A community approach to dog bite prevention

American Veterinary Medical Association
Task Force on Canine Aggression and Human-Canine Interactions

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Introduction and Problem Statement

Dog bites are a serious public health problem that inflicts considerable physical and emotional damage on victims and incurs immeasurable hidden costs to communities. Bites have been tolerated as a job-related hazard for utility and postal workers, but for many communities the problem may be more encompassing. Following a severe attack, there is usually an outcry to do something, and the something that is done often reflects a knee-jerk response. Only later do officials realize that the response was not effective and, in fact, may have been divisive for the community. To assist communities in avoiding such ineffective responses, the AVMA convened a Task Force on Canine Aggression and Human-Canine Interactions. Although the number of injuries will never be reduced to zero, Task Force members believe a well-planned proactive community approach can make a substantial impact. The information contained in this report is intended to help leaders find effective ways to address their community's dog bite concerns.[a]

Scope of the problem

Dogs have shared their lives with humans for more than 12,000 years,[1] and that coexistence has contributed substantially to humans' quality of life. In the United States, there are slightly more than 53 million dogs sharing the human-canine bond,[2,3] more dogs per capita than in any other country in the world.[1] Unfortunately, a few dogs do not live up to their image as mankind's best friend, and an estimated 4.5 million people are bitten each year,[4,5] although the actual number injured is unknown.[6] Approximately 334,000 people are admitted to US emergency departments annually with dog bite-associated injuries, and another 466,000 are seen in other medical settings.[6] An unknown number of other people who have been bitten do not sustain injuries deemed serious enough to require medical attention. Still another group of individuals is not represented by these data, those that incur injuries secondary to a bite or attempted bite. For example, a jogger may trip and break an arm while fleeing from a threatening dog.

Of concern too are the demographics of typical dog bite victims. Almost half are children younger than 12 years old.[6-8] People more than 70 years old comprise 10% of those bitten and 20% of those killed.[9,10]

Direct costs of dog bite injuries are high. The insurance industry estimates it pays more than $1 billion/y in homeowners' liability claims resulting from dog bites.[11] Hospital expenses for dog bite-related emergency visits are estimated at $102.4 million.[6] There are also medical insurance claims, workmen's compensation claims, lost wages, and sick leave-associated business costs that have not been calculated.

Which dogs bite?

An often-asked question is what breed or breeds of dogs are most "dangerous"? This inquiry can be prompted by a serious attack by a specific dog, or it may be the result of media-driven portrayals of a specific breed as "dangerous."[12,13] Although this is a common concern, singling out 1 or 2 breeds for control can result in a false sense of accomplishment.[14] Doing so ignores the true scope of the problem and will not result in a responsible approach to protecting a community's citizens.

Dog bite statistics are not really statistics, and they do not give an accurate picture of dogs that bite.[7] Invariably the numbers will show that dogs from popular large breeds are a problem. This should be expected, because big dogs can physically do more damage if they do bite, and any popular breed has more individuals that could bite. Dogs from small breeds also bite and are capable of causing severe injury. There are several reasons why it is not possible to calculate a bite rate for a breed or to compare rates between breeds. First, the breed of the biting dog may not be accurately recorded, and mixed-breed dogs are commonly described as if they were purebreds. Second, the actual number of bites that occur in a community is not known, especially if they did not result in serious injury. Third, the number of dogs of a particular breed or combination of breeds in a community is not known, because it is rare for all dogs in a community to be licensed, and existing licensing data is then incomplete.[7] Breed data likely vary between communities, states, or regions, and can even vary between neighborhoods within a community.

Wolf hybrids are just that: hybrids between wild and domestic canids. Their behavior is unpredictable because of this hybridization, and they are usually treated as wild animals by local or state statutes. Wolf hybrids are not addressed by this program.

Sex differences do emerge from data on various types of aggression. Intact (unneutered) male dogs represented 80% of dogs presented to veterinary behaviorists for dominance aggression, the most commonly diagnosed type of aggression.[1] Intact males are also involved in 70 to 76% of reported dog bite incidents.[7,15] The sex distribution of dogs inflicting unreported bites is not known. Unspayed females that are not part of a carefully planned breeding program may attract free-roaming males, which increases bite risk to people through increased exposure to unfamiliar dogs. Dams are protective of their puppies and may bite those who try to handle the young. Unspayed females may also contribute to the population of unwanted dogs that are often acquired by people who do not understand the long-term commitment they have undertaken, that are surrendered to animal shelters where many are destroyed, or that are turned loose under the misconception that they can successfully fend for themselves.[16]

Dog bite costs to a community

Costs associated with dog bite injuries cannot be readily measured, because so many intangible quality of life issues are involved. This makes it more difficult for community councils to justify the time, effort, and expense necessary to institute a bite reduction program when compared to a new fire truck, street paving, or city park. Intangible costs include time spent by volunteer and paid community officials on animal-related issues, deterioration of relationships between neighbors, building appropriate medical support, citizens' concerns about neighborhood safety for children,

homeowners' insurance costs within the community, and animal shelter support for unwanted pets. These are quality of life issues that ultimately determine the desirability of a community to its citizens and that can motivate proactive community officials to institute a prevention program.

This program

Reducing the incidence of dog bites requires active community involvement; passive attention or a token commitment is not sufficient. By actively focusing on dog bite prevention, the State of Nevada was able to reduce the incidence of bites by approximately 15%.[b] Members of the Task Force represented a broad range of disciplines and designed the program presented here. It was recognized that the community approach must be multidisciplinary and that different communities will have different needs based on their level of commitment, preexisting programs, and available resources. Although the best results will be obtained by adopting the entire prevention program, the program is designed so that it may be adopted as a whole or in part. Either way, the goal remains to reduce the incidence of dog bites within communities and improve quality of life for their citizens.

Multidisciplinary and Multiprofessional Groups

It is unlikely that a dog bite prevention program will begin in a complete vacuum. Typically, some formal program is already in place under the auspices of animal control, the health department, or local law enforcement. Efforts may also be under way by other groups such as educators or dog breeders. It makes sense to identify related activities to determine what needs are not being met, find likely sources of support or resistance, and avoid duplication of effort and potential turf battles (**Appendix 1**).[c]

Identify dog bite issues in the community

Each community has a unique set of dog bite-related problems and its own approaches to confronting them. A central task is to identify these particular issues. The project begins by assessing the political landscape regarding dog bites and dog bite prevention. Before launching a program, it is useful to pinpoint the degree of current and potential support among corporate and community leaders as well as legislators and senior staff in the dog bite prevention program's sponsoring agency.

Recognize hot buttons—Crafting a program is easier if the objectives mesh with a highly visible community issue. For example, there may be public outcry about dog waste or a publicized dog attack. Such a situation may provide impetus for a campaign to support licensing and leash laws or ordinances pertaining to reporting dog bites. When community groups and the media have already invested in finding a solution to the dog bite problem, program organizers can dovetail their efforts and work collaboratively with these groups.

Community interest—Knowing the degree of support that exists for a prevention program is important. The prior existence of a program suggests support, but this may not always be the case. The active support of a commissioner or health department head (local or state) is critical, because without his/her backing, a fledgling dog bite prevention program is vulnerable to shifting funding initiatives and political pressure. Public officials are influenced by vocal well-organized constituencies, so it is important to know what dog bite-related agendas are getting politicians' attention. It also helps to know whether any legislators have a strong interest in the dog bite issue.

Dogs in the news—News accounts can provide clues as to how dog-related issues have played out over time. Compare these accounts with available statistical data and scientific assessments for reliability.

Identify potential partners, allies, support, and funding sources

Determine which organizations in the community are likely to support program efforts or resist them. Some individuals and organizations will emerge as natural allies; some old hands will be glad to work with a new partner in the dog bite prevention field, and some will actively welcome a new focal point for dog bite prevention activity. Learning about various entities and their interest and involvement in dog bite control can help answer questions in the following areas.

Community resources—Organizations, agencies, businesses, and individuals offering training, assistance, consulting, library or computer search capabilities, in-kind contributions, volunteer help, or supplemental funding must be identified.

Currently available data—Before launching a major effort to collect dog bite data, it is wise to determine whether an assessment has already been done. Ask about reports related to injuries and costs from dog bites, surveys that include dog bite or dog ownership information, opinion surveys or other studies describing community perceptions about the need for dog bite prevention, and similar information. If possible, find out what happened to existing assessments and related recommendations. Knowing the history of previous evaluation and prevention efforts will help in development of a new program. If an assessment has been done, determine whether methods and conclusions are sound.

Legislation—It is important to know what interventions (eg, leash laws, "dangerous" dog ordinances) have been previously introduced and their history of success. Individuals involved in these efforts may be valuable allies in new programs. In addition, current ordinances should be evaluated to determine whether enforcement or revision could increase their effectiveness.

Barriers—Ownership of particular dog bite issues and potential turf battles should be confronted realistically. In addition, it must be acknowledged that a dog bite prevention program may attract opposition from groups on philosophical grounds (eg, groups that strongly support personal freedom argue that the gov-

ernment should not mandate licensing of dogs). Clubs for specific breeds may not be supportive if they fear their breed will be singled out in a negative way. Barriers can be overcome by a fresh approach to old problems or by agreeing to carve out areas of responsibility among interested groups. Typically, there are many more problems than there are organizations to tackle them, so it makes sense to avoid attacking similar issues.

