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Profiling Equestrians Injured In "At Home" Riding Accidents: Part I

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INTRODUCTION

After a riding accident, the bond between human and horse may be temporarily or, at worst, permanently disrupted. Depression, nervousness and anger can replace the positive feelings and benefits associated with riding. Previous studies indicate that over 27,000,000 people participate in equestrian activities each year in the U.S.¹ Of those, 92,000 annually require some form of medical care. This research profiles equestrians injured in accidents that occurred at home* in order to understand the "feeling states" and responses of these equestrians.

**(Home is defined as the place where the rider or handler keeps/boards/leases his/her horse or horses.)*

METHOD

Participants and

Procedure: An "Equestrian Injury Questionnaire" was distributed through several nationally known horse magazines (*The Chronicle of The Horse*, *Equus*, and *Dressage Today*) two local equine papers (Maryland and Pennsylvania) and on the researcher's Web Site advertised the study.

Data from equestrians whose "at home" riding accidents were serious enough to require medical attention/treatment from a trained medical professional (doctor, nurse, dentist,

physician's assistant) either in a private office or in a hospital/emergency setting) were used.

Five hundred and two people responded to the Equestrian Injury Questionnaire (see below). Four hundred and fifty-two of the respondents used the Internet to answer the questionnaire. The remaining 50 participants requested, received and returned copies of the questionnaire through the mail. Responses were collected throughout the fall of 2000 and the Winter/Spring 2001. Of the 502 responses, 44 came from observers of equestrian



Susan Anthony-Tolbert, Ph.D.

accidents. Information from 8 participants could not be used because they did not fully answer the questionnaire, because their accident happened at a show (not at home), or because they were from a foreign country.

The final sample of injured riders/handlers was 450. All responses were anonymous.

The "Equestrian Injury Questionnaire" contained 28 items. Part A included questions on age, gender, income, educational level, style of riding, description of the accident and the injuries received, importance of riding to the respondent, self ratings of severity of the injury/injuries received, number of riding accidents sustained while riding throughout the years, whether visible signs of the injury persisted after the acci-

dent, number of horses owned, now long he/she had ridden the horse involved in the accident, number of hours per week horses are ridden or handled, whether the horse(s) owned by the participants were kept at home or boarded, self rated level of riding skill (beginning, intermediate, advanced, part time profession, professional) etc. Part B asked respondents to assess 15 causes (riding ability, effort, bad luck, could have happened to anyone, something in the physical environment, interference from others, personality factors, attitudes toward riding, reasons or motives for riding, divine intervention, ability level of the horse, training of the horse, soundness of the horse, tiredness of the horse and finally, the horse's disposition or personality) for their riding accidents. The statement of each cause was followed by a 5 point rating scale (very true of me, true of me, somewhat true of me, not true of me and very untrue of me). Respondents first rated these causes by reflecting on how they felt immediately (within twenty four hours of the accident). Then, respondents re-rated the 15

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MISSION STATEMENT

The American Medical Equestrian Association is dedicated to the philosophy, principles and application of safety of people in equestrian activities. This purpose is achieved through education, research and resource.

- ▲ EDUCATION of health care professionals, organizational representatives and individuals, including an emphasis on public awareness;
- ▲ RESEARCH to better define injury patterns and risks, efficacy of safety measures and equipment, and assistance in equipment design;
- ▲ A RESOURCE of experience and expertise to be shared and utilized for the benefit of equestrian safety.

A Note From the President

A recent article on bicycle helmets caused me to pause and reflect on equestrian helmets once more. I believe that the outcomes of helmet use in other sports, from car racing, motorcycles, bikes, football, hockey, baseball batters to skateboards, etc., can be extrapolated to outcomes for helmet use in equestrians. We have no prospective studies, randomized and double blinded to support the contention that equestrian helmets prevent injury and death. To do so would be unethical. We cannot randomize riders to a study group in which so much collateral data indicates that they are at increased risk of injury. Unfortunately, riders still elect to enter the "no helmet" group of the equation and put themselves at risk.

The *British Columbia Medical Journal* (BCMJ) and more recently the *Canadian Medical Association Journal* (CMAJ) have published follow-up reports on legislated bike helmet laws and their results after 2 years. Five of the ten provinces have bike helmet laws. The review in CMAJ Mar 5 2002; 166(5) by LeBlanc et al reports an increased use of helmets from 36% to 86% and subsequent 50% reduction in cyclist head injuries. This law was enforced by the police and no mass education has been carried out since 1997. One of the editorial comments noted that similar results were found in Australia and New Zealand. One of the detractors noted that the result of the law was a decrease in the number of cy-



clists.

Bicyclists now include those who are on roadways, back country and racing. Except for those on the roadways, it is difficult to believe that the police could enforce such a law. Indeed, many cyclists have been warned or fined and still do not comply. It appears from the statistics that having the law "on the books" does increase the use of helmets and resulted in a subsequent very significant drop in head injuries. Initially, education was used, but it did not have the tangible outcome that resulted from legislation. I hope to see data from New York, Florida and Ontario regarding the results of their helmet laws. It is too early to retrieve this data, so we will have to wait. Changes in head injury incidence have been shown in the US Pony Club since enforcement of their helmet policies.

