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**Aggressive Dogs: A 21st Century Problem?**

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**Introduction**

Epidemiological data showed each year 1% of the Belgian population (100,000 people) suffered a dog bite injury that required medical attention. Equivalent sources indicate an annual incidence of 250,000 people bitten in the UK and 800,000 people in the USA. Recent NHS statistics suggest the incidence in the UK has risen by more than 40% in the last four years. It has been estimated that 50% of bites may remain unreported. Conversely, the benefits of dog ownership to human health and child development are well documented. It is therefore essential that safe methods of living with dogs are devised, aiming to retain the benefits whilst reducing these risks. Sadly, the media hype following serious bite incidents focuses on ‘aggressive breeds’, influencing governments to consider inappropriate breed specific legislation as a preventative measure. A total ban on dog keeping has even been suggested in the medical literature. Such a ban is not only impractical but also undesirable.

The factors that determine a dog's tendency to bite have been identified as heredity, early experience, later socialisation, training and education, medical health, behavioural health and victim behaviour. These must be considered in the context of human social and cultural factors that have been shown to influence human-dog interactions.

**Dog Bite Prevention**

Traditionally, dog bite prevention programmes have focused on the following:

1. **Dog Behavioural Development**: The importance of domestic breeding environments and early socialisation are well documented, and breeders, pet shops, veterinarians and re-homing shelters have a role to play. Temperament tests may be of use, but few have been scientifically validated and it is recommended they should not be used as the sole means of characterising a dog.

2. **Dog Education**: Obedience training is generally promoted as a positive strategy to reduce the incidence of bites. However, a recent study showed in 66% of bite cases, the dog had previously attended obedience classes. Inappropriate physical punishment and discipline, often used to reduce aggression, have been identified as trigger factors initiating bites. Aggression is part of the dog’s normal behavioural repertoire, and its expression is largely related to the situation and context. The dog’s response to a perceived threatening situation may vary according to the ‘ladder of aggression’. Thus, although important, the education must be of good quality with a full understanding of dog behaviour.

3. **Dog Hormone/Gender Status**: Castration has traditionally been recommended as a means of reducing aggression. However, analysis of bite data suggests this may not be as effective as once thought.

4. **Dog Health**: The risk of biting may be increased in the presence of pain or disease in the pet. A recent study revealed 77% of dogs involved in bite incidents were suffering from an emotional disorder. Thus veterinarians not only have a responsibility to provide effective treatment and analgesia for physical conditions, but must also be aware of and screen for behavioural disorders, and make owners aware of the potential increased risk of aggression at these times.

5. **Legislation/Aggressive Breeds**: A ban is not only impractical but also undesirable. The factors that determine a dog's tendency to bite have been identified as heredity, early experience, later socialisation, training and education, medical health, behavioural health and victim behaviour. These must be considered in the context of human social and cultural factors that have been shown to influence human-dog interactions.

6. **Influencing Dog Genetics**: Selection for positive temperament traits may be beneficial in reducing aggression, though clearly the behaviour exhibited by the individual phenotype is also influenced by environmental factors. Conversely, it is possible to select, and subsequently condition and train, for aggressive traits, and this has perhaps reinforced the concept of 'dangerous breeds'.

7. **Legislation/Aggressive Breeds**: Whilst it has been claimed that breed-related behaviours in dogs are responsible for the majority of bite injuries in children, there is little evidence from dog bite data to implicate specific breeds as a greater risk. Following media pressure, the Dangerous Dogs Act was introduced into the UK in 1991, and has subsequently been described as 'this ill-considered unjust law'. Despite this, breed specific legislation has subsequently been introduced into many European countries. The efficacy of such legislation has been questioned in a number of countries.

8. **Rabies**: 55,000 human deaths occur annually in Asia and Africa. The reporting of bites has been used as a method of estimating the incidence of human rabies. It is thought the local people can differentiate bites from a potential rabid dog from other less serious incidents and thus the total number of bites in this situation may be greatly under-reported. Conversely, the legal requirements within rabies endemic areas may affect reporting of bites in a positive manner.