Develop an advisory council

Obtaining community input can be as sophisticated as conducting public opinion surveys or holding focus groups to learn about what the community sees as pressing dog bite issues. More likely, there will be limited funds at the outset of the program, so more informal but also potentially valuable approaches may be required. These include meetings with potential partners and interested groups to learn about their constituencies' concerns. This type of informal interview can be a great help in uncovering key dog-related issues as perceived by the community. Talking with people in neighborhoods most affected by dog bite problems is important. For example, if there is a problem with dog bites in low-income neighborhoods, obtaining the views of people living there can help identify the nature of the problem and potential solutions.

An advisory council or task force that represents a wide spectrum of community concerns and perspectives creates a source of support for program initiatives. Advisory groups provide guidance for a dog bite prevention program and may focus on specific high-priority dog bite issues. Although organizing and maintaining an advisory council is labor-intensive, it can substantially benefit the program. Members may be able to provide access to useful information that is not otherwise easy for the coordinator to obtain. Members can also identify ways in which the program can work with appropriate voluntary organizations and associations. People with experience in dog bite control can offer perspective about the program and help identify potential pitfalls as well as successful strategies. Participation by members representing community organizations builds a sense of ownership in the dog bite prevention program.

Logistics in starting an advisory council include identifying organizations and individuals that should participate (Appendix 1), determining the size of the council, establishing a structure and operating procedures for the council and its regular meetings, assigning staff support, determining the relationship between the staff and the council, and reaching an agreement about key tasks. When community members and government officials work together to support the creation and development of a local task force, it enhances the group's visibility and impact.

To foster an involved and active advisory council, professionals agree that several criteria must be met. The number of participants should be kept manageable; 10 to 12 is a size that works well. If it is necessary to have more members for political reasons, breaking the group into smaller committees or working groups will improve the dynamics. For example, groups could coalesce around data issues, legislation and policy, and so on. Involving participants from the start in meaningful tasks will underscore that this is a productive group. In addition, people are more likely to support a program they participated in creating, because they have a sense of ownership.

Because each community's needs and priorities differ, the advisory council's major tasks will vary. The advisory council or one of its working groups may consider the following activities:

- coordinating efforts among participating organizations
- developing an action plan
- establishing dog bite prevention priorities
- generating public and legislative support for dog bite control
- identifying dog bite reporting sources
- interpreting data
- identifying and obtaining resources for program activities (educational, financial, staffing)
- providing technical expertise for the program
- recommending goals and objectives for prevention

It is recommended that the program be overseen by a paid coordinator. The program coordinator and other staff involved can contribute to the advisory council's success by good meeting planning and preparation, regular communication with members, working with the advisory council chairperson to set the agenda, and helping to solve problems that threaten to derail the process. As with any volunteer effort, a dog bite prevention advisory council is likely to thrive if the coordinator nurtures its members with regular expressions of appreciation.

Infrastructure

A coordinated effort is essential for success in any venture, and each individual or organization involved must have a clear sense of their/its responsibilities. Reducing the incidence of dog bites requires the cooperation of many groups, including animal control agencies, the human and veterinary medical communities, educators, departments of health, and the local licensing authority. Open and consistent communication is an integral part of an effective program, and one entity should be designated as the coordinating agency. A logical coordinating agency would be the health department or animal control. In addition, it is imperative that an appropriate agency be granted authority to conduct investigations and make recommendations.

Program coordinator

As previously mentioned, dog bite prevention efforts should be assisted by a paid staff person. Because the diversity of input is so great, it is recommended that the office of the advisory council's program coordinator be located within the municipality's coordinating agency. Individuals, agencies, or organizations that come into contact with or are aware of a "dangerous" dog or risky situation should provide this information to the coordinator. The coordinator should then relay all information to the proper recipients.

Animal control agencies

Animal control officers are the frontline in controlling animal bites. A well-resourced animal control agency is vital for public health and safety within any community. In some communities, animal control is a stand-alone agency. In others it is administered through the local city or county health director or is a subsidiary of the local police department or sheriff's office. Wherever located, the functions of animal control within communities are multiple, including:

- training of animal control officers and ancillary personnel
- licensing of dogs and cats
- enforcement of leash laws, ordinances, regulations, and statutes
- control of unrestrained and free-roaming animal populations
- investigation of animal bite-related incidents
- administration of rabies quarantine programs after an animal bites
- bite data management, analysis, and dissemination regulation of "dangerous" animals
- educational outreach within the community regarding responsible ownership, spay/neuter programs, control of "dangerous" animals, rabies vaccinations
- coordination of efforts

Larger communities often possess more resources to properly fund animal control agencies and provide adequate staff[17] and training; however, smaller animal control programs can also be effective, even when they operate on a limited budget. Dedicated personnel can accomplish much if they have community support, including support from law enforcement and the judiciary.

Preventive measures

Preventive measures are designed to minimize risk and should be addressed by all communities.

Control of unrestrained and free-roaming animals—Reasonable and enforceable laws or ordinances are required for good control of unrestrained or free-roaming animals (**Appendix 2**).[18] Laws written to ensure that owned animals are confined to their property or kept on a leash make freeing a community of unrestrained and free-roaming animals easier. Although most dog bites occur on the property where the dog lives, unrestrained or free-roaming dogs do pose a substantial threat to the public. Enforcement of restraint laws is, therefore, essential if the incidence of dog bites is to be reduced. It is important to protect animal owners by providing an adequate amount of time for them to claim animals that have been impounded. Because of economic constraints, the current standard in the industry is 3 working days; however, 5 days may be more reasonable to ensure successful owner-animal reunions. Control of unrestrained and free-roaming animal populations requires an adequately staffed, trained, and funded animal control agency.

Licensing of dogs—The primary benefit of licensing animals is identification, should that animal become lost. Licensing also ensures rabies vaccinations are current, allows quick identification in case of a bite incident, and provides revenue to help offset the costs of administering the animal control program. An effective program can be a source of reliable demographic data as well.

Vaccinations—Rabies vaccinations are normally a prerequisite for licensing dogs and cats, because they are an important control measure for a major public health concern. In addition to protecting pets, rabies vaccinations provide a barrier between infected wild animals and humans. Vaccination has reduced confirmed cases of rabies in dogs from 6,949 in 1947 to 126 in 1997.[19]

Breed or type bans—Concerns about "dangerous" dogs have caused many local governments to consider supplementing existing animal control laws with ordinances directed toward control of specific breeds or types of dogs. Members of the Task Force believe such ordinances are inappropriate and ineffective.

Statistics on fatalities and injuries caused by dogs cannot be responsibly used to document the "dangerousness" of a particular breed, relative to other breeds, for several reasons. First, a dog's tendency to bite depends on at least 5 interacting factors: heredity, early experience, later socialization and training, health (medical and behavioral), and victim behavior.[7] Second, there is no reliable way to identify the number of dogs of a particular breed in the canine population at any given time (eg, 10 attacks by Doberman Pinschers relative to a total population of 10 dogs implies a different risk than 10 attacks by Labrador Retrievers relative to a population of 1,000 dogs). Third, statistics may be skewed, because often they do not consider multiple incidents caused by a single animal. Fourth, breed is often identified by individuals who are not familiar with breed characteristics and who commonly identify dogs of mixed ancestry as if they were purebreds. Fifth, the popularity of breeds changes over time, making comparison of breed-specific bite rates unreliable.

Breed-specific ordinances imply that there is an objective method of determining the breed of a particular dog, when in fact, there is not at this time. Owners of mixed-breed dogs or dogs that have not been registered with a national kennel club have no way of knowing whether their dog is one of the types identified and whether they are required to comply with a breed-specific ordinance. In addition, law enforcement personnel typically have no scientific means for determining a dog's breed that can withstand the rigors of legal challenge, nor do they have a foolproof method for deciding whether owners are in compliance or in violation of laws. Such laws assume that all dogs of a certain breed are likely to bite, instead of acknowledging that most dogs are not a problem. These laws often fail to take normal dog behavior into account and may not assign appropriate responsibilities to owners.

Some municipalities have attempted to address notice and enforcement problems created by unregistered and mixed-breed dogs by including in the ordinance a description of the breed at which the ordi-

nance is directed. Unfortunately, such descriptions are usually vague, rely on subjective visual observation, and result in many more dogs than those of the intended breed being subject to the restrictions of the ordinance.

Animal control legislation has traditionally been considered a constitutionally legitimate exercise of local government power to protect public safety and welfare. Breed-specific ordinances, however, raise constitutional questions concerning dog owners' fourteenth amendment rights of due process and equal protection.[20] When a specific breed of dog is selected for control, 2 constitutional questions are raised: first, because all types of dogs may inflict injury to people and property, ordinances addressing only 1 breed of dog appear to be underinclusive and, therefore, violate owners' equal protection rights; and second, because identification of a dog's breed with the certainty necessary to impose sanctions on the dog's owner is impossible, such ordinances have been considered unconstitutionally vague and, therefore, to violate due process.

After a bite occurs

It is important to have a well-defined postbite program in place to minimize physical and emotional pain for dog bite victims. This allows animal control personnel to work efficiently, protects animals that are victims of false allegations, and provides the judiciary with reasonable alternatives that address a variety of situations. State laws may dictate parts of this process.

