

Dog Bite Related Injuries in Virginia, 2007

Dear Injury Prevention Advocate,

The 2007-2008 National Pet Owners Survey estimates that there are 44.8 million households in the United States with a dog¹. I happen to contribute to these statistics as the proud owner of three dogs. As a dog owner, my dogs bring me a tremendous amount of joy and love and are considered part of my family. The *US Pet Ownership and Demographic Sourcebook* states that this is a fairly common perception as nearly half of all pet owners in 2006 considered their pets to be family members². Retailers further this mindset by making outfits, dog strollers and carriers, daycare and other such things available to dog owners. Despite the apparent desire to make dogs and other pets seem human, society must remember that these animals are animals. They can not verbalize emotions such as fear, anxiety or pain. They can not be reasoned with. There will be situations in which there is the possibility that they will react in the manner that is innate to them with a bite.

Dog bites can be traumatizing events that leave lasting reminders in the form of physical trauma and psychological trauma, disease, and or death. The available data indicates that children are most often the victims of dog bite injuries. Children are often unable to protect themselves as they are smaller and closer to a dog's mouth, do not react as quickly as adults and are not as aware of potentially dangerous situations.

The analysis of Emergency Department chief complaint data revealed that the impact of dog bite injuries is greater than was initially identified by Virginia hospital discharge and death data. However, as with most unintentional injuries, dog bite injuries can be prevented with changes to behavior of dog owners, children, parents and anyone who comes in contact with a dog.

This report and previous reports are available for download at www.vahealth.org/civp.

Thank you for your efforts in preventing injuries in your community.

Sincerely,



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Director, Unintentional Injury Prevention



Christina Sloan, MPH
Data and Evaluation Coordinator

Introduction

An estimated 4.7 million people are bitten by dogs each year; 80% of people are bitten by canines they know and interact with regularly³.

It is estimated that every year 800,000 people seek medical attention for a dog bite in the United States. 368,000 people are treated in U.S. emergency rooms for nonfatal dog bite-related injuries and approximately 12 die. Many bites go unreported and untreated⁴.

About half of the people seeking medical treatment for dog bite injuries are children. The injury rate is highest among children 5-9 years old. The majority of injuries to children 4 and under are to the head and neck region⁵.

This report will examine the burden of dog bite injuries in the state of Virginia. Emergency Department (ED) and Urgent Care Center chief complaint data collected by the Virginia Department of Health (VDH) in 2007 and Virginia hospital discharge and death data from 2002—2006 were analyzed.

It is important to note that ED/Urgent Care submission of chief complaint data to VDH is done on a voluntary basis. Currently, not all EDs/Urgent Care Centers in Virginia submit this information to the state health department. By the end of 2007, 49 EDs and 28 Urgent Care Centers in the state submitted data. Records were included in analysis only if the chief complaint narrative indicated a dog bite had occurred. As a result, the data presented in this report is an underestimate of the actual number of Virginians seen in EDs for dog bite injuries and should be interpreted with caution.

Hospital discharge data was coded using ICD-9-CM E-codes. The validity and reliability of the data relies on coding accuracy. A hospital discharge was included for analysis only if the case had an ICD-9-CD injury related code and a valid E-code for dog bite (E9060).

Rates for ED data were calculated using 2007 population estimates from the U.S. Census Bureau and are per

100,000. All hospital discharge rates were calculated using population data from the national Center for Health Statistics and are per 100,000 population.

Case Briefs

Case One:

While an 11 year old was riding his bike to the local pool he was attacked by two dogs. As he passed a house with the dogs in a containment pen they got out and chased him down the street. He tried to fight them off but received bites to both legs and thighs.

Case Two:

Animal Control Officer responded to a reported dog bite. He arrived at the scene to find the victim bleeding from what appeared to be a dog bite to his hand. The victim reported that he was walking down the sidewalk when a large German Shepherd dog leapt over the fence and attacked him without provocation. The officer observed that the dog was in a fenced yard and the dog did not appear to be able to jump over the fence. The officer also observed numerous “Beware of Dog” signs placed around the yard.

