Alaska Native children.                        | Retrospective chart review  | The average annual dog bite hospitalization rate was higher among American Indian/Alaska native children in Alaska and the Southwest region compared with the general US child population. The hospitalization rate was highest in both American Indian/Alaskan Native and US males aged <5 years.  | 136 | Dog bite characterization |
| <b>Shields et al., 2012 [47]</b>  | Dog bites: an opportunity for parent education in the pediatric emergency department.      | Randomized controlled trial | The majority of respondents who answered the exposure questions reported seeing stray dogs and having dangerous dogs in their neighborhood. Few respondents reported that their   | 901 | Education                 |

|                                   |   |                             |  |     |                           |
|-----------------------------------|---|-----------------------------|--|-----|---------------------------|
|                                   |   |                             | child had been bitten by a dog, but the majority reported having knowledge of another child having been bitten.  |     |                           |
| <b>Boat et al., 2012 [38]</b>     | Pediatric dog bite victims: a need for a continuum of care.   | Prospective cohort          | More than 70% of parents noted at least one new concern concerning behavior in their children, and more than 85% of parents also endorsed concerns about their own reactions. Half of parents believed that children, in general, might benefit from interventions to help with postbite fears and nearly three quarters felt that families would benefit from education regarding dog bite prevention.  | 34  | Psychosocial              |
| <b>Schwebel et al., 2012 [46]</b> | The Blue Dog: evaluation of an interactive software program to teach young children how to interact safely with dogs. | Randomized controlled trial | Children using Blue Dog had greater change in recognition of risky dog situations than children learning fire safety. No between-group differences emerged in recall (dollhouse) or engagement (live-dog) in risky behavior.   | 76  | Education                 |
| <b>Dixon et al., 2012 [42]</b>    | Dog bite prevention: an assessment of child knowledge.  | Cross-sectional             | 43% of children within the parent/guardian-child pairs failed the knowledge test. Older children had higher odds of passing the knowledge test, as did children with white parents vs those with nonwhite parents. More than 70% of children had never received dog bite prevention education.   | 300 | Education                 |
| <b>Wu et al., 2011 [24]</b>       | Primary repair of facial dog bite injuries in children.   | Retrospective chart review  | The mean age of patients was 6.8 years, and the majority were female. All facial injuries were primarily repaired at the time of presentation either in the emergency department, operating room, or outpatient setting. The mean age of patients repaired in the OR was significantly younger than those repaired in the ED.  | 87  | Dog bite characterization |
| <b>Reissner et al., 2011 [7]</b>  | Behavioural characteristics associated with dog bites to children presenting to an urban trauma centre.               | Prospective cohort          | More than half the patients were <7 years old and male. The majority of children knew the biting dog. Most bites to younger children occurred during positive interactions, initiated by the child, with stationary, familiar dogs, indoors. Most older bitten children had been active, unfamiliar with the dog and not interacting. Face bites predominated in the younger group (<7 years), and bites to extremities predominated in the older group. | 203 | Dog bite characterization |
| <b>Kaye et al., 2009 [22]</b>     | Pediatric dog bite injuries: a 5-year review of the experience at the Children's Hospital of Philadelphia.            | Retrospective chart review  | The majority of injuries were sustained by male children and most prevalent during the months of June and July. Grade school-aged children (6 to 12 years) constituted the majority of victims, followed by preschoolers (2 to 5 years), teenagers (13 to 18 years), and   | 551 | Dog bite characterization |