Investigation of animal bite-related incidents— Any animal bite or incident must be thoroughly investigated and substantiated by an agent of the empowered investigating authority such as an animal control officer, police officer, or peace officer. Ideally, the investigating authority should be the same authority that enforces related ordinances or laws to give continuity and credibility to all investigations. Investigating officers must be given authority to perform their duties by statute or ordinance. Clear, concise, standardized information concerning the incident must be obtained to ensure its successful resolution and facilitate long-term data collection (**Appendix 3**).

Postbite rabies quarantine programs—A healthy dog that is currently vaccinated against rabies and that bites a human should be examined by a licensed veterinarian to determine its health status. If no signs of illness compatible with rabies are detected, the dog should be quarantined. The Centers for Disease Control and Prevention has set the quarantine period for dogs, cats, and ferrets at 10 days, including the day of the bite. Vaccinated dogs can be allocated to 2 categories: those that have bitten a member of the immediate family and those that have bitten an individual outside the immediate family. Home quarantine can be considered for vaccinated dogs that have bitten a member of the immediate family, assuming the owner can confine the dog in a manner that prevents further exposure. Vaccinated dogs that have bitten a human outside of the immediate family generally should be quarantined at the local shelter or veterinarian's office. At the end of the quarantine period, the dog should undergo a physical examination. In addition, interim evaluations are highly recommended.

A dog that is not currently vaccinated against rabies and that bites a human should be considered a rabies suspect and be appropriately quarantined. Contact with the dog during the quarantine period should be strictly limited to individuals who have completed rabies prophylaxis and are up-to-date on serologic testing and booster vaccinations. Physical examinations should be conducted at the beginning and end of the quarantine period to determine the dog's health status. Quarantined dogs may be treated by a veterinarian, but rabies vaccines should not be administered to the dog until the quarantine period is complete. If at any time during the quarantine period the dog has signs of illness compatible with rabies, it should be humanely euthanatized and samples submitted for rabies testing.

Records of all bites must be kept, including information specifically identifying the dog and owner. These should be crosschecked with each incident for evidence of a chronic problem.

Identification and regulation of "dangerous" dogs—Certain dogs may be identified within a community as being "dangerous," usually as the result of a serious injury or threat. That classification, because it carries with it serious implications, should be well defined by law (**Appendix 4**). Any such definition should include an exclusion for justifiable actions of dogs. Procedures should be outlined that take into account the potential public health threat, are reasonable to enforce, and convey the seriousness of the situation to the owner. Although animal control officers or their statuary counterparts are responsible for collecting information, a judge or justice will hear evidence from animal control officers and the dog's owner to determine whether that dog fits established criteria for "dangerousness." In some municipalities, a hearing panel comprising a cross section of private citizens hears alleged "dangerous" dog evidence and has been given the authority to declare a dog "dangerous" if deemed appropriate. Any declaration by a hearing panel, judge, or justice is subject to judicial review.

A judge, justice, or hearing panel may promulgate orders directing an animal control officer to seize and hold an alleged "dangerous" dog pending judicial review. If a dog is determined to be "dangerous" by a judge, justice, or hearing panel, the owner of that dog is usually required to register the dog with the appropriate health department or animal control facility. The judicial process may also require the owner to follow other rigid requirements, including but not limited to permanent identification of offending dogs, training and assessment of dogs and owners, and having offending dogs spayed or neutered.

Because the judicial branch is such an integral part of any enforcement action, the judiciary must assist during formulation of "dangerous" dog laws. If the judiciary is involved, its members will be aware of the process that must be followed to declare a dog "dangerous." In addition, they will be aware of steps that have already been completed and the options available when a particular case reaches the courts.

Bite Data Reporting

Accurate and complete reporting of dog bites is an essential element of a bite prevention program. These reports are vital not only for case management and judicial review but for planning, implementing, and evaluating the status of the problem. Major goals of comprehensive dog bite data reporting include:

- accurately defining victim demographics to identify populations at greatest risk for bites and allow targeting of educational efforts
- defining dog and owner characteristics associated with higher risk so that an actuarial approach to the dog bite problem is possible (this facilitates effective program planning and proper targeting of control measures)
- defining high risk geographic areas at city, county, or neighborhood levels so that limited resources for animal control and public education can be appropriately deployed
- establishing baseline data so that the impact of specific elements of the bite prevention program can be assessed
- providing an accurate, detailed, unbiased, objective source of information for decision makers, media, and the public interested in the dog bite problem and its prevention
- providing critical information for proper management of dog bite cases

What should be reported?

At a minimum, a dog bite case should be defined as any medically-attended dog bite or any dog bite resulting in a report to an animal control or law enforcement agency. This would presumably cover those instances consuming public resources and would also include cases that may result in litigation.

A number of data elements should be captured on a report form such that it is comprehensive in scope without placing unnecessary burdens on reporting agencies (Appendix 3). Fatal and severe dog attacks on humans have been associated with prior or concurrent attacks on pets or livestock, so it is important that communities also track those incidents. Maintaining records of incidents of menacing behaviors of owned dogs running at large in the community may be found useful in later legal actions.

Who should report?

The goal is to report any medically treated dog bite or any bite resulting in a report to, or response from, an animal control agency, humane society with animal control responsibilities, or law enforcement agency. Therefore, the primary sources of data should be:

- animal control or law enforcement agencies responding to a dog bite complaint
- health professionals attending to a bite injury (hospital emergency staff, urgent care facility staff, private physicians, school or camp medical staff, medical staff of other entities such as military bases or reservations, and veterinarians)

Recognizing that many dog bites go unreported, a comprehensive program to assess dog bite incidence should consider possible secondary sources of data. These may include:

- anonymous surveys of high-risk populations (eg, school-age children) that may clarify the true extent of risk in a community
- anonymous surveys of the public (eg, phone surveys) that can help document the extent of bite injuries and provide a basis for estimating the ratio of unreported to reported bites
- reports from professionals including veterinarians, animal behaviorists, dog trainers, groomers, and kennel operators who are informed of a bite incident (mandating that any or all of these professions report bites may be unrealistic given the potential legal consequences of identifying an animal as a biter)

Reporting mandates are often inconsistent between jurisdictions or are poorly enforced. Current local and state reporting regulations should be reviewed, as should directives from health or veterinary officials. If current provisions are adequate, it may be necessary to implement procedures to reeducate professionals concerning their reporting obligations and periodically remind them of these obligations. When a failure to report is uncovered, it may be an opportunity to gain the attention of the professional, because sanctions may be imposed.

Who should receive reports?

Reporting should be coordinated by one agency. Logical agencies to coordinate reports include animal control or the public health department. The coordinating agency, perhaps through the dog bite prevention program coordinator, must assume responsibility for maintaining all information and disseminating that information to other appropriate individuals or agencies (eg, veterinarians, physicians, the dog owner, and those involved in follow-up educational efforts).

To insure consistency and compliance, regulations or procedures should unambiguously state to whom reports should be submitted and within what time frame the reports should be submitted.

Data management, analysis, interpretation, and dissemination

Because multiple sources may report the same case, procedures should be in place to permit combination of data from multiple sources into a single report. Avenues should be developed for electronic submission of reports to assist in rapid response, to streamline reporting to higher levels of government, and to facilitate data analysis. Whereas disposition of individual incidents is the first goal for reporting, there is much to be learned from looking at the overall picture. Keeping information in an electronic database simplifies the latter.

Data should be reviewed at regular intervals (no less than yearly) to determine whether the incidence and severity of dog bites is getting better, worse, or staying the same. Basic analysis consists of studying the characteristics of incidents, including:

- time—yearly trends, peak months, day of week, time of day. This can help with scheduling animal

control services as well as dispatch and response planning.
- ? place—locating every incident on a map with a pin. Are there hot spots? This can help target high risk areas for future control.
- ? person—victims and animal owners: age, sex, race, size. Can they be targeted for education?
- ? dog—proportion of offenders by sex and breed, proportion running at large, proportion neutered, proportion with prior reported problems, history of rabies vaccinations, licensing history. Have these proportions changed over time?

Successful evaluation and resolution of a community problem and accurate assimilation, evaluation, and use of quality data requires interactive assessment, feedback, and information exchange. City, county, and state public health practitioners, epidemiologists, and representatives of public health organizations (eg, the National Association of State Public Health Veterinarians, the Council of State and Territorial Epidemiologists, the Association of State and Territorial Health Officers, and the National Association of County and City Health Officials) can provide communities with considerable expertise in the acquisition and interpretation of dog bite data. Their participation should be encouraged.

Education

Education is key to reducing dog bites within a community. The list of those to be educated and those who may educate includes everyone who regularly comes into contact with dog owners and potential victims (eg, veterinarians, veterinary technicians and assistants, animal control officers, animal behaviorists, dog trainers, humane society personnel, physicians, school nurses, public health officials, teachers, and parents).

The purposes of this section are to educate city officials and community leaders about the role of various professionals in an educational program to reduce dog bites, provide starting references to ensure a core of knowledge for those professionals (**Appendix 5**), and assist in identification of the educational needs of various constituencies within a community.