When interviewed by the officer, the property owner admitted that his dog bit the complainant. He explained that the complainant routinely teased the dog by shaking the fence, throwing rocks into the yard, and placing his hand through the fence and waving at the dog. He stated that on this day the complainant was again teasing the dog by putting his hand through the fence, but the dog had reacted quicker than the victim and succeeded in biting the victim’s hand. The victim was treated at the local emergency room and released.

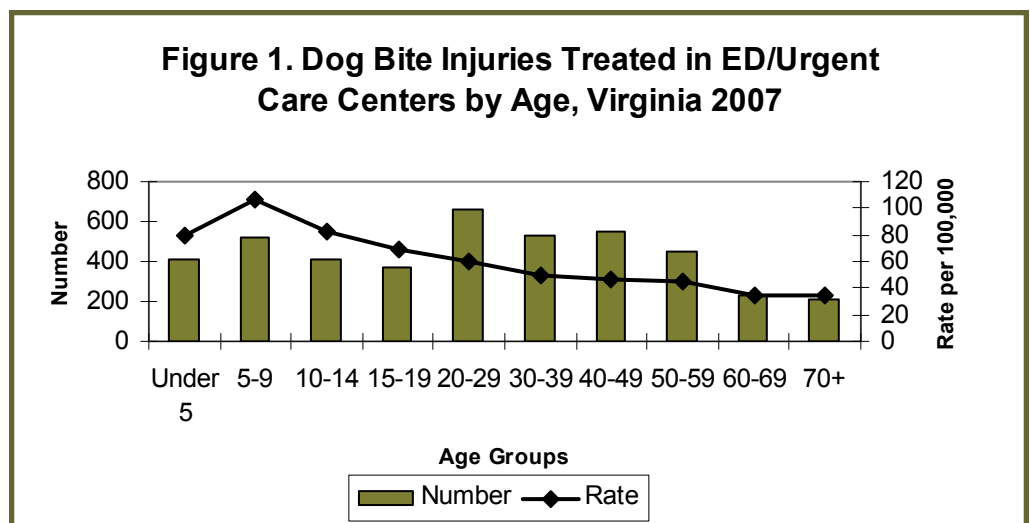
Emergency Department/Urgent Care

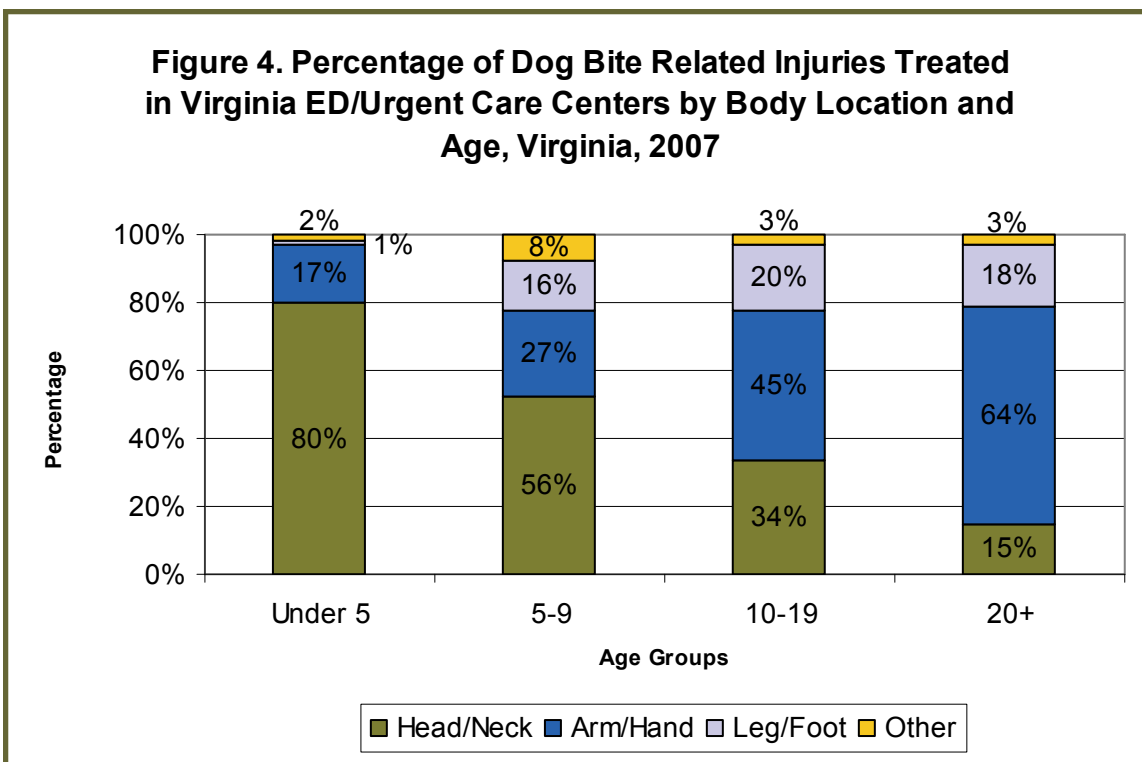
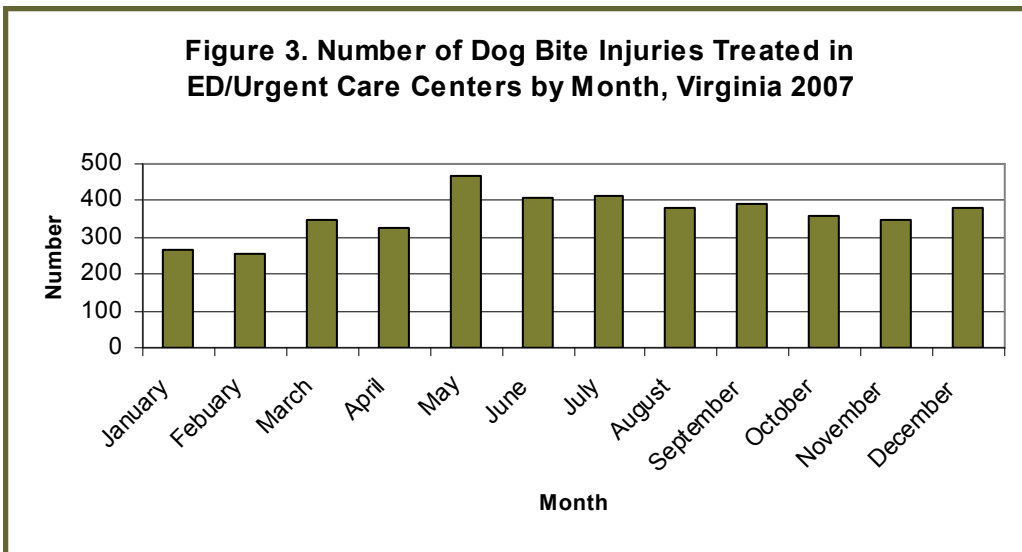
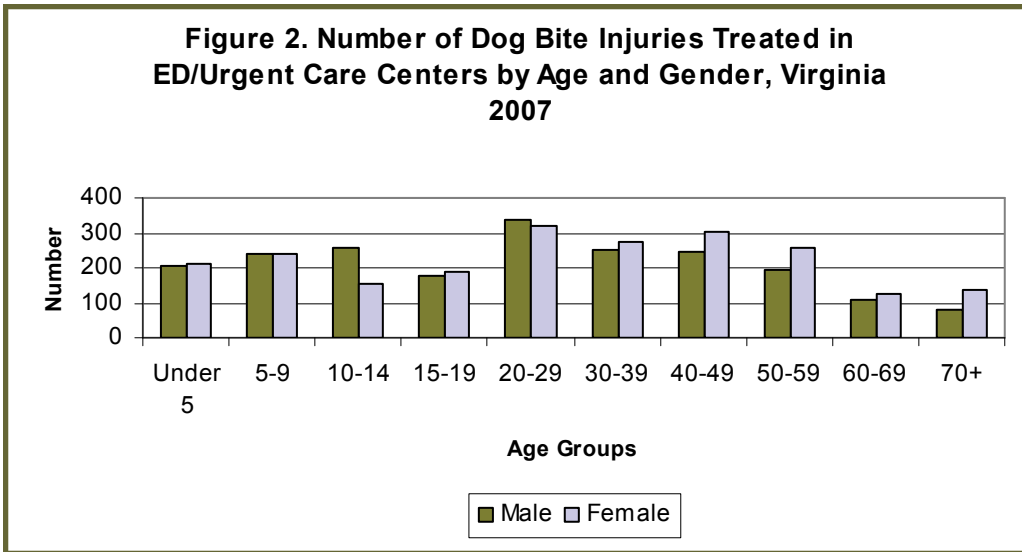
In 2007, an estimated 4,346 dog bite related injuries were seen in emergency departments and urgent care centers across the state. The number of dog bite cases was highest during May, accounting for 11% of all injuries.