I personally would prefer education to laws, but I wonder how many need to suffer from head injury before riders are convinced by education alone?

JANET M. FRIESEN
President, AMEA

LITERATURE UPDATE

Low-Level Falls Can Cause Greater Pediatric Brain Injury Than Previously Thought

Dr. Michael Y. Wang
American Association of
Neurological Surgeons

Children who fall from heights of less than 15 feet can develop intracranial bleeding or blood clots that may not be apparent on external examination. The researchers of Children's Hospital of Los Angeles performed a retrospective analysis of patients younger than 15 years old with fall related trauma between 1992 and 1998. Cases, excluding suicides, were identified through the hospital database. Complete records were available for 729 patients. Boys accounted for slightly more than half of the children. The median age was 2 years. Low level falls involved 396 patients (54.3%). The commonly used guideline to gauge the severity of injury and emergency care of an injured child is a 15 foot fall.

Dr. Michael Y. Wang said that low-level falls have been largely ignored as a public health issue, and emergency medical services triage criteria dictate a lower urgency for low-level falls. All deaths occurred in children younger than 9 years of age. The only cause of mortality from low-level falls was intracranial injury.

[www.medscape.com/
viewarticle/431503](http://www.medscape.com/viewarticle/431503)

Editorial Note:

Physicians and medical personnel who see young children who have fallen from a horse must be aware of the high danger of intracranial injury that does not show symptoms at the time of the fall. These children must not remount and must be under careful observation by qualified personnel.

Doris Bixby Hammett, MD

Profiling Equestrians Injured In "At Home" Riding Accidents *continued from page 1*

causes by analyzing how they felt now, at the time they were answering the questionnaire, about these same causes. Because time since the accident varied from "approximately one month" to "20 years", respondents were rating their post accident attributions at very different time intervals. Statistical techniques (partial correlation and ANCOVAs²) were used to help to eliminate the influence of time since the accident on post accident attributions.

This research also questioned participants on their depression, nervousness and anger, within 24 hours of the accident and at times subsequent to the accident. Again, these "times since the accident" varied depending on how long it was between answering the questionnaire and the date of the equestrian-related accident. Participants also indicated how long each one of these feelings lasted.

RESULTS

The 450 participants ranged in age from 9 to 80 years. (Average age = 39 years).

Table I

AGE	PERCENT
< 21 years	8%
21-30 years	17%
31-40 years	23%
41-50 years	29%
51-60 years	15%
> 60 years	2%
Total	450

Table II

DISCIPLINE	TOTAL	450
English Hunter or Pleasure on the Flat	16%	
Dressage	14%	
Combined Training (in fields or on an outside course)	3%	
Jumping in the Ring	8%	
Trail Riding English	11%	
Western Pleasure	15%	
Western Speed/Games	1%	
Trail Riding Western	11%	
Bareback (English or Western)	5%	
Saddleseat	< 1%	
Race Training	< 1%	
Driving	< 1%	
Mounting or Dismounting (English, Western or Bareback)	8%	
Groundwork (lounging, leading, grooming, trailer load/unload)	6%	
	98%	

Ninety five percent were female and five percent male. Their income ranged from \$1600 a year for students and younger participants to \$250,000, with an average of \$58,200 per year. Twenty seven percent of this sample made more than \$70,000 per year.

Respondents have ridden an average of 20 years but this varies from a few months to 76 years. All participants who were 18 or older at the time of the survey had completed high school. Most respondents (47%) have had some college or completed college, though 20% are still in school and 33% have completed some graduate level training, including the MBA, MSW, Ph.D., MD or JD degree. They rode or handled horses an average of 14 hours per week and owned an average of 3 horses at the time of the accident. Fifty one percent kept their horses at home, 11% boarded at a small, private boarding facility with five or fewer horses or at a friend's farm, 26% boarded at a large private facility (six or more horses) and 11% kept their horses at a lesson or boarding barn at the time of the survey. The remaining 1% boarded at a large public facility. Eighteen percent of the respondents did not own a horse at the time of their accidents. They were either leasing one or the accident happened on a school horse. Four percent had the accident while trying out a horse for purchase.

FINDINGS

Part I: Psychological Aspects of an Equestrian Injury:

(A). Attributions from the Injured Equestrians:

In general, riders and handlers made stronger attributions to external causes for their accidents than to internal causes. This was true both at the time of the accident (within twenty-four hours) and at various post accident intervals. Specifically, riders and handlers and drivers rated two causes as most important in their analyses of their accidents: **could have happened to anyone (M=3.22) and the attitude/disposition/personality of the horse (M = 3.09).**

A few rider characteristics related to how attributions were made. Older riders attributed less to bad luck as a cause of their accidents than younger riders ($p < .05$). The more years of formal schooling, the less the riders attributed their equestrian mishaps to "could have happened to anyone" ($p < .05$). The longer they had ridden and the higher their own self assessed skill level, the less they saw ability as a cause in their riding accidents ($p < .05$). There were no other statistical differences ($p > .05$) in any of the 15 attributions for income level, for horse's activity or behavior at the time of the accident, for the gait at which the accident occurred, for riding style (English Hunt Seat, Dressage, Western, Bareback) for single versus multiple injuries or for body region injured. This was true for participants' responses to how they assigned causality immediately after the accident (within twenty-four hours) as well as at post accident intervals.