Public officials and community leaders

Public officials and community leaders are the people to whom residents look for assistance with social problems. Their influence is important and well recognized. If a community dog bite prevention program is to gain public acceptance and be effective, community leaders must be well-informed about dog-related issues within their community and in general.

Professionals

Professionals from many backgrounds need to be involved in bite prevention programs. Their expertise is essential to making realistic decisions about what should and can be done to prevent or follow up on dog bite incidents and in recognizing what is normal or abnormal behavior for a dog. Several of these professionals will likely be members of the advisory committee, but all should be encouraged to be a part of a community's efforts to decrease the impact of a dog bite problem.

Many professions mentioned in this document are science-based. This means their members are used to making decisions on the basis of peer-reviewed data-supported information rather than gut feelings. This approach to decision making results in improved outcomes. Because the dog bite problem impacts so many different groups, networking between community leaders and professionals is important. The following sections describe ways that various professionals and community leaders can work together toward a common goal.

Veterinarians—Veterinarians are scientists trained for a minimum of 7 to 8 years and then licensed to diagnose and treat animal problems both medical and behavioral. Although most people think of veterinarians as performing animal vaccinations and surgical neutering, the practice of veterinary medicine includes all subdisciplines typically associated with human medicine. The study of animal behavior both normal and abnormal has become more important within the profession as animals have become more important to their owners. Dogs are now four-legged members of the family, rather than farm animals that help bring cows into the barn at milking time. With this change in the dog's role have come unrealistic owner expectations about what constitutes normal behavior for a dog. Veterinarians can educate dog owners as to what behavior is normal, can help dog owners teach their dogs to respond appropriately in various environments and provide referrals to reputable dog trainers, and can assist owners with behavioral problems, including those that have a medical basis or are responsive to medication.

Until recently, animal behavior was not often taught in veterinary curricula. Many veterinarians have had to acquire their knowledge of normal and abnormal canine behavior from continuing education programs and professional textbooks. For this reason, different veterinarians have different degrees of knowledge about behavior. All veterinarians, however, have access to board-certified veterinary behaviorists for help with behavioral problems beyond their expertise.

Although the time, physical, and emotional demands of veterinary practice can be overwhelming and leave limited time to devote to a formal community prevention program, veterinarians can substantially impact prevention efforts through their professional contact with prospective and current dog owners. This contact should begin before the pet is acquired. Providing unbiased information on pet selection can help prevent inappropriate owner-dog pairings. Prospective dog owners often make spur-of-the-moment selections that are based on warm-and-fuzzy feelings and unrealistic expectations. Encouraging prospective dog owners to seek information from their veterinarian about the characteristics and needs of various types of pets and encouraging future dog owners to ask for guarantees from puppy providers can minimize future problems. When owners take their newly

acquired dogs to their veterinarian for an initial examination and immunizations, the veterinarian has a second opportunity to provide these owners with good medical, nutritional, and behavioral advice.[21] Finally, veterinarians can educate owners during their dogs' routine examinations (asking appropriate questions can reveal problems an owner may not have recognized) or when their dogs are evaluated for specific problems.

Board-certified veterinary behaviorists—The American College of Veterinary Behaviorists (ACVB), an American Veterinary Medical Association-recognized veterinary specialty organization, certifies graduate veterinarians in the specialty of veterinary behavior. To become certified, a veterinarian must have extensive postgraduate training, sufficient experience, and pass a credential review and examination set by the ACVB. Diplomates of this organization work with problem animals by referral from the animal's regular veterinarian, consult with practitioners on cases, and give continuing education seminars on animal behavior. Although many communities may not have the benefit of a resident board-certified veterinary behaviorist, veterinarians have access to and may consult with their specialist colleagues when necessary.

Veterinary technicians—Veterinary technicians are integral members of the veterinary health care team who have been educated in the care and handling of animals, basic principles of normal and abnormal life processes, and routine laboratory and clinical procedures. They perform many of the same tasks for veterinarians that nurses and others perform for physicians. Veterinary technicians are often frontline people when it comes to educating pet owners, particularly in general veterinary practices; they greet clients and answer initial inquiries, clarify instructions, provide clients with appropriate print, audio, and video educational material, and answer questions. Certainly, they are an important part of the educational team when it comes to dog bite prevention.

Like veterinarians, veterinary technicians have several opportunities to educate clients. Veterinarians may be consulted prior to owners acquiring a new pet, and veterinary technicians can help provide information on appropriate pet selection. Veterinary technicians regularly counsel owners during new puppy appointments, and this is a particularly good opportunity to provide owners with information on bite prevention, including the importance of socialization and training. Routine physical examinations are times when veterinary technicians can reinforce the importance of these early lessons and training, and they can help veterinarians identify potential aggression problems through observation and dialog with owners. Veterinary technicians can also be tapped to educate nonpet-owning children and adults through school or other programs.

Veterinary technology programs do not always offer curricula in animal behavior and, consequently, many technicians do not have formal training in this area when they enter practice. Continuing education that includes basic principles of animal behavior is essential for veterinary technicians, just as it is for their employers. Maintaining a clinic reference library of appropriate print, audio, and video material for reinforcement and enrichment and for client education is useful.

Behavioral education for veterinary technicians relative to dog bite prevention should include recognition of classic canine behavioral displays and an understanding of the basic types of canine aggression and their prevention. The aim is to assist technicians in conveying dog bite prevention information to owners. Veterinary technicians must not be placed in the role of diagnosing or treating canine aggression.

Animal behaviorists—There are a number of scientists with PhD degrees in academic fields related to animal behavior who can serve as valuable resources for communities attempting to reduce dog bite injuries. Because of their science-based backgrounds, they can be particularly helpful in setting up protocols to determine the extent of the problem within a community and whether ongoing programs are having a substantial impact.

As a note of caution, the terms animal behaviorist or animal psychologist are often used by individuals who do not have strong scientific backgrounds but who want to work with problem dogs. There is no method to evaluate the competence of these individuals, and they may be more harmful than helpful to a community's efforts.

Dog trainers—This is a diverse group of individuals with no uniformly recognized credentialing body or measures of competence. Although there are many good dog trainers, there are also trainers that use inappropriate methods of behavioral modification that can negatively affect a dog's behavior, making the dog more dangerous to the owner and the community. It is important that communities make a concerted effort to work with responsible trainers who interact closely with veterinarians and PhD-degreed animal behaviorists. A qualified responsible dog trainer can be a valuable asset to a community advisory group.

Obedience training by itself does not prevent the development of behavior problems,[22] and animals that are sent to a training facility may not learn how to obey their owners, because the owners do not learn how to give commands. For problem animals, training is only part of the solution.

Physicians and nurses—With a dog residing in 1 of every 3 US homes and approximately 53 million dogs in the United States,[2,3,6] exposure of the physician or nurse, their family members, or their patients to dogs during the course of daily life is inevitable. Dogs have become important members of many families, and the presence of a pet in the home can affect an individual's own decisions about care. Most physicians are familiar with at least 1 example of a person refusing hospitalization, because there was no one else in the home to care for their pet.

Because 334,000 Americans are seen in emergency departments for dog bite injuries each year, 466,000 are seen in other medical practice settings, and 6,000

are hospitalized,[6] it behooves human healthcare providers to acquaint themselves with community and personal strategies to prevent dog bites. Furthermore, just as occurrences of infectious diseases such as measles are reported to enable investigation of outbreaks and development of control measures to protect the public, dog bites must be reported so that cause and prevention can be addressed. Communities differ in their requirements for reporting, and practitioners must understand what is required in their area.

Traditionally, when confronted with patients seeking care for dog bites, physicians and nurses have confined their roles to providing medical treatment. With the expanding roles of physicians and nurses, however, disease prevention has become an important issue. In addition to competently treating dog bites and their complications, healthcare providers need to be aware of critical roles they can play in reducing dog bite injuries.

Advising patients about safe behaviors appears effective in preventing injury.[23-26] Teaching children, parents, and patients who own dogs about proper behavior around dogs and responsible dog ownership is advisable given the frequency of human-canine contact in our society. Physicians can recommend contacting a veterinarian for pet selection information and advice if an individual or family is considering dog ownership, and for information about canine behavior and obedience training if a dog is already part of the family. Pediatricians provide age-appropriate injury prevention counseling during wellness visits.[26] Dog bite prevention should be a part of this counseling. Dog safety tips can also be included in packets of materials routinely sent home with new mothers.

When a patient is being treated for a bite, an opportunity exists to prevent future injury by teaching bite-avoidance strategies. Probing into the circumstances of the current bite may reveal which strategies should be emphasized. Taking advantage of teachable moments should be considered part of curative care. Consulting with a veterinarian may help human health care providers identify subjects they can address during postbite sessions.

As witnesses to the health-related outcomes of dog bites, physicians and nurses are particularly credible sources of information and can be effective spokespersons. Pediatricians and nurses should be full partners in community efforts to reduce dog bite injuries.

Animal control personnel—The staff of a well-resourced animal control program often includes an education coordinator who can train teachers, school nurses, and volunteers to become dog bite prevention educators within the community's school system (similar to volunteers in the McGruff crime prevention program presented to primary-school children). For animal control personnel, job-related continuing education is important. Programs are available through the National Animal Control Association.

