

Effect of National Football League games on small animal emergency room caseload

Elizabeth A. Rozanski, DVM, DACVECC, DACVIM; Mark P. Rondeau, DVM, DACVIM;
Scott P. Shaw, DVM, DACVECC; John E. Rush, DVM, MS, DACVIM, DACVECC

Objective—To evaluate whether games of popular professional football teams have an effect on small animal emergency room caseload and percentage of dogs and cats that subsequently are hospitalized, are euthanatized, or die following admission to veterinary emergency rooms located within a dedicated fan base.

Design—Prospective study.

Animals—818 dogs and cats admitted to the emergency room.

Procedures—During the 2007 New England Patriots (NEP) football season, small animal emergency room caseload was recorded for Sunday (4-hour blocks, 8:00 AM until 12:00 midnight) and Monday night (7:00 PM to 11:00 PM). Number of dogs and cats that subsequently were hospitalized, died, or were euthanatized was recorded. Mean game importance rating (GIR) was determined for NEP games (scale, 1 [mild] to 3 [great]).

Results—Percentage of dogs and cats admitted from 12:00 noon to 4:00 PM on Sundays during NEP games (mean GIR, 1.7) versus non-NEP games was not different. Mean \pm SD percentage of dogs and cats admitted from 4:00 PM to 8:00 PM on Sundays during NEP games (mean GIR, 2.4) versus non-NEP games was significantly different ($18 \pm 5\%$ and $25 \pm 7\%$ of daily caseload, respectively). Percentage of dogs and cats admitted from 8:00 PM to 12:00 midnight on Sundays during NEP games (mean GIR, 2.1) versus non-NEP games was not different. Game type (NEP vs non-NEP) during emergency room admission did not influence whether dogs and cats subsequently were hospitalized, died, or were euthanatized.

Conclusions and Clinical Relevance—Professional sporting events may influence veterinary emergency room caseloads. (*J Am Vet Med Assoc* 2009;235:58–60)

Daily caseload at a veterinary emergency room is often difficult to predict. Results of a recent study¹ indicate that a full moon significantly increases the caseload at a veterinary emergency room. In that study,¹ there was an increase of 0.59 and 0.13 emergency room visits for dogs and cats, respectively, during the full moon, although this may not represent a clinically relevant change in caseload. Other variables such as weather and season are also anecdotally thought to influence admission of patients to a veterinary emergency center. In human medicine, the effect of local and national sporting events on the caseload of emergency departments has been evaluated with mixed results. In 1 study,² there was a significant decrease in the use of a human emergency room during the Super Bowl (ie, championship game of the US National Football League). For European football (soccer), televised games have had a mixed impact on emergency room visits by people; in 1 study³ there was a nonsignificant decrease in patient admissions during local televised soccer matches, and in another,⁴ there was a significant decrease in patient visits for injuries or illness of low severity. In another study⁵ in Europe, no effect of televised champion league soccer games was found on

From the Department of Clinical Sciences, Cummings School of Veterinary Medicine, Tufts University, North Grafton, MA 01536 (Rozanski, Shaw, Rush); and the Department of Clinical Studies-Philadelphia, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, PA 19104 (Rondeau). Address correspondence to Dr. Rozanski.

ABBREVIATIONS

GIR	Game importance rating
NEP	New England Patriots

children emergency room visits as well as subsequent hospitalization of children for surgery.

The NEP are the National Football League team of the greater Boston area. Their home games are held in Gillette Stadium in Foxborough, Mass, which is 35 miles (56 km) southeast of the Cummings School of Veterinary Medicine at Tufts University in North Grafton, Mass. It was hypothesized that the popularity of the NEP would affect whether a fan would bring a dog or cat to the emergency room for treatment during a game, either because of distraction from an in-home televised game or by absence from the home by viewing a game in person or on television at a local venue (eg, sports bar or another home). The purpose of the study reported here was to evaluate whether regular-season games of a popular National Football League team have an effect on small animal emergency room caseload and the percentage of dogs and cats that are hospitalized, are euthanatized, or die at veterinary emergency rooms located within the geographic region of a team's dedicated fan base.

Materials and Methods

Study population—During the 2007 NEP football season, records were kept of all dogs and cats brought

to the university emergency room on Sundays (12:00 noon to 4:00 PM, 4:00 PM to 8:00 PM, and 8:00 PM to 12:00 midnight periods) and Monday nights (7:00 PM to 11:00 PM period). The university serves all of New England, although most small animals that are brought to the university are from within a 75-mile radius of North Grafton, Mass. This area includes metropolitan Boston, as well as outlying rural and suburban areas.