In addition to finding how injured equestrians responded to a standard attribution questionnaire, the research also asked which causes participants would select from a list of eight causes. There were also places in this question for riders to add to the list of possible causes. Participants were asked, "When you think about this riding accident, whom/what do you feel is responsible?" Beside the causes listed respondents were free to list as many causes, as they

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AMEA Vision



by Rusty Lowe, EMT-P, Executive Director, AMEA
Things are moving right along!



Julie, Carolyn, Drake (the horse), Russell & Rusty Lowe.

Since last edition, I have been very busy. Being Medical Officer at the Foxhall Cup (Eventing's National Championship), attending the Kentucky Derby, putting the finishing touches on the safety portion of the USEA's Instructor's Certification Program and normal day-to-day business has kept me on my toes, not to mention my real job and family duties! Another computer crash slowed me down and now I am in the recovery mode. My deepest apologies if technical difficulties have slowed down our response to you.

The AMEA is moving right along and I still have some goals to achieve including membership. We are way behind in membership dues and I appeal to you to please send in your 2002 dues. Reminders will be mailed soon. Man can not live by bread alone and neither can the AMEA! Another goal is to solicit corporate sponsorship to help our mission and offer our corporate, safety minded friends more exposure through the AMEA. If

you have any suggestions of potential corporate partners or sponsorship, please contact me amea@charter.net. Individuals wishing to be sponsors are welcomed also. Donations are tax deductible.

If you don't know, the AMEA does more than publish a newsletter. Please see "AMEA to the Rescue" in this edition. In the near future, I would like to establish a list of members or member's facilities that specialize in the treatment and rehabilitation of those injured while riding to help us refer requests to the appropriate treatment centers.

This month's *News* contains a few new items. Thanks are in order for Ms. Jan Dawson, a long time friend of the AMEA, who will begin a column to address legal issues relevant to members of the AMEA. Also, a member spotlight column will begin to highlight members and introduce them to us. This issue will highlight our two new Board members. Please submit your suggestions for who can be profiled in this interesting column.

In closing, I would again like to say thanks to the many people that help the AMEA and me personally on a daily basis. Without the support and advice that is given by our many friends, we could not survive. The AMEA is definitely making a difference within our sport and I am proud to be associated with such a fine organization. I hope you have a safe and happy summer.

Rusty

Member Spotlight



Drusilla E. Malavase, better known as "Dru", should be a familiar name to readers of the *AMEA News*.

Dru has recently accepted appointment to the Board of the AMEA, but has always been involved with our organization. Currently, her "day job" is being the Coordinator of the Stop DWI Program in Ontario County New York, where she has worked in her home town for 18 years.

Notably, Dru has been Chairman of and now a resource of the Equestrian Protective Headgear Committee, American Society for Testing and Materials from 1984 to the present. She directed development of and has assisted in maintaining the current standards for testing of equestrian helmets. This was a continuation of her involvement in the United States Pony Club's Committee on Protective Headgear. (This is why she is considered the AMEA's "helmet expert".) More activities include being the Chair of the New York Horse Council's Safety Committee, Co-Organizer of the Stuart Horse Trials, Instructor- Trainer for the American Red Cross and recipient of the Hammett-Ayer award from the AMEA in 2000.

Being a speaker at many conferences, including the AMEA, keeps her very busy and she is always available to speak and answer e-mails regarding equestrian safety.

With over 50 years experience in teaching riding and horse management skills, there is no doubt that Dru's efforts have saved many lives and prevented injury within our sport.



Dr. Betsy Greene is the Extension Equine Specialist for the University of Vermont (July, 2000-present) and has also recently accepted appointment to the AMEA Board.

Originally from Massachusetts, Dr. Greene spent the last seven years as the Equine Extension Specialist at Washington State University. She received a national award (August, 2000) from the National Association of County Agricultural Agents for her 4-H and Youth Extension Programs in Washington.

She earned her Ph.D. at Kansas State University examining the effect of moderate exercise on muscle satellite cells in young, growing horses. She completed her M.S. at the University of Arizona and her undergraduate work at Morehead State University in Kentucky.

Dr. Greene produced the video "Ground Handling Horses Safely" in collaboration with two other universities. She has published several scientific, educational, and popular press articles, as well as horse/youth curriculums.



Profiling Equestrians Injured In "At Home" Riding Accidents *continued from page 3*

felt applied and to add their own. Fifty four percent selected only one cause. The remaining 46% checked multiple causes. Of those who selected only one cause for their accident, a significantly larger percent of the respondents, as indicated by Chi Square tests for independence, attributed the accident to rider error (37%), to the horse misbehaving (25%) or to extraneous causes such as loose dogs (19%) than to any of the other causes.