Humane society/animal shelter/rescue group personnel—Dog bite injuries have negative repercussions for dogs as well as people, and humane society/animal shelter/rescue group personnel must deal with these issues. Dogs causing severe injuries may be brought to humane facilities for rabies quarantine or euthanasia. Dogs that have threatened to bite or that have nipped may be surrendered to shelters or rescue groups, sometimes without full acknowledgment by their owners.[16] Shelter personnel are forced to decide which dogs can be placed in new homes and which are not suitable for adoption. Progressive organizations work with veterinarians and animal control officers to educate their staff about safe dog handling and objective evaluation techniques. Record keeping and follow-up studies expand their knowledge base about what works in their community and what does not. Well-trained and dedicated humane society/animal shelter/rescue group personnel can be valuable community resources for public education as well.

Public

Public education is critical to the success of any dog bite prevention program, because half of all bites are inflicted by the family dog.[27] Only about 10% of bites are inflicted by dogs unknown to the victim.[7,15] A public education effort must target a variety of individuals and age groups, and one individual should be assigned to integrate its components. If a special advisory council or task force is convened, its paid coordinator would be a logical choice to coordinate the public education effort. Alternatively, the public education coordinator could be a member of a municipal group such as the local health department, animal control agency, or board of education, or a member of a stakeholder group such as a humane society or veterinary association. Many educational programs targeted at various audiences exist and are included in the dog bite prevention resource list found on the American Veterinary Medical Association Web site (www.avma.org). As new materials become available, they will be added to this resource list.

Children—Children are the most common victims of serious dog bites. Seventy percent of fatal dog attacks and more than half of bite wounds requiring medical attention involve children.[7,9,15] In addition, almost half of all children are bitten before 18 years of age.[27,28] The most vulnerable youngsters are 5- to 9-year-old boys,[6,7,8] but smaller children can also be seriously injured.[29] Dog bite injuries rank third only to bicycle and baseball/softball injuries as a leading cause of emergency admission of children to hospitals.[6] Children's natural behaviors, including running, yelling, grabbing, hitting, quick and darting movements, and maintaining eye contact, put them at risk for dog bite injuries. Proximity of a child's face to the dog also increases the likelihood that facial injuries will occur.[6,7,29-31]

Target group—The first step in a child education effort is determining what population of children to target and when. The logical primary audience is those at greatest risk: children in grades kindergarten through 4. Late winter or early spring appears to be the best time to institute a campaign, because the school year is concluding and, as children spend more time outside, exposure risk increases.[32] It is critical

that school administrators buy into the concept of a dog bite prevention program; therefore, requests to the school district must be made by committed convincing well-organized individuals. Because school curricula are crowded, time blocks for dog bite prevention education should be requested early within the school system's calendar year. If such a block of time is not available, an alternative is to have a veterinarian or physician present a 1-hour lecture or assembly program to the entire student body. Once dog bite prevention education has been included within the curriculum (or has been scheduled to be provided through a special lecture or assembly program), teachers, nurses, and volunteers should consider addressing the school's parent-teacher organization to inform parents of upcoming dog bite prevention training for their children.

Secondary efforts—Secondary targets include children in other settings, such as early education programs (eg, Head Start, day care centers, recreational centers, and camps).

Identifying instructors—Who teaches the material will depend on expertise within the community. For classroom instruction, teachers who have had in-service training, school nursing staff, health educators, or trained volunteers are logical choices. Stakeholder groups (eg, veterinarians, veterinary technicians, animal control officers, physicians, nurses, humane society staff) may provide a ready source of volunteers for classroom instruction and special programs.

Adults—Adult citizens must understand the need for and support a strong dog bite prevention program not only for their own safety but for the safety of others in their community. It is this understanding that gives a prevention program long-term stability. All adults should learn appropriate behaviors around dogs so that they can protect themselves, teach their own children, serve as an example for others, and reinforce appropriate behaviors in other children at every opportunity. Adults also serve as local eyes for animal control so that roaming dogs are controlled.

Educational materials sent home with school children, distributed by pediatricians during well-child visits, inserted in public utility bills, and produced by an enlightened local media are all reasonable approaches. Involving representatives of service organizations and community groups during a prevention program's planning and active stages will strengthen commitment.

Active adults (eg, joggers, bicyclists, golfers) whose outdoor activities provide greater exposure to dogs are most at risk for injury. To reach these individuals, bite prevention information should be provided to local interest groups, recreational facilities, and health clubs.

Target group—Primary adult targets within the community are those who have children and who are active in outdoor activities.

Secondary efforts—Secondary targets include individuals between the ages of 21 and 65 years.

Identifying instructors—Materials can be developed or selected by animal control personnel, veterinarians, veterinary technicians, or other people knowledgeable about dog behavior. Information can be distributed through a number of channels such as those identified above.

The elderly—As people age, they become more susceptible to injury and disease. Thinning skin increases risk of bruising, and a bite producing a simple puncture wound in a younger individual can cause a severe laceration in a senior citizen. Sensory perception decreases so that an elderly person may not see a threatening dog or may not be able to read its behavioral signals accurately. In addition, diminished motor skills mean that the elderly are less able to physically protect themselves or escape.

Another concern for the elderly is that their beloved pet may not be trustworthy around their grandchildren. Dogs not raised around small children or not frequently exposed to them may not be socialized toward them.[1] This increases the likelihood of aggressive behavior being directed toward these children.

An educational program for senior citizens can be implemented in various settings. Materials may be provided through community services for the elderly such as church groups, visiting nurse programs, meals-on-wheels, recreational centers, or travel groups. Secondary targets are shopping malls and the media. Trained volunteers, especially from dog-associated professions, are logical sources of information. Human healthcare professionals can be an important source of information for the elderly because of the frequency of their interactions.

Target group—Primary targets are grandparents and people aged 60 years or older who have dogs in their homes.

Secondary efforts—Secondary targets include other individuals who are at least 60 years old.

Identifying instructors—Physicians can interact with these people during clinic visits. Animal control personnel, veterinarians, veterinary technicians, and people knowledgeable about dog behavior can select or produce resource information.

Animal owners—People who own dogs have a wide variety of views about their responsibilities. For some, dog care means providing food and water when the thought occurs to them. At the other end of this spectrum is the person who actively makes sure the pet is appropriately fed, well-trained, licensed, and healthy. Some individuals view dogs as disposable items that can be abandoned at any sign of trouble or expense. Once a community establishes acceptable standards for responsible ownership, dog owners must be informed of these expectations and related ordinances, and rules must be enforced. Owners and future owners must be educated about their unique set of responsibilities, which include appropriate pet selection, providing quality nutrition, housing, and medical care, compliance with confinement and licensing requirements,

appropriate behavioral training, and supervision of interactions between dogs and children. Citizens must understand that pet ownership is an ongoing responsibility, not a passive activity.

Dog owners can be provided with information through various avenues. Veterinarians and their staff are logical educators and distributors. Local dog clubs and trainers provide services to more conscientious owners. Businesses that sell pet foods and supplies should also be encouraged to provide bite prevention materials to their customers. Information can be distributed with utility bills, and animal shelters can provide classes for people who are considering acquiring a pet. Incentives for attendance at bite prevention classes could include reduced fees for licenses and coupons for vaccinations, food, and obedience classes. The most difficult group of dog owners to reach is those with minimal attachment to their pets. Although strong enforcement of local regulations will change some owners into former owners, most will continue to own dogs. Therefore, education should be an integral part of any enforcement program. A good working relationship with the judiciary is critical so that offenders of animal-related ordinances are required to take courses that emphasize responsible ownership.

Target group—Primary targets are adults who already own dogs.

Secondary efforts—Secondary targets are adults who are considering getting a new dog.

Identifying instructors—Information for this target audience can come from various sources, and its distribution should be approached in a number of ways. Animal control officers and members of the legal profession can describe what is expected regarding local regulations and the serious consequences if these regulations are violated. Veterinarians and their staff can educate owners about vaccinations, neutering, restraint, and other health care issues. Dog club members and trainers can assist by providing socialization and training instruction and can help educate owners about being good dog-owning neighbors.

Victims—When someone becomes a dog bite victim, a teachable moment is created. How useful that moment becomes in preventing future incidents depends tremendously on the seriousness of the bite and the fear response of the victim. Scare-producing or threatening events are good times for dog bite prevention information to be conveyed. However, the time surrounding a serious injury is generally too emotionally charged to be of value for dog bite prevention education.

Who provides information to victims depends, in part, on who is contacted about the incident. In addition to medical personnel, animal control's investigative efforts usually require a home visit. Routine visits to a physician should include gathering historical information about the patient's interactions with dogs to identify patients who would benefit from additional education. Media stories that reinforce correct approaches to prevention can also touch many when they are most receptive.

Target group—Individuals who have recently been bitten by a dog seriously enough to require medical attention but not so seriously as to have sustained severe injuries are the primary target.

Secondary efforts—Secondary targets are individuals who have been bitten by a dog in the past.

Identifying instructors—Medical professionals and animal control personnel are the individuals who encounter this group.

Businesses—Community businesses need to address dog bite prevention as well. Certain businesses (eg, veterinary clinics, grooming and boarding facilities, animal control, pet sitting agencies) revolve around direct contact with dogs, and employee education is critical from a safety and liability standpoint. Employees of other businesses will occasionally encounter dogs in the course of their daily job activities (eg, utility workers, police officers, parcel carriers, and emergency medical technicians). Training conducted by an animal control officer or other knowledgeable professional may provide employees with the tools they need to safely handle contacts with at-large animals, attack/guard dogs, or dogs who simply reside on the premises of those facilities where they do business.