Game time caseload—Sunday was divided into 4-hour blocks, starting at 8:00 AM and continuing until 12:00 midnight. The caseload for Monday night was recorded from 7:00 PM to 11:00 PM. Sunday games began at 1:00 PM, 4:15 PM, or 8:15 PM. Monday night games began at 8:30 PM. Game periods for Sunday were 12:00 noon to 4:00 PM, 4:00 PM to 8:00 PM, and 8:00 PM to 12:00 midnight. Games consist of four 15-minute quarters, with a typical game length of approximately 3 hours and 10 minutes. Game day caseload was recorded by an author (EAR) who did not have knowledge of the relative importance of the games.

Severity of illness—In addition to the number of dogs and cats that were brought to the emergency room for emergent care, the number of these dogs and cats that were hospitalized for 24 hours or more of ongoing care in the critical care unit, medical unit, or surgical services unit; died; or were euthanatized was recorded. These admissions were specifically used to determine whether dogs and cats that were brought to the emergency room during NEP games were more severely ill (or injured) than those brought during non-NEP game times.

Game importance—Because football games vary in importance because of the opponent and the football season record to date, the relative importance of NEP games was evaluated by 3 authors (MPR, SPS, and JER) as mild (1), moderate (2), and great (3). Criteria used for evaluation included the perceived strength of the opponent and the potential for an upset or advancement in standing. Additionally, the interest factor for other matches being played on the same day was also considered, as a relevant match in another division might influence the importance of an NEP game. The GIR was made without knowledge of the emergency room caseload at the time. A most important game was defined as a game with a mean GIR ≥ 2.67 . A least important game was defined as a game with a mean GIR ≤ 1.33 .

Statistical analysis—Comparisons were made between emergency room caseloads during NEP games versus during non-NEP games at the same times on Sunday or Monday nights, between emergency room caseloads immediately following an NEP game versus during the NEP game, and between the number of dogs and cats brought to the emergency room that subsequently were hospitalized, died, or were euthanatized (all indications of severe illness or injury) during NEP games versus during non-NEP games. Comparisons were made by use of a *t* test. Values of $P < 0.05$ were considered significant.

Results

Eight hundred eighteen dogs and cats were brought to the small animal emergency room for evaluation dur-

ing the studied game periods on Sundays and Monday nights. The football season consisted of 17 weeks (September 2007 through December 2007), during which 16 NEP games were played. One week was a bye or off week, and 1 game was played on a Saturday night and was not included in the statistical analysis.

Day type (Sunday with an NEP game vs Sunday without an NEP game) had no significant ($P = 0.83$) effect on number of small animal emergency room visits. Mean \pm SD number of dogs and cats brought to the emergency room on Sundays with an NEP game versus Sundays without an NEP game was 33.3 ± 6.7 and 33.8 ± 8.7 , respectively.

Five games with a mean GIR of 1.7 were played by the NEP at 1:00 PM on Sunday, whereas 12 weeks did not have a game at 1:00 PM on Sunday; this game time had no significant ($P = 0.08$) effect on number of small animal emergency room visits during the game period. Mean \pm SD percentage of dogs and cats brought to the emergency room from 12:00 noon to 4:00 PM on Sundays during NEP games versus during non-NEP games was $27 \pm 7\%$ and $33 \pm 7\%$ of the daily emergency room caseload, respectively.

Five games with a mean GIR of 2.4 were played by the NEP at 4:15 PM on Sunday; this game time had a significant ($P = 0.03$) effect on number of small animal emergency room visits during the game period. Mean \pm SD percentage of dogs and cats brought to the emergency room from 4:00 PM to 8:00 PM on Sundays during NEP games versus during non-NEP games was $18 \pm 5\%$ and $25 \pm 7\%$ of the daily emergency room caseload, respectively.

Three games with a mean GIR of 2.1 were played by the NEP at 8:15 PM on Sunday; this game time had no significant ($P = 0.36$) effect on number of small animal emergency room visits during the game period. Mean \pm SD percentage of dogs and cats brought to the emergency room from 8:00 PM to 12:00 midnight on Sundays during NEP games versus during non-NEP games was $14 \pm 8\%$ and $16 \pm 8\%$ of the daily emergency room caseload, respectively.

Two games were played by the NEP on Monday nights at 8:30 PM. During the football season, a mean \pm SD of 7.2 ± 1.9 dogs and cats were brought to the emergency room for treatment during the 7:00 to 11 PM period on Mondays. The first Monday night NEP game had a minor GIR of 1, during which 8 dogs and cats were brought to the emergency room. The second Monday night NEP game had a GIR of 3, during which only 1 dog was brought to the emergency room.

Importance of the NEP games (most important [GIR ≥ 2.67] vs least important [GIR ≤ 1.33]) had no significant ($P = 0.14$) effect on number of small animal emergency room visits. Mean number of dogs and cats brought to the emergency room during most important NEP games versus least important NEP games was 6 and 8.4, respectively.