Overall, there was little difference between male and female injuries, with females accounting for 51% of all injuries. Among children 14 and under, the rate of dog bite injuries was higher for boys (90.87 per 100,000) than girls (81.25 per 100,000). For those 15 and older, the rate was higher among females (50.43 per 100,000) than males (46.17 per 100,000).

Dog bite injury rates were highest among children 5-9 and then decreased with increasing age of the victim (see Figure 1). Of the estimated 4,346 dog bite injuries treated in ED’s, 1,346 (31%) occurred to children 14 and under.

Forty-three percent of dog bite related injury records indicated where on the body the injury occurred. Overall, 52% of injuries occurred to the arm and hand region of the body. A majority of injuries among children 4 and under (78%) and children 5-9 (55%) were to the head, neck, and face region. Injuries to the extremities occurred most often among individuals 10 and over (60%).



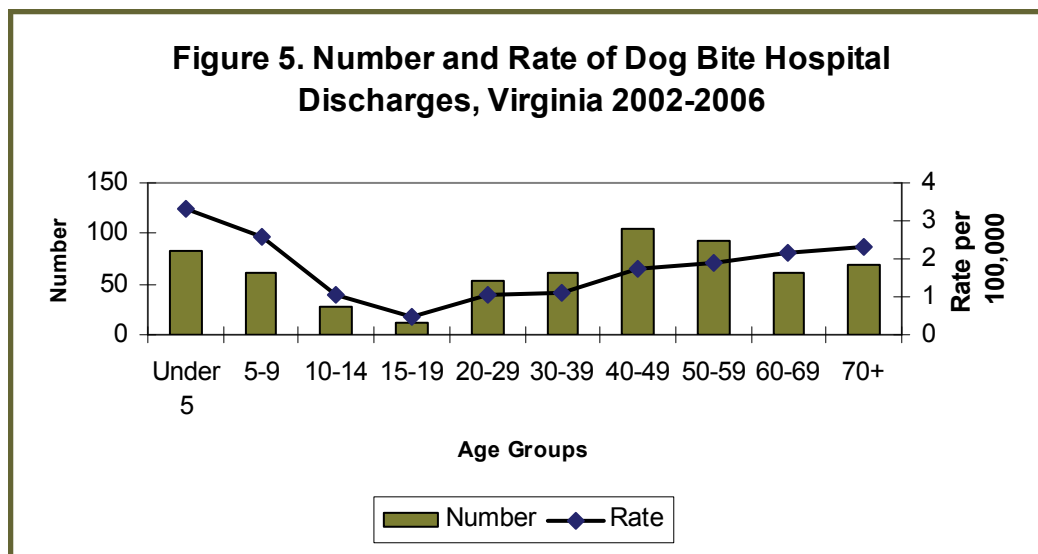


Dog Bite Hospitalizations and Deaths

Each year, on average, 125 Virginians are hospitalized for a dog bite related injury. From 2002 to 2006 there were 628 dog bite related hospitalizations in Virginia and three deaths. Among hospital discharges, 27% (n=172) were children 14 and under and 50% were males. As seen in Figure 5, children nine and under had higher rates of dog bite related hospital discharges than any other age group.

Over half (52%) of the injuries to youth 14 and under occurred in the head, neck, face region of the body. Among those 15 and older, 89% of dog bite injuries occurred to the upper and lower extremities. Overall, 80% of the dog bite injuries resulted in open wounds and 12% resulted in fractures.