Target group—Primary targets are employees and business owners who will be working with dogs on a daily basis.

Secondary efforts—Employees of companies who are likely to encounter dogs in their daily business activities can be considered secondary targets.

Identifying instructors—Animal control personnel, veterinarians, veterinary technicians, and dog trainers who are experienced at dealing with dogs in a variety of environments. These individuals will need to customize presentations to the type of situations most likely encountered by the target audiences.

Media

The local media play an important role in a community's efforts at bite prevention. For this reason, it is suggested that 1 member of the advisory council or task force be a media representative. In addition, the advisory council can be proactive in helping the media convey important and appropriate messages. Sensational events provide an opportunity to convey important messages. Regular features can reinforce principles and keep educational efforts flowing.

Know the media

Your key to the public eye and ear is a selective up-to-date list of local media contacts who have an interest in animal issues. Such a list can be developed by undertaking a comprehensive media survey. Check the local library for publications that list names, telephone numbers, and short descriptions of your community's media outlets. Call each office or studio to discover which desks or departments should receive your inquiries and press releases. Read local newspapers and listen to local radio and television news and feature

programs to identify reporters and hosts who address animal issues. Finding out whether these individuals gather their own news or use wire services will allow you to target press releases and materials to those who are most likely to use them. Contact local freelance writers to see whether they would be willing to feature a bite prevention message in an upcoming piece. Be aware that your media list will be dynamic, and take time to update the names of specific contacts. Once a helpful story is published, or a reporter conveys your message during a broadcast, be sure to acknowledge that effort by sending a thank-you note or making an appreciative telephone call.

A spokesperson

The community should identify a spokesperson who has the expertise to address complicated dog bite-related issues, and this individual should be provided with media training so that he/she becomes an effective communicator with the print and broadcast media. It is the spokesperson's responsibility to convey information clearly, accurately, and promptly. In various situations, this individual can identify when there are not enough animal control officers to prevent dog packs from forming or when a dog has been "sicced" on a person as a weapon. A knowledgeable and effective communicator can turn a publicized bite into a learning opportunity by providing suggestions on how that bite could have been prevented (eg, the dog was not appropriately controlled or confined, or a child was left unsupervised).

Have information readily available

The advisory council or task force should create a 1-page fact sheet for use by the media and the spokesperson. This fact sheet should include the number of dog bite incidents occurring in the community during the past year, the number of dogs in the community, the number of licensed dogs in the community, what local laws govern dog ownership and control, and to whom problems should be reported. A list of community resources should also be available.

Ways to effectively convey information

Because animal stories are popular with the media, there are numerous opportunities to convey bite prevention information. Local broadcast programs and newspapers find regular segments about animals popular with viewers/listeners/readers, and most of those spots have enough time for short lessons. Another approach is to proactively bring animal stories to the media. Examples include a story about a shelter dog that visits nursing homes after being rescued and appropriately trained, a description of a guide or "hero" dog's training, or warm-weather tips for pets. Effective mechanisms for providing information vary with the medium but include:

News releases—Releases may be provided to print, radio, or television outlets. Releases should be double-space typed on stationery that provides the source of the announcement (ie, the advisory council or task force). Include the subject of the news release and contact information in the upper left corner. The mailing date of the release should be indicated along the right margin. The release should be written in inverted pyramid style, placing the most important information at the beginning. Releases should be limited to 1 page if possible.

Interviews—Interviews may be conducted by print, radio, or television reporters or hosts and, in the case of television and radio, may be live or taped. The individual being interviewed must be an excellent communicator and intimately familiar with dog bite issues and prevention. The interviewee may request a preinterview to get a grasp of the direction of the interview. It is advisable to tell the interviewer which issues you would definitely like to see addressed. Answers should be structured according to the program's time limits.

Talk shows—Most of the principles that apply to interviews also apply to talk shows, but in this situation there usually will be interaction with guests (who often hold opposing views), potentially with an audience, and with the host. Running through mock discussions prior to participation is helpful. Responses to questions or comments from those with opposing views should always be factual, sincere, and polite.

Public affairs programs—Many stations air 2 or 3 programs a week in which the station's news staff or station management interview a newsmaker, a spokesperson from an activist group, or a public relations representative from an industry. Issues in the news are often addressed by such programming. These provide a good opportunity to make your community aware of bite prevention efforts and to elicit support. Access to these programs may be requested by sending a letter to the station manager.

Bulletin board and community announcements— Many local television stations donate air time to announcements of community events. These are often broadcast in calendar format. This is an easy way to publicize educational events and responsible pet ownership classes.

Editorials—Editorials are used by print, radio, and television reporters to present their views on issues of public interest. Prepared statements describing the advisory council's approach to dog bite prevention can be provided to reporters for use in preparing an editorial or may be provided if a reporter presents an opposing viewpoint.

Public service announcements—Many radio and television stations donate time for **public service announcements (PSA)**; however, public service groups cannot specify when your PSA is to be aired. It is acceptable to suggest when you believe airing your PSA will be most effective. Most PSAs run for 30 to 60 seconds, although 10- and 20-second spots are also used. To mitigate the costs associated with production, you may want to contact local stations to see whether they offer sponsored placements, in which local advertisers donate time for specific public service messages. Public service announcements may consist of script only, sight and sound (simple or complex), or 16-mm film or videotape.

[a]See www.avma.org for additional and updated information.
[b]Anderson RD, Nevada Department of Public Health, Reno, Nev: Personal communication, 1999.
[c]National Center for Injury Prevention and Control. *Resource guideline for state and local injury control programs*; in preparation.

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Appendix 1

Groups potentially involved in dog bite prevention

A model program for preventing dog bites begins with assembling a local coalition. Wide representation of community views on the coalition helps ensure sufficient input and community acceptance of the program. Key players include:

- animal control officials
- attorneys, judges
- business sector (eg, local business leaders, insurance companies, pet stores)
- dog breeders and trainers
- educational system (eg, schools, parent-teacher organizations)
- health departments and public health associations
- humane societies
- human healthcare providers and associations (eg, nurses, pediatricians, community health centers, emergency medical service and ambulance companies, health maintenance organizations, hospitals, managed care organizations, medical associations, medical examiners' and coroners' offices, schools of medicine and public health, trauma centers)
- kennel clubs, dog clubs, assistance dog organizations
- law enforcement agencies
- local government officials
- media
- occupational safety organizations, agencies, and groups (eg, firefighters, meter readers)
- veterinary care providers and associations, allied staff, clinics, schools of veterinary medicine and veterinary technology
- volunteer nonprofit organizations (eg, boy/girl scouts; various "Y"s; 4-H clubs; chapters of the American Red Cross, Safe Kids, National Safety Council, and National Fire Protection Association; foundations; United Way; and civic groups [Kiwanis, Rotary])
- other groups (eg, sports recreation clubs [joggers, bicyclists], automobile clubs, extension offices)

Continued on next page.

Appendix 2

Model dog and cat control ordinance

Originally produced and published jointly by the American Veterinary Medical Association, the American Humane Association, the Humane Society of the United States, and the Pet Food Institute in 1976. Modifications have been made from the original version to reflect updated US Public Laws, current titles of other referenced documents, and present favored terminology and definitions concerning "dangerous" animals.

Section 1. Definitions

As used in this ordinance the following terms mean:

Animal—For the purpose of this ordinance, animal shall mean dog or cat.

Animal control authority—The person or persons designated to enforce this ordinance.

Animal establishment—Any pet shop, grooming shop, animal auction, performing-animal exhibition, kennel or animal shelter, except this term shall not include veterinary medical facilities, licensed research facilities, facilities operated by government agencies, or licensed animal dealers regulated by the USDA under the provisions of US Public Laws 89-544, 91-579, 94-279, 99-198, and 101-624.

Animal shelter—Facility designated or recognized by the [jurisdiction]* for the purpose of impounding and caring for animals.

At large—A dog or cat shall be deemed to be at large when off the property of the owner and not under restraint.

Humane manner—Care of an animal to include, but not be limited to, adequate heat, ventilation and sanitary shelter, wholesome food and water, consistent with the normal requirements and feedings habits of the animal's size, species, and breed.

Kennel—An establishment kept for the purpose of breeding, selling, or boarding dogs or cats or engaged in training dogs or cats.

Licensing authority—The agency or department of [jurisdiction] or any designated representative thereof charged with administering the issuance and/or revocation of permits and licenses under the provisions of this ordinance.

Livestock guarding dogs—Dogs kept for the primary purpose of protecting livestock from predatory attacks.

Neutered—Rendered permanently incapable of reproduction.

Nuisance—A dog or cat shall be considered a nuisance if it: damages, soils, defiles, or defecates on private property other than the owner's or on public walks and recreation areas unless such waste is immediately removed and properly disposed of by the owner; causes unsanitary, "dangerous," or offensive conditions; causes a disturbance by excessive barking or other noise making; or chases vehicles, or molests, attacks, or interferes with persons or other domestic animals on public property.

Owner—A person having the right of property or custody of a dog or cat or who keeps or harbors a dog or cat or knowingly permits a dog or cat to remain on or about any premises occupied by that person.