How do riders' and handlers' attributions differ from observers? The observers did not witness the accidents described by the riders or handlers. The riders/handlers and observers are **not** making attributions for the same accidents. The sample of observers was also much smaller. Forty observers' responses were usable. These forty observers were matched in terms of age, education level, income level, and frequency of religious participation and self-assessed riding skills with forty riders/handlers from the sample of 450. All data for this stage of the data analysis came from females. Regardless of the type of equestrian accident, observers rated rider ability ($M=2.94$) and rider effort ($M=1.89$) as significantly stronger causes of the equestrian accident than did actors ($M=1.63$ (ability) and $M=.83$ (effort)). On the other hand, just as attribution theory would predict, the riders/handlers rated "could have happened to anyone" ($M=3.22$) and the horse's personality/disposition as significantly ($M=3.09$) stronger causes of the accident than did observers ($M=1.93$ for "could have happened to anyone") and ($M=2.02$ for horse's attitude, personality/disposition).

(B). Feelings after a Riding Accident:

Immediately after a riding

accident (within 24 hours), 24% reported no depression, 24% reported no nervousness and 39% reported no anger. These are not necessarily the same riders reporting no anger, no depression and no nervousness. For example, some riders may have felt no depression but a great deal of nervousness and moderate anger, etc. Approximately 40% within each one of the emotions rated slight to moderate feelings of depression, nervousness and anger. On the other end of the emotional spectrum, 29% reported that they were very depressed, 35% very nervous and 23% very angry. These are not necessarily the same riders reporting high levels of depression, nervousness and anger. However, analyses did indicate statistically significant correlation (relationships) among the three emotions, both at the time of the accident (within 24 hours) and at the various post accident intervals. This means that within twenty-four hours of the accident, the more depressed a rider, the more nervous ($rp(431) = .444, p=.000$). It means the more depressed a rider, the more angry ($rp(430) = .446, p=.000$). The more nervous the rider, the more angry he or she is likely to be ($rp(430) = .160, p=.000$). Similar significant correlation was also obtained at post accident intervals. These intercorrelations tell us that the feelings are occurring and are staying together. However, the statistical technique does not permit us to discuss cause and effect.

All three emotions, rated within 24 hours, were significantly correlated ($p < .05$) with these ratings of emotions at post accident intervals. Time since the accident was partialled out statistically. This means the more depression retrospectively reported within 24

hours of the accident, the more depression retrospectively reported at post accident ($rp(421) = .322, p=.000$). The same was true for nervousness within 24 hours and at post accident ($rp(423) = .371, p=.000$) and for anger ($rp(420) = .421, p=.000$). In general, the findings also tell us that the stronger the feelings of depression, nervousness and anger at the time of the accident, the longer these feelings were reported to persist post accident ($p < .05$).

When all the various riding styles/disciplines were included, for those who did suffer depression, nervousness and anger, they lasted for 4.67 months, 8.7 months and 5.73 months respectively. Depression at the time of the accident and length of time anger lasted were related to severity of self-assessed injury ratings ($p < .05$). This means the more severe the rider viewed his/her injuries, the higher the level of depression ($p < .05$) and the longer the anger lasted ($p < .05$). The majority of riders reported that any depression (93%), nervousness (79%) and/or anger (89%) that they felt dissipated with time and even disappeared. By post accident intervals the ratings of all three emotions were at "one" or "zero" on a five-point scale. These participants were rating the three feelings as not occurring or as very slight. The emotion, which persists the longest and the strongest for most styles of riding and for all age groups involved, is nervousness.

There were statistically significant relationships ($p < .05$) between the three feeling states of nervousness, depression and anger and certain attributions. The more nervous the injured equestrian at the time of the accident and the longer that nervousness lasted, the stron-

ger the attributions to rider's effort, to the ability level (actually inability) of the horse, to the horse's lack of training and/or to the horse's tiredness as causes of the accident. Higher levels of self rated depression at the time of the accident and at post accident intervals as well as length of time the depression lasted were related to attributing the accident to "Divine Intervention" and/or to the horse's unsoundness. Higher anger ratings were related, both at the time of the accident and at post accident intervals, to beliefs that the horse's unsoundness, and/or the horse's tiredness and/or "Divine Intervention" caused the accident. These relationships require more in-depth study in subsequent analyses.

In the next report on this research, the physical injuries sustained in the sample of "at home" riding accidents will be considered along with safety precautions reported both before and after the accident. And, in the third report, coping strategies and enjoyment levels after the injury as well as some vignettes provided by the participants will be discussed. Conclusions will also be presented in Part III.)

¹ Nelson DE, Rivera FP. Condie C: Helmets and Horseback Riders. *AmJPrevMed* 1994;10(1)

² ANCOVA: analysis of covariance. If a third variable (unwanted variable or confounding variable) is influencing the relationship between the dependent variable and the independent variable there is a statistical procedure that takes the influence of this covariate (Confound) out and gives you a better result (meaning a less confused look at how the independent variable is influencing the dependent variable).