The average length of stay for dog bite hospitalization was three days. These hospitalizations resulted in charges of more than 5.9 million, with a median charge of \$6,468.50 per episode of care.



Conclusion/Limitations

The data presented in this report indicates that the impact of dog bite injuries in Virginia mirrors that seen at the national level (5-9 year olds experience the highest rate of injury and that the majority of injuries among children occur to the head neck and face while injuries to adults occur to the hands and extremities). However the Emergency Department and Urgent Care Center data presented in this report is an underestimate. There were a number of limitations with the ED/Urgent Care chief complaint data used:

- Not all ED/Urgent Care Centers in Virginia submit data to the state health department. Participating ED/Urgent Care Centers did not necessarily submit data for the entire 12 month reporting period of 2007.
- External cause of injury codes (e-codes) are not used in this system. A record was included only if the narrative indicated a dog bite had occurred.

Despite these limitations, the ED/Urgent Care Center data revealed that the impact of dog bite injuries was far greater than was initially identified by hospital discharge and death data. This report showcases a clear need for a more comprehensive surveillance system that would include Emergency Department and Urgent Care Center data.

A WORD ABOUT RABIES...

Although rabies is uncommon in dogs in the United States, it is one of the first things that comes to mind after a dog bite.

Rabies is a deadly disease caused by a virus that attacks the nervous system. It kills almost any mammal or human that gets sick from it. The rabies virus is found in the saliva and brain tissue of rabid animals. The virus can be transmitted through a bite or by getting infected saliva or brain tissue into an open wound; rarely by getting virus into a mucus membrane like the eye or mouth. The rabies virus cannot cause an infection through intact skin.

Cats, dogs, ferrets, and some livestock can be protected from the rabies virus by staying up to date on their rabies vaccinations.

If an animal bite occurs, wash the wound thoroughly with soap and lots of water and then seek medical attention immediately. Report the bite to the local health department and your local animal control office. These agencies will help determine if you may have been potentially exposed to the rabies virus and will coordinate follow up on the animal. Even if a dog, cat or ferret is up to date on its rabies vaccinations, these animals will be observed for ten days following the bite to insure that they were not shedding the rabies virus when the bite occurred.

As a result of improved rabies vaccination programs for pets and better treatment for people who are bitten, rabies cases among humans in Virginia, and the United States, are extremely rare.

The best way to prevent the spread of rabies to humans is by keeping pets properly vaccinated and enjoying wildlife from a distance.

Tips to prevent pets from getting rabies:

The best way to prevent rabies is to make sure your pets get and stay vaccinated. The following tips can also help prevent rabies in your pets:

- Walk your dog on a leash. Never let them roam freely where wildlife may be present.
- Consider keeping your pets indoors.
- Call animal control to take wild or stray animals away, especially if you see an animal acting strangely.
- If an animal bites your pet, handle your pet carefully so you do not get bitten. Get a rabies booster vaccination for them. Even if they have had the rabies vaccination, a booster shot will help them fight off the disease better.
- Get your pets spayed or neutered. Pets that are fixed are less likely to leave home, become strays, and make more stray animals.
- Make sure your pet gets and wears their rabies vaccination tags. They should also wear a tag with their name and your address and phone number.
- Keep them in a fenced yard or on a leash.

For more information on rabies contact your local health department or visit the following website, www.vdh.virginia.gov/epi/rabies.asp.⁶

Virginia Dangerous Dog Registry

The Dangerous Dog Registry provides a mechanism for consumers to determine if dangerous dogs reside in their neighborhoods and for local animal control officials to post information about dogs that have been declared dangerous by the local court. Consumers can visit the Virginia Department of Agriculture and Consumer Services' Web site at www.vdacs.virginia.gov/animals/dogs.shtml to access the registry.