|                                   |  |                            |  |      |  |
|-----------------------------------|--|----------------------------|--|------|--|
|                                   |  |                            | infants (birth to 1 year). Injuries sustained by infants and preschoolers often involved the face whereas older children sustained injuries to the extremities.  |      |  |
| <b>Daniels et al., 2009 [21]</b>  | Analysis of nonfatal dog bites in children.  | Retrospective chart review | The majority of patients were treated and released from the emergency department. For children requiring inpatient admission, the median length of stay was 2 days. Victims were frequently male and <8 years old. 34% of all dog bite victims were <5 years old, and half of all children required hospitalization. 37% of all children admitted to the hospital were bitten by a family dog. The cost of direct medical care during the study was \$2.15 million.  | 1347 | Dog bite characterization                              |
| <b>Reisner et al., 2007 [19]</b>  | Behavioral assessment of child-directed canine aggression.   | Retrospective chart review | Children <6 years old or familiar with the dog were most commonly bitten in association with resource guarding, whereas older children or unfamiliar children were most commonly bitten in association with territory guarding. Behavioral screening of the dogs revealed resource guarding and discipline measures as the most common stimuli for aggression. Anxiety screens revealed abnormalities in 77% of dogs. 66% of dogs had never previously bitten a child. Most dogs were neutered, and a majority of owners had taken their dogs to obedience training. | 111  | Dog bite characterization                              |
| <b>Mello et al., 2007 [48]</b>    | Innovations in injury prevention education.  | Experimental study         | Most dog bite victims were male and bit on the head/neck, lower extremity, upper extremity, and trunk. Head/neck bites were the most common site of injury in children <5 years old. After students underwent a 4-5 week course focusing on dog interactions, videos, and lessons on dog safety, the results indicated a significant increase in dog bite prevention knowledge among participants when comparing pretest scores.   | 51   | Combination of dog bite characterization and education |
| <b>Mitchell et al., 2003 [20]</b> | Dog bites of the scalp, face, and neck in children.  | Retrospective chart review | The most commonly injured victim is a 5-year-old boy attacked by a familiar dog at home or in the local neighborhood. Children with the diagnosis of attention deficit hyperactivity disorder also appear to be at a higher risk.  | 44   | Dog bite characterization                              |
| <b>Bernardo et al., 2002 [39]</b> | A comparison of dog bite injuries in younger and older children treated in a pediatric emergency department. | Prospective cohort         | Children <6 years old constituted 53% of the sample. A higher proportion of younger children were bitten by their family dog and were bitten on the face in their own homes.   | 386  | Dog bite characterization                              |
| <b>Calkins et al., 2001 [8]</b>   | Life-threatening dog attacks: a devastating  | Retrospective chart review | The mean age of the population was 5.4 years. 71% of injuries  | 39   | Dog bite characterization                              |

|                                   |  |                             |  |      |                           |
|-----------------------------------|--|-----------------------------|--|------|---------------------------|
|                                   | combination of penetrating and blunt injuries.   |                             | occurred in the head/neck region, and 23% children sustained life-threatening injuries.  |      |                           |
| <b>Bernardo et al., 1998 [18]</b> | Dog bites in children admitted to Pennsylvania trauma centers.                         | Retrospective cohort        | Dog bites were found to constitute a very small proportion of the total pediatric admissions to Pennsylvania trauma centers; however, the findings were similar to other reported studies.   | 183  | Dog bite characterization |
| <b>Brogan et al., 1995 [17]</b>   | Severe dog bites in children.  | Retrospective chart review  | Most children were white males. The median age was 50 months. Most dogs were medium-sized or large breeds and were familiar to the victim. The average hospital stay was 6 days, and injuries to the face, head, and neck area were most common. Major surgical procedures included craniotomy, exploration of the neck or abdomen, ocular procedures, and repair of fractures.                  | 40   | Dog bite characterization |
| <b>Avner et al., 1991 [40]</b>    | Dog bites in urban children.   | Prospective cohort          | Most patient affected were male and occurred during the warmer months. The smallest number of dog bites occurred in the months of January and December. 6% of patients required hospitalization.   | 199  | Dog bite characterization |
| <b>Beck et al., 1985 [16]</b>     | Unreported dog bites in children.  | Retrospective cohort        | Dog bites were much more common than previously reported: 45% of children had been bitten during their lifetimes, and 15.5% had been bitten in 1980. The highest bite rate occurred in children 7-12 years old. Children were bitten more frequently by dogs owned by their neighbors, followed by family dogs, then by strays or unknown owners. Boys were bitten twice as frequently as girls. | 3200 | Dog bite characterization |
| <b>Boenning et al., 1983 [10]</b> | Dog bites in children: Epidemiology, microbiology, and penicillin prophylactic therapy | Randomized controlled trial | Patients with simple, nonfacial dog bites were randomized to an experimental arm (oral penicillin prophylaxis) and a controlled arm (local wound care). Overall, the infection rate was 3.6% with one patient in each group developing infection and suggesting that routine use of prophylactic antibiotics is not required in simple nonfacial dog bites.                                      | 55   | Dog bite characterization |
| <b>Lauer et al., 1982 [41]</b>    | Dog bites: A neglected problem in accident prevention.                                 | Prospective survey          | Of families surveyed, 20.2% of children had been bitten at least once, with most bites occurring in children <5 years old. Dogs were usually owned by a neighbor (40.2%) or victim's family (31%). Seventy-seven percent of parents felt that dog bite prevention should be discussed with a physician.  | 960  | Dog bite characterization |
| <b>Chun et al., 1982 [5]</b>      | Dog bites in children less than 4 years old.   | Retrospective cohort        | The mean age of the population was 8 years old and with males  | 168  | Dog bite characterization |

|  |  |  |   |  |  |
|--|--|--|---|--|--|
|  |  |  | outnumbering females. Most injuries occurred in or around the home and involved dogs known to the patient. More than 12 different purebreeds/crossbreeds were identified as perpetrators, including: German shepherds, pit bulls, rottweilers, and Dobermans. Most animals were contained at the time of injury. Almost half were provoked prior to biting. |  |  |
|--|--|--|---|--|--|

OR = operating room, ED = emergency department