Person—Any individual, corporation, partnership, organization, or institution commonly recognized by law as a unit.

Pet shop—An establishment engaged in the business of buying or selling, at retail, dogs or cats or other animals for profit-making purposes.

Restraint—A dog or cat shall be considered under restraint if it is within the real property limits of its owner or secured by a leash or lead or under the control of a responsible person.

"Dangerous" dog or cat—A dog or cat that without justification attacks a person or domestic animal causing physical injury or death, or behaves in a manner that a reasonable person would believe poses an unjustified imminent threat or serious injury or death to one (1) or more persons or domestic animals.

Section 2. Licensing and rabies vaccination

a. Except as provided in Section 3, no person shall own, keep, or harbor any dog or cat over four (4) months of age within [jurisdiction] unless such dog or cat is vaccinated and licensed. The provisions of this section do not apply to animals owned by a licensed research facility or held in a veterinary medical facility or government operated or licensed animal shelter.

b. All dogs and cats shall be vaccinated against rabies by a licensed veterinarian, in accordance with the latest "Compendium of Animal Rabies Prevention and Control" authored by the National Association of State Public Health Veterinarians and published annually in the *Journal of the American Veterinary Medical Association*.

c. A certificate of vaccination shall be issued to the owner of each animal vaccinated on a form recommended by the Compendium. Each owner shall also receive a durable vaccination tag indicating the year in which it was issued.†

d. Application for a license must be made within thirty (30) days after obtaining a dog or cat over 4 months of age, except that this requirement will not apply to a nonresident keeping a dog or cat with the [jurisdiction] for no longer than sixty (60) days.

Written application for a dog or cat license shall be made to the [licensing authority] and shall include the name and address of the owner and the name, breed, color, age, and sex of the dog or cat. Applicants also shall pay the prescribed licensing fee and provide proof of current rabies vaccination.

e. The licensing period shall be for ‡ year(s). License renewal may be applied for within sixty (60) days prior to the expiration date. New residents must apply for a license within thirty (30) days of establishing residence.

f. A license shall be issued after payment of a fee of $____ for each unneutered dog or cat and $____ for each neutered dog or cat.§ Persons who fail to obtain a license as required within the time period specified in this section will be subjected to a delinquent fee of $____ .

g. License fees shall be waived for dogs serving the blind or deaf or government-owned dogs used for law enforcement. All other licensing provisions shall apply.

h. Upon acceptance of the license application and fee, the [licensing authority] shall issue a durable license tag including an identifying number, year of issuance, city, county, and state. Both rabies and license tags must be attached to the collar of the dog or cat.II Tags must be worn at all times and are not transferable. [Licensing authority] shall maintain a record of all licenses issued, and such records shall be available to the [animal control authority].

Section 3. Permits

a. No person shall operate an animal establishment without first obtaining a permit in compliance with this section

b. The permit period shall begin with the first day of the fiscal year and shall run for one (1) year. Renewal applications for permits may be made within sixty (60) days prior to the expiration date. Application for a permit to establish a new breeding animal establishment under the provisions of this ordinance may be made at any time.

c. Annual permits shall be issued upon payment of the applicable fee:

i. For each kennel authorized to house less than six (6) dogs or cats $ ____

ii. For each kennel authorized to house six (6) but not more than forty-nine (49) dogs or cats $ ____

iii. For each kennel authorized to house fifty (50) or more dogs and cats $ ____

iv. For each pet shop $ ____

v. For other animal establishments $ ____

d. A person who maintains a kennel of six (6) or more dogs or cats for breeding purposes may pay an annual permit fee or may elect to license individual dogs or cats as provided under Section 2. Every facility regulated by this ordinance shall be considered a separate enterprise, requiring an individual permit.

e. Under the provisions of this ordinance, no permit fee shall be required of any animal shelter. All other provisions shall apply. Any change in the category under which a permit is issued shall be reported to the [licensing authority] within sixty (60) days, whereupon reclassification and appropriate adjustment of the permit fee shall be made.

f. Failure to comply with the provisions of this section is subject to a fine of $____.

Section 4. Issuance and revocation of permits and licenses

a. The [appropriate authority] may revoke any permit or license if the person holding the permit or license refuses or fails to comply with this ordinance, the regulations promulgated by the [appropriate authority] or any other law governing the protection and keeping of animals.

b. If an applicant is shown to have withheld or falsified any material information on the application, the [licensing authority] may refuse to issue or may revoke a permit or license.

c. It shall be a condition of issuance of any permit for an animal establishment that the [appropriate authority] shall be permitted to inspect any and all animals and the premises where such animals are kept at any reasonable time during normal business hours. Where a permit is revoked for any cause, or pending appeal of any such action, the [appropriate authority] shall have power of entry on the premises and into all areas where animals are being kept. A person denied a permit may not reapply for a period of at least thirty (30) days. Each reapplication shall disclose any previous denial or revocation and shall be accompanied by a $____ fee.

Section 5. Owner responsibility

a. All dogs and cats shall be kept under restraint.

b. Every "dangerous" dog or cat, as determined by the [appropriate authority], shall be confined by its owner within a building or secure enclosure and shall be securely muzzled or caged whenever off the premises of its owner.

c. No dog or cat shall be allowed to cause a nuisance. The owner of every dog or cat shall be held responsible for every behavior of such dog or cat under the provisions of this ordinance.

d. Failure to comply with the provisions of this section shall be subject to a fine of $_____.

e. Dog and cat owners shall ensure that their dog or cat carries identification at all times in the form of microchip, tag, or other means to allow easy determination of the owners.

f. Livestock guarding dogs shall be exempt from nuisance regulations when performing duties protecting livestock on premises owned or controlled by the owner.

Section 6. Impoundment

a. Any dog or cat found running at large shall be impounded by the [animal control authority] in an animal shelter and confined in a humane manner. Immediately upon impounding a dog or cat, the [animal control authority] shall make every reasonable effort to notify the owner and inform such owner of the conditions whereby custody of the animal may be regained. Dogs and cats not claimed by their owners within a period of [five (5) full days]¶ in which the shelter is open to the public shall become the property of the [jurisdiction].

b. When a dog or cat is found running at large and its ownership is verified by the [animal control authority], the authority may exercise the option of serving the owner with a notice of violation in lieu of impounding the animal.

c. In the event that the [appropriate authority] finds dogs or cats to be suffering, it shall have the right forthwith to remove or cause to have removed any such animals to a safe place for care at the owner's expense or to euthanatize them when necessary to prevent further suffering. Return to the owner may be withheld until the owner shall have made full payment for all expenses so incurred.

d. Disposal of an animal by any method specified here in does not relieve the owner of liability for violations and any accrued charges.

Section 7. Redemption

a. Any animal impounded may be redeemed by the owner thereof within five (5) days upon payment of an impoundment fee of $____ , provided that if any such animal has been previously impounded, the impoundment fee shall be $____ . Payment of impoundment fees is not considered to be in lieu of any fine, penalty, or license fees.

b. Any animal confined for rabies quarantine, evidence, or other purpose may be redeemed by the owner thereof upon payment of a fee of $____ .

c. No animal required to be licensed or vaccinated under this ordinance may be redeemed until provisions for such licensing have been fulfilled.

Section 8. Adoption

An adoption fee of $____ shall be assessed at the time of adoption. No dog or cat shall be released for adoption as a pet without being neutered or without a written agreement from the adopter guaranteeing that the animal will be neutered. Vaccination fees, licensing fees, and veterinary costs may be assessed above and beyond the adoption fee.

Section 9. Interference

No person shall interfere with, hinder, or molest any agent of the [animal control authority] in the performance of any duty as herein provided.

Any person violating this section shall be deemed guilty of a misdemeanor and shall be subject to a fine of not less than $____ or more than $____ .

Section 10. Repeals (conflicting ordinances)

All other ordinances of the [jurisdiction] that are in conflict with this ordinance are hereby repealed to the extent of such conflict.

Section 11. Severability

If any part of this ordinance shall be held invalid, such part shall be deemed severable and the invalidity thereof shall not affect the remaining parts of this ordinance.

Section 12. Applicability

This ordinance shall be in full force and effect upon the expiration of days after its passage and publication.

Section 13. Safety clause

The [jurisdiction] hereby finds, determines, and declares that this ordinance is necessary for the immediate preservation of the public health, safety, and welfare of the [jurisdiction] and the inhabitants thereof.

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*For all occurrences of [ ], communities should insert their applicable agency. †The organizations developing this model ordinance recommended that licensing tags show, in addition to the license number, the city or county and state in which the animal is registered. This helps to alleviate the problem of an animal being left unidentified or unclaimed because it has been transported from one state to another and has no reference to the issuing city or county on the license tag. ‡Where blanks are found without insertions, communities should insert applicable fees or conditions. §Differential license fees for neutered animals serve as an incentive for responsible pet ownership. IIBreakaway collars are recommended when tags are affixed to collars worn by cats. ¶It is recognized that holding periods will be determined to some degree by availability of facilities; however, it is important to ensure a reasonable opportunity for owners to reclaim their dog or cat.