ANIMAL RELATED DEATHS

Vital Statistics 1995-1998
Centers of Disease Control 1999

TABLE I
Animal Related Deaths

Code	83-94	Deaths/Yr 83-94	1995	1996	1997	1998	Total	Deaths/Yr 95-98	Percent
E813.5 Motor vehicle involving collision with animal ridden/animal-drawn vehicle	74	6	3	6	7	8	24	6	3.7%
E827 Animal drawn vehicle	69	6	8	9	6	6	29	7	4.4%
E828 Animal being ridden	1218	102	86	87	76	91	340	85	52.1%
E906.8 Other injury caused by animal	852	71	51	75	70	63	259	65	39.7%
TOTAL	2213	185	148	177	159	168	652	163	

The animal related deaths for the years 1983 to 1998 are listed in Table I. As noted in the AMEA NEWS November 1997 there are no inclusive figures for horse related deaths. Motor vehicles causing deaths of riders of animals and occupants of animal drawn vehicles are included in E813.5. Animal drawn vehicles, E827, are mostly horses, but again bovine, dogs, elephants and other animals can draw a vehicle. The chief classification is E828 "animal being ridden". Other animals are ridden; bulls and cows in rodeo, elephants and camels for example. "Other injuries caused by animals" is the last category included (E906.8). This includes deaths from kicks, crushing, dragging and bites not only from horses, but injuries from dogs, bears, sharks and other animals. The National Center of Health Statistics coding does not separate the animals that cause death.¹

GENDER (Table II)

TABLE II
Animal Related Deaths 1995-1998 Gender

	1995 Male	1995 Female	1996 Male	1996 Female	1997 Male	1997 Female	1998 Male	1998 Female	Total Male	Total Female	TOTAL	Percent Male	Percent Female
E813.5	2	1	2	4	4	3	6	2	14	10	24	58.3%	41.7%
E827	7	1	8	1	5	1	5	1	25	4	29	86.2%	13.8%
E828	49	37	51	36	49	27	48	43	197	143	340	57.9%	42.1%
E906.8	39	12	53	22	50	20	48	15	190	69	259	73.4%	26.6%
Total	97	51	114	63	108	51	107	61	426	226	652	65.3%	34.7%
TOTAL YR		148		177		159		168					

In E813.5 (motor vehicle involving collision with animal ridden/animal-drawn vehicle) males have a higher percent at 58.3% than females at 41.7%. If we can accept that females ride horses more frequently than males and that the NEISS figures (AMEA NEWS December 2001) are correct giving more female horse related injuries than males, we must assume that males may be more risk takers with animals than females. (AMEA NEWS May 1995) Jill M. Ryder of The Carriage Association of America² states that no data on the gender of drivers of horses exists.

The AMEA provides these statistics as a service to the equine industry for educational awareness purposes

E828 (animal being ridden) although the total figure of 340 deaths in the four years are much higher, they give very similar percent figures to E813.5 motor vehicle deaths, again bringing up the question relative to male risk taking.

Although E906.8 (other injury caused by animal) is included, it is unknown relative to the part horse related injuries share in these figures. Again males dominate the fatalities.

AGE (Table III)

TABLE III
Animal Related Deaths 1995-1998 Age

		1-4 yrs	5-14 yrs	15-24 yrs	25-34 yrs	35-44 yrs	45-54 yrs	55-64 yrs	65-74 yrs	75-84 yrs	85+ yrs	Total	PerCent
E813.5													
Motor vehicle involving collision with													
animal ridden/animal-drawn vehicle	1995	0	0	2	0	1	0	0	0	0	0	3	
	1996	0	4	1	1	0	0	0	0	0	0	6	
	1997	0	1	2	1	0	0	0	2	1	0	7	
	1998	0	1	1	1	2	1	0	1	1	0	8	
Total		0	6	6	3	3	1	0	3	2	0	24	3.7%
E827 Animal drawn vehicle													
	1995	1	2	0	1	1	0	2	0	1	0	8	
	1996	0	3	0	0	2	1	0	2	1	0	9	
	1997	0	1	1	0	0	1	0	1	2	0	6	
	1998	0	1	0	0	2	0	1	1	1	0	6	
Total		1	7	1	1	5	2	3	4	5	0	29	4.4%
E828 Animal being ridden													
	1995	1	7	6	14	18	24	2	9	5	0	86	
	1996	3	9	4	14	15	17	14	3	7	1	87	
	1997	1	11	6	9	14	11	12	7	5	0	76	
	1998	0	12	6	13	23	14	13	7	3	0	91	
Total		5	39	22	50	70	66	41	26	20	1	340	52.1%
E906.8 Other injury caused by animal													
	1995	4	3	2	6	8	7	2	8	10	1	51	
	1996	4	10	9	5	5	5	10	13	11	3	75	
	1997	4	7	5	2	12	10	8	12	10	0	70	
	1998	2	7	4	8	7	9	11	7	6	2	63	
Total		14	27	20	21	32	31	31	40	37	6	259	39.7%
TOTAL FOR AGE 1995-1998													
		20	79	49	75	110	100	75	73	64	7	652	
		3.1%	12.1%	7.5%	11.5%	16.9%	15.3%	11.5%	11.2%	9.8%	1.1%		

The highest number of animal related deaths occur in the ages 35-44 years followed closely by 45-54 years, and with less in the ages 25-34 years, 55-64 years and 65-74 years. These ages of persons in animal related deaths seem unexpected, as the mature years are believed to have more experience and better decision making.

If we only take the category

animal being ridden, we see the same ages with the greatest percent of deaths although the percent spread is somewhat greater and the ages 25-34 years have increased their percent.