**Conclusion**

The importance of domestic breeding environments and early socialisation are well documented, and breeders, pet shops, veterinarians and re-homing shelters have a role to play. Temperament tests may be of use, but few have been scientifically validated and it is recommended they should not be used as the sole means of characterising a dog. Obedience training is generally promoted as a positive strategy to reduce the incidence of bites. However, a recent study showed in 66% of bite cases, the dog had previously attended obedience classes. Inappropriate physical punishment and discipline, often used to reduce aggression, have been identified as trigger factors initiating bites. Aggression is part of the dog’s normal behavioural repertoire, and its expression is largely related to the situation and context. The dog’s response to a perceived threatening situation may vary according to the ‘ladder of aggression’. Thus, although important, the education must be of good quality with a full understanding of dog behaviour. The risk of biting may be increased in the presence of pain or disease in the pet. A recent study revealed 77% of dogs involved in bite incidents were suffering from an emotional disorder. Thus veterinarians not only have a responsibility to provide effective treatment and analgesia for physical conditions, but must also be aware of and screen for behavioural disorders, and make owners aware of the potential increased risk of aggression at these times.

**References**

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another issue - human social factors.

8. **Human Social Factors**: RSPCA data (1976 - 91) indicated a link between dog-fighting, gambling and organised crime. Dog-fighting is illegal in many countries and contravenes the European Convention. Those involved have been categorised as professionals, hobbyists or street fighters, and it is unlikely that breed specific legislation alone would curb their activities. However, we are sadly experiencing an increase in violence in our society - often involving guns and knives. It has been suggested "...in some communities these dogs have become a badge of honour, a fashion accessory in a way...". If the dog is simply a potential weapon, introducing measures to control dogs is not addressing the underlying social issues. There is also a danger that people owning such dogs may become stereotyped as social misfits. Owner education about responsible pet ownership is very important, and legislation has a place when targeted at specific individuals or circumstances. However, urban animal management rules need also to be devised that protect people from the perceived dangers of dogs whilst allowing dog owners to enjoy the benefits.

**Additional strategies**

Dog bite data should be further examined to identify any additional strategies. The data can be categorised as relating to the victim (race, age, gender, injuries, and consequences), the dog (breed, age, gender, hormone status, social type, consequences) and context (geographic location, place, time, season, human-animal interaction etc). Data can be obtained in various ways, and the specific source will significantly affect the results. According to hospital data, children are twice at risk than adults, and severe injuries, particularly involving the neck and face, occur most frequently in young children, usually in their own home by a dog that is familiar to them. 55% of children suffer post traumatic stress disorder following substantial bites. The child initiates 86% of the dog/child interactions that lead to the bite, and in many cases there is lack of active parental supervision.

The importance of the behaviour of the potential victim has been underestimated, and further research is necessary. Educational programmes have been in existence for many years, but there is a need to better identify the main group at risk, consider which prevention messages are most valid and devise the best teaching tool to communicate these messages. Finally it is important to scientifically assess whether the programme achieves its educational objectives. To meet this challenge, a multi-discipline team (involving veterinarians, dog behaviourists, paediatricians, child psychologists, graphic artists and educationalists) has developed the Blue Dog programme which targets young children (between 3yo and 6yo), and indeed their parents, enabling them to live in a safer way with their own dog. It takes the form of an interactive CD Rom that the child finds fun to use, yet learns some important lessons during this play. In essence, it attempts to help the child recognise potential risk situations and behave accordingly, underlining the importance of 'anticipatory guidance'. Ideally a parent or guardian would be present to reinforce the lessons to be learnt, and a printed parent guide facilitates this. Selected sections of the CD have been scientifically assessed by the Child Psychology Department of Lincoln University and shown to have positive learning outcomes. However there is a need to develop other resources, which are better suited to get the prevention message across in other situations (e.g. in the classroom).

The epidemiology of bites, and trigger factors stimulating them may be different in other cultures. Data from India indicate that 75% of bites occur in poor/low income families and 65% are inflicted by stray dogs, though defining the make-up of stray/free-roaming populations may be problematic.

**Conclusions**

In conclusion, dog bites pose a serious problem to humans, and the incidence appears to be increasing. This suggests that current preventative interventions are inadequate. The causes of bites are multi-factorial, and more research is needed on the epidemiology of bites to help identify the most appropriate prevention strategies. It is clear, however, that this will require coordination and agreement of all major stakeholders, and that education will be the key (and perhaps the greatest challenge).

**References**

8. AVMA Task Force on Canine Aggression and Human-canine interactions (2001) *JAVMA 218 (11): 1732 - 49*

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