No significant increase was seen in the emergency room caseload immediately following the conclusion of 1:00 PM ($P = 0.43$) or 4:15 PM ($P = 0.78$) NEP games on Sundays. The period after 12:00 midnight on Sunday was not recorded.

Severity of illness or injury was not significantly ($P = 0.52$) different between dogs and cats brought to the

emergency room during NEP games versus non-NEP games. Mean percentage of dogs and cats brought to the emergency room and that subsequently were hospitalized, died, or were euthanatized (all indications of severe illness or injury) during NEP games versus during non-NEP games was not significantly different (56% and 51% of daily caseload, respectively).

Severity of illness or injury was not significantly ($P = 0.18$) different between dogs and cats brought to the emergency room during most important NEP games (rating ≥ 2.67) versus least important NEP games (rating ≤ 1.33). Mean percentage of dogs and cats that were hospitalized, died, or were euthanatized during most important NEP games ($n = 45$) versus least important NEP games (50) was 45% and 57% of the daily emergency room caseload, respectively.

Discussion

Findings of this study indicate that popular professional sporting events, particularly in geographic regions with a dedicated fan base, may affect the caseload of a veterinary emergency room and that staffing alterations may be warranted. Predications for staffing are often challenging for services with an unpredictable caseload; thus, knowledge of factors that help predict the expected caseload can improve patient care and conserve resources.

Veterinary emergency medicine is a rapidly evolving specialty; understanding factors that influence the number of animals brought to the emergency room is vital to successful practice management. Recently, it was documented that the lunar cycle has a minor (but significant) influence on the number of dogs and cats brought to the emergency room.¹ Other beliefs may benefit from closer scrutiny, including perceptions such as rainy days are slower in terms of patient caseload or such as there is more trauma and therefore a higher caseload on the first nice day in springtime. Importantly, there are a variety of external stimuli that do influence whether patients are admitted to human and veterinary emergency rooms, and a better understanding of these factors will influence patient care. Findings in a recent study⁶ from the United Kingdom revealed a significant decrease in admission of children to a pediatric emergency room the weekend that a new Harry Potter book was released, presumably because children were busy reading rather than participating in more potentially reckless activities.

The 2007 football season was particularly exciting for the NEP, as the NEP completed the regular season undefeated, which is a rare event. Findings from this study, during this unusual year, may therefore reflect

an uncommon situation and may not be widely applicable to other professional sports in other regions of the country. However, it is likely that major regional or national events do affect veterinary emergency room admissions. The reason for the decrease may be similar to the effect of the Harry Potter books, in that dogs and cats are less likely to be traumatized while their owners are watching television than perhaps they might be if they were instead out hiking, for example. This study did not specifically evaluate the type of admissions (eg, medical, surgical, or traumatic), but further studies might be warranted to help clarify that specific point. Additionally, because no difference in severity of illness was seen in dogs and cats brought to the emergency room after a game, this suggests that cats and dogs were not deteriorating medically at home while their owners watched football games.

Limitations of this study include primarily the short study period as well as small sample size, as games are only played for a few hours each week and this study only examined the effects over a single football season. Additionally, caseload is potentially influenced by many other factors, including season of the year, weather, and other life events. In the fall of 2007, the Boston Red Sox (regional Major League Baseball team) played out a closely contested season before subsequently winning the World Series; excitement accompanying baseball may have affected the veterinary emergency room caseload during the early part of the 2007 football season. Additionally, certainly not all individuals are football fans, and for such a person, there would be no anticipated effect of games, while other universal events (eg, weather) might more dramatically influence the number of dogs and cats admitted to the veterinary emergency room.

References

1. Wells RJ, Gionfriddo JR, Hackett TB, et al. Canine and feline emergency room visits and the lunar cycle: 11,940 cases (1992–2002). *J Am Vet Med Assoc* 2007;231:251–253.
2. Reich NT, Moscati R, Jehle D, et al. The impact of a major televised sporting event on emergency department census. *J Emerg Med* 1994;12:15–17.
3. Boyce SH. VUEFA Champions League: does live television football affect attendances at accident and emergency departments? Union of European Football Associations. *Eur J Emerg Med* 2002;9:77.
4. Miro O, Sanchez M, Barras A, et al. Football, television and emergency services. *Med Clin (Barc)* 2000;114:538–540.
5. Farrell S, Doherty GM, McCallion WA, et al. Do major televised events affect pediatric emergency department attendances or delay presentation of surgical conditions? *Pediatr Emerg Care* 2005;21:306–308.
6. Gwilym S, Howard DP, Davies N, et al. Harry Potter casts a spell on accident prone children. *BMJ* 2005;331:1505–1506.