Using these limited figures, no change in the past four years in the number of horse related deaths from motor vehicles have occurred. This is a challenge to the division of mo-

tor vehicles as well as those riding or an occupant in the horse drawn vehicle on a road shared by motor vehicles. In the article on horse related deaths in Ohio (*AMEA NEWS* June 2000) 50% of the deaths where in horse drawn vehicles that were struck by automobiles. Dr. Koepke's recommendation was that these statistics should be given to the Department of Transportation so that

the department, through more public education, can make the roads safer for not only horse drawn vehicles but for everyone.

Animal drawn vehicle deaths may have increased. Education for those using horses not only on the roads but also on farms and in relational activities must be made aware of safety recommenda-

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ANIMAL RELATED DEATHS Vital Statistics 1995-1998/Centers of Disease Control 1999

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lieve that the number of those participating in horse activities has increased. However, horse tack, equipment and apparel manufacturers report decreased sales, which they attribute to fewer participants. (AMEA NEWS September 2001). The National Electronic Injury Surveillance System (NEISS) has reported an increased number of horse related injuries going to emergency rooms from 1996. If

we can accept these figures for comparison, the injuries appear to have been less severe and not resulting in deaths.

Other deaths caused by animals are also down, but as horse related deaths from kicking and crushing might be a relatively small part of these figures the horse community cannot take credit for the decrease.

DEATHS 1999: Centers for Disease Control³

TABLE IV
V Codes Animal Related Deaths 1999

V CODES CDC Wonder V80-V80.9	1999 Total	Percent
V80.0 Rider or occupant injured fall from animal or animal drawn vehicle in non-collision accident	74	67.3%
V80.1 Rider or occupant injured in collision with pedestrian or animal	0	0.0%
V80.2 Rider or occupant injured in collision with pedal cycle	0	0.0%
V80.3 Rider or occupant injured in collision with 2 or 3 wheeled motor vehicle	0	0.0%
V80.4 Rider or occupant injured in collision with car, truck, van or bus	9	8.2%
V80.5 Rider or occupant injured in collision with other specified motor vehicle	0	0.0%
V80.6 Rider or occupant injured in collision with railway train or railway vehicle	0	0.0%
V80.7 Rider or occupant injured in collision with other non-motor vehicle	0	0.0%
V80.8 Rider or occupant injured in collision with fixed or stationary object	1	0.9%
V80.9 Rider or occupant injured in other and unspecified transport accidents	26	23.6%
TOTAL	110	

In 1999 the Centers for Disease Control changed the code number of animal related deaths from E to V with the numbers 80.0 to 80.9 (Table IV). The V codes gave 110 animal related deaths in 1999. The years 1995-1998 E codes gave an average of 163 animal related deaths during those years. A decrease may have occurred as a decrease is seen in the trend during the previous years of E codes. However, this large change may be related to variance in record keeping. Future years using the V codes will give this information.

Gender V code

TABLE V

Gender V Code 1999

1999	Total	Percent
Male	65	59.1%
Female	45	40.9%
Total	110	

The percent of males continues to be higher in animal related deaths than females. In comparison with E Code 1995-1998 (male 65.3% female 34.7%) there is an increase in the percent of fe-

males compared to males. This has been a trend shown in the NEISS horse related injuries. More women are riding horses as well as participating in other activities with animals.

Age V Code 1999

TABLE VI
V Code 1999 Age

1999	< 1 yr	1-4 yr	5-9yr	10-14yr	15-19yr	20-24yr	25-34yr	35-44yr	45-54yr	55-64yr	65-74yr	75-84yr	>84yr	Total
V80.0	0	0	4	3	3	1	8	12	19	13	9	1	1	74
V80.4	0	0	0	1	1	1	2	1	1	0	0	2	0	9
V80.8	0	0	0	0	0	0	0	0	0	1	0	0	0	1
V89.9	0	1	1	2	1	0	4	4	3	7	1	2	0	26
Total	0	1	5	6	5	2	14	17	23	21	10	5	1	110
Percent	0.0%	0.9%	4.5%	5.5%	4.5%	1.8%	12.7%	15.5%	20.9%	19.1%	9.1%	4.5%	0.9%	

The new age divisions are smaller from birth to the age 24 years providing more precise information on age of death. The ages 25-34 years, and above remain the same as in the E codes. As most of the animal related deaths are in these ages we can use them without change.

In 1999 V codes the largest percent of deaths were in the ages 45-54 years, with the second highest in the 55-64 years with 35-44 years and 25-34 following in that order. Comparing the E code figures 1995-1998 the highest percent animal related deaths were in the 35-44 years, with the second highest in the 45-54 years. The NEISS studies of horse related injuries have shown a trend in which the highest percent of injuries were in the ages of 25-44 years but the greatest percent of increases are occurring in the older age groups. (AMEA NEWS December 2001) It has been proposed (AMEA NEWS September 2001) that the baby boomers are continuing their active lives as they age which gives a greater number of riders in this age group.

The National Center of Health Statistics does not give the animal, that caused the death. Using injury records of Department of Surgery, East Texas Medical Center⁴ 55% were caused by horses, 32% by bulls, 11% by cows, 2% by wild animal attacks. No other references were found.