Appendix 3

Recommended data elements for reports of dog bites

Data element	Comment
Notifications of dog attacks on humans	A card or telephone report to be submitted by those providing care to the human victim
Name of victim	
Address of victim	
Telephone (home and work)	
Parent contact information (if a minor)	
Incident date and time	
Reported to whom	
Date and time of report	
Notifications of dog attacks on animals	A card or telephone report to be submitted by those providing care to the animal victim
Owner of victim	
Type of victim	
Address of owner	
Telephone (home and work)	
Incident date and time	
Name and address of owner or custodian of attacking dog	
Reported to whom	
Date and time of report	
For animal control investigations	
Agency information	
Case number	
Report date and time	
Incident date and time	
Who reported the case	
Report received by	
Location of incident	
Victim information	
Name	
Breed (if animal)	
Age and date of birth	
Sex	
Address	
Telephone (home and work)	
Parent contact information (if minor)	
Rabies immunization status (if animal)	
Owner information	
Name	
Age and date of birth	
Sex	
Address	
Telephone (home and work)	
Dog information	
Name	
Breed	Indicate by whose designation (eg, owner report, animal control officer, law enforcement officer). This is important if breed data are to be interpreted.
Sex	
Age	
Weight	
Reproductive status	
Name of veterinarian	
Rabies vaccination date	
Rabies tag number	
License number	
Microchip number	
Degree of confinement at time of bite	Identifying different forms of confinement (eg, chaining, tethering, electronic fence) is important if risk associated with these practices is to be assessed.
Prior incidents	
Obedience training	
Circumstances of the bite	
Victim account	
Owner's account	
Witness account (contact information)	
Number of dogs involved	Attacks by multiple dogs may account for 20 to 30% of incidents. Forms for these animals could be given case numbers with a special designation (eg, 123A, 123B).
Injury information	
Location of injury	
Nature of injury	
Severity of injury	
Animal disposition	
Quarantine location	
Date of quarantine	
Date to be released	
Quarantined by	
Euthanatized	

Continued on next page.

Appendix 4

Model legislation for the identification and regulation of "dangerous" dogs

A. Actions allowed by authorized persons prior to hearing
   1. If any dog shall attack a person or domestic animal who was peaceably conducting himself in any place where he may lawfully be, any person, for the purpose preventing imminent injury or further injury, may use such force as is required to stop the attack.
   2. A police officer or peace officer acting pursuant to his statutory duties may, where the threat of serious injury to a person or domestic animal is imminent and unjustified, use such force as is required to prevent such injury.

B. Definitions
   1.
      a. "Dangerous dog" means any dog which without justification attacks a person or domestic animal causing physical injury or death, or behaves in a manner that a reasonable person would believe poses an unjustified imminent threat of serious injury or death to one or more persons or domestic animals. A dog's breed shall not be considered in determining whether or not it is "dangerous." Further,
      b. No dog may be declared "dangerous"
         i. If the dog was protecting or defending a person within the immediate vicinity of the dog from an attack or assault;
         ii. If at the time the person was committing a crime or offense upon the property of the owner, or custodian, of the dog;
         iii. If the person was teasing, tormenting, abusing or assaulting the dog, or in the past had teased, tormented, abused or assaulted the dog;
         iv. If the dog was attacked or menaced by the domestic animal, or the domestic animal was on the property of the owner, or custodian, of the dog;
         v. If the dog was responding to pain or injury, or protecting itself, its kennels or its offspring;
         vi. If the person or domestic animal was disturbing the dog's natural functions such as sleeping or eating.
         vii. Neither growling nor barking, nor both, shall alone constitute grounds upon which to find a dog to be "dangerous."
   2. "Attack" means aggressive physical contact initiated by the dog.
   3. "Serious injury" means any physical injury consisting of broken bones or a permanently disfiguring laceration requiring either multiple stitches or cosmetic surgery.
   4. "Domestic animal" means any animal commonly kept as a pet in family households in the United States, including, but not limited to dogs, cats, guinea pigs, rabbits and hamsters; and any animals commonly kept for companion or commercial purposes.

C. Hearing procedure
   1. Any person may make a complaint of an alleged "dangerous" dog as that term is defined herein to a police officer or peace officer of the appropriate municipality. Such officers shall immediately inform the complainant of his right to commence a proceeding provided for in Paragraph 2, immediately below, and, if there is reason to believe the dog is a "dangerous" dog, the officer shall forthwith commence such proceeding himself.
   2. Any person may, and any police officer, or peace officer acting within the scope of his statutory duties, shall make a complaint under oath or affirmation of an allege dangerous" dog as that term is defined herein to any municipal judge or justice. Thereupon, the judge or justice, or hearing panel subject to judicial review, shall immediately determine if there is probable cause to believe the dog is a "dangerous" dog and, if so, shall issue an order to any police officer or peace officer pursuant to his statutory duties or animal control officer directing such officer to immediately seize such dog and hold same pending judicial determination as herein provided. Whether or not the judge or justice, or hearing panel subject to judicial review, finds there is probable cause for such seizure, he shall, within five (5) days and upon written notice of not less than three (3) days to the owner of the dog, hold a hearing on the complaint.

D. Where a dog is determined pursuant to clear and convincing evidence at a duly constituted hearing to be "dangerous," the judge or justice, or hearing panel subject to judicial review, shall require the owner of said animal to register such animal (with the appropriate Health Department or animal control facility), and to provide prompt notification to (the appropriate Health Department or animal control facility) of any changes in the ownership of the animal; names, addresses and telephone numbers of new owners; any change in the health status of the animal; any further instances of attack; any claims made or lawsuits brought as a result of further instances of attack; the death of the animal. In addition, the judge or justice, or hearing panel subject to judicial review, may require any or all of the following, but items 5, 6 and 11, or any one of them, may only be imposed where there has been serious injury to a person.
   1. Indoors, when not alone, the dog be under the control of a person eighteen (18) years or older. (Provisions for the dog to be outdoors must also be made.)
   2. Outdoors and unattended, the dog be kept within a locked fenced area from which it cannot escape.
   3. When outdoors the dog must be attended and kept within a fenced area from which it cannot escape.
   4. When outdoors the dog must be attended and kept on a leash no longer than six (6) feet and under the control of a person eighteen (18) years of age or older.
   5. When outdoors the dog must be attended and muzzled. Such muzzle shall not cause injury to the dog or interfere with its vision or respiration but shall prevent it from biting any person or animal.
   6. Outdoors and unattended, the dog must be confined to an escape-proof kennel of the following description:
      a. Such kennel shall allow the dog to stand normally and without restriction, and shall be at least two and one half (2.5) times the length of the dog, and shall protect the dog from the elements.
      b. Fencing materials shall not have openings with a diameter of more than two (2) inches, and in the case of wooden fences, the gaps shall not be more than two (2) inches.
      c. Any gates within such kennel or structure shall be lockable and of such design as to prevent the entry of children or the escape of the animal, and when the dog is confined to such kennel and unattended such locks shall be kept locked.
      d. The kennel may be required to have double exterior walls to prevent the insertion of fingers, hands or other objects.
   7. Placement of a sign or signs of a description and in places directed by the judge or justice, advising the public of the presence and tendencies of said animal.
   8. Attendance by the dog and its owner/custodian at training sessions conducted by a certified applied animal behaviorist, board certified veterinary behaviorist or other recognized expert in the field and completion of training or any other treatment as deemed appropriate by such expert. The owners of the dog shall be responsible for all costs associated with the evaluation and training ordered under this section.
   9. Neutering or spaying of the dog at the owner's expense, unless medically contraindicated.
   10. That the dog be permanently identified by tattooing or by injecting an identification microchip, using standard veterinary procedures and practices, identification number and the identification of the person performing the procedure to be registered with the (appropriate health department or animal control facility) as indicated above.
   11. The procurement of liability insurance in an amount to be determined by the judge or justice, but in no case in an amount of less than fifty thousand dollars ($50,000), covering the medical and or veterinary costs resulting from future actions of the dog (a determination of liability shall be made in accordance with the laws of the jurisdiction). This condition may not be imposed if it is shown that no such insurance is available for a reasonable premium.
   12. If any of the above conditions ordered by a judge or justice, or hearing panel subject to judicial review, are not complied with, the owner shall be subject to a fine of not more than ten thousand dollars ($10,000).
   13. If a further incident of attack occurs under such circumstances that the dog, after a hearing as described above, is determined to be a "dangerous" dog, the judge or justice, or hearing panel subject to judicial review, may impose or reimpose any applicable directives listed above; additionally, humane destruction of the dog may be ordered, but only where the further incident involves serious injury to a person.

Appendix 5

Suggested reading for professionals (numbers correspond to cited references)

Group	Reference numbers
Public officials and community leaders	4, 6, 8-9, 10, 12, 14-16, 18, 20, 27-28, 30, 32-47
Veterinarians	1, 4-10, 12, 14-16, 27-28, 30, 32, 35-36, 39, 41-73
Veterinary technicians	7, 12, 16, 28, 43-45, 47, 50-57, 59,61, 63-64, 66-69, 74
Physicians and nurses	4-6, 8-10, 12, 14-15, 27-28, 30, 32, 35-36, 41, 43, 45-48, 60, 70-71, 73, 75-76
Humane society/animal shelter/ rescue personnel	4-6, 10, 12, 14-15, 27-28, 30, 35-36, 41-43, 51-55, 61, 66, 69, 71