PREVENTION TIPS

Regardless of the size or breed, any dog can bite if provoked. Responsible pet ownership and knowing how to behave when approached by a dog will reduce the likelihood of being bitten by a dog. The Centers for Disease Control and Prevention recommend the following⁷:

Teach children basic safety around dogs and review the following regularly:

- Do not approach an unfamiliar dog.
- Don't run past a dog and don't ride or skate close to a dog on your bike or rollerblades; dogs naturally love to chase and catch things. Don't give them a reason to become excited or aggressive. Remain motionless (e.g., "be still like a tree") when approached by an unfamiliar dog.
- If you are threatened by a dog, remain calm. Don't scream. If you say anything, speak calmly and firmly. Avoid eye contact. Try to stay still until the dog leaves, or back away slowly until the dog is out of sight. Don't turn and run.
- If knocked over by a dog, roll into a ball and lie still (e.g., "be still like a log").
- Always ask an owner if you can pet the owner's dog before doing so. Do not play with a dog unless supervised by an adult.
- Immediately report stray dogs or dogs displaying unusual behavior to an adult.
- Avoid direct eye contact with a dog.
- Do not disturb a dog that is sleeping, eating, or caring for puppies.
- Do not pet a dog without allowing it to see and sniff you first.
- If bitten, immediately report the bite to an adult.

Things to consider before you get a dog:

- Consult with a professional (e.g., veterinarian, animal behaviorist, or responsible breeder) to learn about suitable breeds of dogs for your household.
- Dogs with histories of aggression are inappropriate in households with children.
- Spay/neuter all dogs (this frequently reduces aggressive tendencies).
- Never leave infants or young children alone with any dog.
- Do not play aggressive games with your dog (e.g., wrestling or tug-of-war).
- Properly socialize and train any dog entering the household.

What to do if Bitten:

If you or your child has been bitten, wash the wound thoroughly with soap and lots of water and then seek medical attention immediately. If possible, have information about the dog and its whereabouts so that you can share this with local authorities. Report the bite to the local health department or your local animal control office.

What to do if my dog bites someone:

The American Veterinary Medical Association recommends the following if your dog bites someone⁸:

- Restrain the dog immediately. Separate it from the scene of the attack. Confine it.
- Check the victim's condition. Wash wounds with soap and water. Professional medical advice should be sought to evaluate the risk of rabies or other infections. Call 911 if paramedic response is required.
- Provide important information including your name, address and information about your dog's most recent rabies vaccination. If your dog does not have a current rabies vaccination, it may be necessary to quarantine it or even euthanize it for rabies testing. The person bitten may need to undergo rabies treatment.
- Comply with local ordinances regarding the reporting of dog bites.
- Consult your veterinarian for advice about dog behavior that will help prevent similar problems in the future.

BEST PRACTICES IN INJURY PREVENTION

Research tells us that injuries are preventable by changing the environment, individual behavior, products, social norms, legislation and governmental and institutional policies to reduce or eliminate risks and increase protective factors. In addition to following safety tips that can reduce risk of injury, there are some best practices in injury prevention that have been identified based on the best available evidence. The Virginia Department of Health, Division of Injury and Violence Prevention supports best or promising practice local community-based injury prevention projects every year. Some of these projects are listed on the Division's Web page www.vahealth.org/civp/community/index.asp. These projects are highlighted because of their successful strategies in reducing risky behavior in their communities, developing working partnerships with other community leaders, and finding low-cost means to reduce preventable injuries.

When considering implementing a prevention program in your community, research best practice or promising practice programs that have been tested for effectiveness. Below is a list of useful sources for injury prevention research from Safe Kids Canada⁵:

1. Harborview Injury Prevention and Research Center Best Practices Overview

<http://depts.washington.edu/hiprc/practices/index.html>

This project include reviews of studies that have been evaluated using some type of comparison group and measure specific outcomes using injury indicators like deaths, hospitalizations and or observed behavior change. Studies that measure changes in attitudes, beliefs, self-reported, behaviors or knowledge are excluded from the review.

2. The Cochrane Library Reviews (109 reviews on injuries)

http://www.mrw.interscience.wiley.com/cochrane/cochrane_clsystrev_subjects_fs.html

The Cochrane Library is a collection of databases and systematic reviews that contain high-quality, independent evidence that can inform healthcare decision-making.