CONCLUSIONS

Few horse or animal related deaths occur each year, so that trends or changes must be evaluated in the same study for several years. The trends that may be occurring:

- Morbidity records show that the ages at time of death are increasing.
- Males continue to be the dominant number but females are increasing.
- Deaths from motor vehicles while riding or in a horse drawn vehicle appear to have increased from 3.7% (E code 813.5) to 8.2% (V code 80.4).
- Deaths from falls from animal being ridden or from animal drawn vehicle appear to have increased from 56.5% (E codes 827 and 828) to 67.3% (V code 80.0). If this is so, it reverses the trend noted in the E-codes.
- Other injury caused by animal appear to have decreased from 39.7% (E code 906.8) to 24.5% (V80.8 and V80.9).

These figures can alert the horse community of areas that need increased attention.

¹ Ken Kochanek, Statistician, National Center for Health Statistics, 6425 Belcrest Road, Hyattsville, MD 20782-2003; (301) 458-4319, personal communication.

² Carriage Association of America, (177 Pointers-Auburn Rd, Salem, NJ 08079 carrasc@mindspring.com),

³ Centers for Disease Control Wonder Customer Support <http://wonder.cdc.gov/mortICD9J.shtml>

⁴ Norwood S, Mcauley C, Vallina VL, Fernandex LG, McLarty JW, Goodfried G. Mechanisms and patterns of injuries related to large animals. *J Trauma* 2000 Apr; 48(4) 740-744.

DORIS BIXBY HAMMETT, MD
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LITERATURE UPDATE

by David McLain, MD

Injury During Contact with Horses: Recent Experience with 75 patients at a Level I Trauma Center.

It is unusual to pick up a medical journal and find an article on injuries related to horses. In the April, 2002 issue of the *Southern Medical Journal*, Drs. Griffen, Boulanger, et.al. reviewed data collected for the five years from Jan., 1994 to Dec., 1998 at a Level I Trauma Center at the University of Kentucky Medical Center in Lexington. They reviewed cases of equine-related trauma in an area "in which there is significant contact between horses and humans."

Over the four years, 75 patients were admitted due to contact with horses (0.75% of all trauma admissions). In this study, 55% of the patients were men and the mean age was 37 years (range, 3 to 81 years). The vast majority (89%) were injured during recreational activities with only 11% injured during vocational activities. Most (65%) fell or were thrown while 19% were kicked, 12% were crushed, and 4% were hit by a vehicle while riding. Only 14% were wearing helmets and 11% had ethanol in their blood (17% of those tested). The most common injuries were extremity fractures (49%) and head injuries (44%), but thoracic and abdominal injuries were not rare. Of the Abbreviated Injury Scale injuries rated level 4 or 5 (moderately severe, severe), 56% were head injuries, 25% were chest injuries, and 19% were abdominal injuries. Facial injuries accounted for 16% of the total injuries. Only 5% of those injured suffered a neck injury and none were severe. Of the 75 patients, 34 (45%) required surgery. Of these, the majority (53%) required surgery for repair of extremity fractures of which 42% were tibial fractures. Facial fractures accounted for 20% of the operations. Four patients required surgery for thoracoabdominal injuries. Five patients (6.7%) died, all of head injury. They note that this was consistent with other reports including those of Bixby-Hammett and Brooks, that fatalities were almost always related to head injury. During the study period, 11 deaths were reported in Kentucky (5 at their center and 6 elsewhere) due to contact with horses. This produced an estimate of 0.06 deaths per 100,000 persons per year due to horse related injury in Kentucky. This was noted to be lower than an estimate made in New Zealand and Australia in a previous study. The authors concluded that injury with horses was uncommon even at a center in an area with a large equestrian and equine population. They note that the NEISS reports that only 4% of persons injured during contact with horses require hospitalization.

Most horse-related injuries are soft tissue contusions, lacerations, and abrasions and these are unlikely to be referred to a Level I trauma center. Accordingly, the relatively high frequency of abdominal and thoracic injuries in this series, including 4 requiring surgery, likely relates to patient selection due to their Level I trauma unit status.

Though uncommon, injuries were often serious and lead to significant morbidity and occasional mortality. Prevention of death from horse-related trauma, the authors concluded, is synonymous with head injury prevention. The low rate of helmet use (14%), especially among children in this study, suggests that more prevention and education are needed.

David McLain, MD is a rheumatologist in Birmingham, Alabama and a founding member of the AMEA. Currently, Dr. McLain is a Board Member and Treasurer of the AMEA and has worn many hats (or helmets!) within our organization. He formerly was President of the United States Combined Training Association's (now United States Eventing Association) Safety Committee for many years and has contributed significantly to safety within our sport.



Dear Sirs,

I am an Italian mother of a 17 year old girl that has been riding for 11 years and is very keen on eventing. Even before my daughter Eleonora had a bad accident last June, when all my fears came true, I was looking for serious information on safety in riding and I am very grateful to the web that made possible my knowledge of your existence. I hope membership to AMEA is open to foreign people because I would like to request a junior membership for Eleonora in order to make her more responsible about the sport she practices and loves.