3. EuroSafe - Child Safety Good Practice Guide <http://www.eurosafe.eu.com/csi/eurosafe2006.nsf/wwwVwContent/l4goodpracticeguide.htm?OpenDocument>

The guide provides injury stakeholders with evidence-based strategy options that address child injury within the areas of education, environment and enforcement. It also has selection of case studies that illustrate programs in Europe that have applied these strategies and lessons learned for their application.

4. The Injury Prevention Journal

<http://ip.bmj.com/>

This is an international journal dedicated to injury prevention and includes peer-reviewed articles that focus on injury for all ages. Furthermore, Injury Prevention regularly includes a 'News and Note' section and many other special features: program reports, guest editorials, commentaries, fillers, book reviews, and letters.

5. CDC's National Center for Injury Prevention and Control

<http://www.cdc.gov/ncipc/pub-res/pubs.htm>

The CDC's National Center for Injury Prevention and Control is the lead National agency in the United States for injury prevention. This Center monitors trends in injury in the United States, conducts research and evaluates prevention programs in collaboration with national, state, and local organizations; state and local health departments; and research institutions.

6. SafetyLit

<http://www.safetylit.org/>

SafetyLit is an injury research weekly update service that provides abstracts of English language research articles and reports on injury prevention from a variety of disciplines that are relevant to preventing unintentional injuries, violence, and self-harm. *SafetyLit* service scans 2600 scholarly international journals, conference proceedings, government and agency reports.

7. Society for Public Health Education (SOPHE)

<http://www.sophe.org/>

SOPHE is an independent, international, professional association made up of a diverse membership of health education professionals and students. The society promotes healthy behaviors, healthy communities, and healthy environments through its membership, its network of local chapters, and its numerous partnerships with other organizations. With its primary focus on public health education, SOPHE provides leadership through a code of ethics, standard for professional preparation, research, and practice; professional development; and public outreach.

Please note that most of the above listed sources provide information in English only.

RESOURCES

- ◆ Division of Injury and Violence Prevention, Virginia Department of Health
www.vahealth.org/civp/
- ◆ Division of Environmental Epidemiology, Virginia Department of Health
www.vdh.state.va.us/epidemiology/DEE/
- ◆ Dangerous Dog Registry, Virginia Department of Agriculture and Consumer Services
<http://www.vdacs.virginia.gov/animals/dogs.shtml>
- ◆ Center for Disease Control and Prevention, National Center for Injury Prevention and Control
www.cdc.gov/ncipc/duip/biteprevention.htm
- ◆ American Veterinary Medical Association
www.avma.org/onlnews/javma/jul06/060701i.asp
- ◆ American Academy of Pediatrics
www.aap.org/advocacy/releases/dogbitetips.cfm
- ◆ United States Postal Service
www.usps.com/communications/community/dogbite.htm
- ◆ Prevent The Bite
www.preventthebite.com
- ◆ Doggone Safe
www.doggonesafe.com
- ◆ Safe Kids USA
www.usa.safekids.org
- ◆ National Safety Council
www.nsc.org

REFERENCES

1. National Pet Owner's Survey. American Pet Products Manufacturers Association, Inc.
http://www.appma.org/press_industrytrends.asp
2. U.S. Pet Ownership & Demographics Sourcebook. American Veterinary Medical Association.
<http://www.avma.org/reference/marketstats/sourcebook.asp>
3. Stay Dog Bite Free. The Humane Society of the United States.
http://www.hsus.org/pets/pet_care/dog_care/stay_dog_bite_free/
4. National Dog Bite Prevention Week. Centers for Disease Control and Prevention.
<http://www.cdc.gov/ncipc/duip/biteprevention.htm>
5. CDC, MMWR Report: Nonfatal Dog Bite--Related Injuries Treated in Hospital Emergency Departments --- United States, 2001, <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5226a1.htm>
6. Division of Zoonotic and Environmental Epidemiology. Virginia Department of Health.
www.vdh.state.va.us/epidemiology/DEE/
7. National Dog Bite Prevention Week. Centers for Disease Control and Prevention.
<http://www.cdc.gov/ncipc/duip/biteprevention.htm>
8. What you should know about dog bite prevention. American Veterinary Medical Association.
http://www.avma.org/animal_health/brochures/dog_bite/dog_bite_brochure.asp

The Virginia Injury Update has been prepared by the Division of Injury and Violence Prevention, Virginia Department of Health with assistance from the Office of the Chief Medical Examiner, Virginia Department of Health.

For more information, or to obtain additional copies, contact:

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For more information on Emergency Department (ED) and Urgent Care Center chief complaint data collected by the Virginia Department of Health, contact:

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Division of Injury And Violence Prevention Materials Request Form

REQUESTER'S INFORMATION

(VIRGINIA RESIDENTS ONLY)

SEND COMPLETED FORM TO

Attention To (Please Print)

Company Name

Street Address: (NO PO Box)

City _____ State **VA** Zip _____

Phone# _____ Fax# _____ Special Instructions or Due Date _____

E-Mail address _____

MATERIAL REQUEST

Record the quantity desired for each item in the space provided. Please note that all materials are available to Virginia residents **without charge**. As noted, a few of the items are available in limited quantities only.

TIP CARDS

The following tip cards are printed with English text on one side and Spanish on the other.

Description	Qty.
Bicycle & Skate Safety	_____
Pedestrian & School Bus Safety	_____
Child Passenger Safety	_____
Playground Safety	_____
Sweet Dreams, Safe Sleep for Babies	_____
Choking & Strangulation Prevention for Infants/Toddlers	_____
Drowning Prevention	_____
Home Fire Safety	_____
Fire & Fall Prevention for Older Adults	_____
Fall Prevention for Children	_____
Inhalant Abuse Prevention	_____
Gun Safety	_____
Youth Suicide Prevention	_____
Rape & Sexual Assault Prevention	_____
Teen Dating Violence Prevention (tips for parents)	_____
Domestic Violence Prevention	_____
Poisoning Prevention for Children	_____
Poisoning Prevention for Older Adults	_____
Dog Bite Prevention for Children	_____

POSTERS

Description	Qty.
Welcome Safety into Your Home (poster)	_____
Safe On the Road, At Home & At Play (poster)	_____

FLIERS

Description	Qty.
Welcome Safety into Your Home	English _____
Welcome Safety into Your Home	Spanish _____

VIDEOS

Description	limit 1
Pirate Pete's Playground Safety (Targets children ages 5-9)	DVD _____ VHS _____
Ride Smart, It's Time to Start: Bike Safety	DVD _____ VHS _____
Bike Safety, Bike Smart	DVD _____ VHS _____
Talk to Me: Talking to your teen about dating violence and sexual assault	VHS _____

ADDITIONAL FREE RESOURCES AND HOTLINES

Stop It Now!® Prevent Child Sexual Abuse 1-888-PREVENT www.stopitnow.org

Virginia Child Abuse and Neglect Hotline: 1-800-552-7096 (voice/TTY) www.preventchildabuseva.org

Virginia Family Violence and Sexual Assault Hotline: 1-800-838-8238 (V/TTY)

National Poison Help Line: 1-800-222-1222 (For poison emergencies)

National Suicide Prevention Lifeline: 1-800-273-TALK, www.suicidpreventionlifeline.org

National Highway Traffic Safety Administration (NHTSA): www.nhtsa.gov (Free transportation and bike safety materials)

VA Department of Transportation- Bicycle Safety: <http://virginiadot.org/infoservice/bk-orderinfo.asp> (Free bike safety brochures and reflectors)

VA Department of Fire Programs- VDFP Kids: www.vdfp.state.va.us/kidscampaign.htm (Free downloadable activities and lesson plans)

U.S. Consumer Product Safety Commision (CPSC): www.cpsc.gov (Free injury prevention brochures)

Window Covering Safety Council: www.windowcoverings.org (Free window safety information and free cord-repair kits)

Health Smart Virginia: <http://www.healthsmartva.org> (Resources for VA educators to support the Health Education SOL)

PoisonPrevention.org: www.poisonprevention.org (Free brochures, posters and downloads)

You may access our web site at www.vahealth.org/civp for additional injury and violence prevention information and resources. The above tip cards and some of our past brochures can be downloaded from our web site.