As for me, I would like to know if you ever made any study on riding helmets suitable to protect the riders face. In fact, my personal observation has seen 3 riders (one is my daughter) having their face devastated in bad falls. Why does riding not have helmets similar to skiing, flying, paragliding and so on?

If you have any article relative to a study on this subject please, be so kind to let me know how to get it.

The junior membership is requested for: ELEONORA GIULIA MONTI, ITALY.

Editors Note: This question was received via e-mail from Ms. Monti and has been edited for printing.

Dear Signora Monti,

I am the "helmet expert" at the AMEA, and the Chairman of the committee that wrote the U.S. (American Society for Testing and Materials) standards for riding helmets. I am an eventing organizer, as well as a Technical Delegate, and a teacher of riding instructors.

At ASTM we have been discussing a helmet with face protection for rodeo and bull riders. There has been a draft of the standard which is not yet complete. The problem with a new standard is that the sport for which it is intended must want the product and create a market for it before it will be made, and our Western riders are not only uninterested, they are hostile to

the idea. And their competitive associations are not interested in requiring its use. So there is not much point to spending valuable volunteer hours in promoting something nobody wants.

There are engineering problems with adding facial protection to a helmet. If it isn't made correctly there is a chance of a faceguard breaking into the rider's eyes, especially if it is made of metal wires. For many years I have been trying to get the best manufacturer of hockey face guards to market a clear plastic guard which could be added to a riding helmet, but neither he nor any else wants to accept the liability of making such a product.

Also, when the guard is added there is a chance that a blow to the guard will transfer energy back to the helmet at the small points where it is attached. In the temple area this might cause more damage to the brain than a wider blow to the face, whose cheekbones are generally stronger than the temporal bones.

Polo masks are meant to guard against blows from a wooden mallet or a wooden ball. Most polo ponies are ridden in standing martingales which keep them from impacting a rider's face with their heads, something which can happen to eventers even with the use of the running martingales which are the only ones permitted in the jumping phases. There is also a chance of an eventer who "ducks" over fences hitting a face mask on the horse's neck.

What you ask makes very good sense, particularly when we are talking about female riders who would like to avoid plastic surgery. But it is not a simple subject, or one which has been scientifically studied so far. We are only just coming to a time when truly protective helmets are being accepted by most riders, and that has taken a ridiculously long time and is not yet universal. In our country we have had motorcycle helmets with good facial protection available for many years, but the majority of riders in that sport will not buy or wear them. The other sports you mention, skydiving, parasailing, etc. use helmets which do not really offer much protection to the

head, and if those participants hit the ground their chances of survival are not at all good. They protect their eyes so they can see without tears, hoping to be able to anticipate the proper way to land.

I agree with Dr. Hammett that you sound like a wonderful and supportive mother. And I support her suggestion of a jaw joint pro-

tector or mouth guard, especially if Eleanora had damage on that part of her face. If the damage was around the eye socket, it would be possible to use the eye guards sold for racquet sports.

Please feel free to contact me if you think I can be of help to you.

Dru Malavase

AMEA to the RESCUE

The AMEA has recently received some interesting requests for assistance. When a request is received, I attempt to triage the situation and forward the request to the appropriate person (s) or organization (s) that can most appropriately handle the request. As you will see, these requests can involve teamwork from many people!

- ▲ The caretaker of a handicapped 7 year old girl with a rare medical condition asked for assistance with finding a helmet for this girl to begin equine therapy. Due to the abnormally large sized head of the girl, it was not easy to find an appropriate equestrian riding helmet. An effort was begun to find a helmet for this special little girl. With international assistance from Alan McMillan of Aussie helmets in Australia, a helmet was found. Many people provided valuable help in this search including Marge Kittredge, of USA Equestrian's Disabled Riding Committee, Dru Malavase, Frank Plastino of International Riding Helmets, the Children's Safety Network and FedEx. Please see story in the September News. Truly an international effort made this wonderful gift possible.
- ▲ A question was received via e-mail asking if Morning Glories were poisonous to horses. Even though we usually don't deal with veterinary issues, Dr. Catherine Kohn of the Veterinary Department of Ohio State and a personal friend was contacted and gave valuable advice to us that Morning Glories are poisonous to horses and the symptoms to watch for. The person requesting the information was very appreciative and stated, "Many thanks for your research. I.....and 23 Arabian horses appreciate your effort!"
- ▲ A business advisor called and asked for referral to rehabilitation facilities in her area that could assist a riding instructor that was injured in an accident with her horse. She was concerned that her client's rehabilitation should be geared to returning to her normal duties as an instructor. Drs. Doris Hammett, John Stremple and George Koepke gave very helpful advice and HEALTHSOUTH Corporation provided referral to a local facility for treatment.

These are only a few of the noteworthy requests received by the AMEA. We will provide assistance within reason for any equestrian issue that is safety related. The AMEA provides this assistance in good faith hoping to continue making our sport safer. For assistance, we can be reached by our e-mail address, fax or toll-free number.

Special thanks should be given to our members and friends who provide assistance to the AMEA with these requests. As stated previously, the AMEA provides assistance at no cost to the requester. We simply ask for a donation.

*RUSTY LOWE, EMT-P
Executive Director*

Legal Issues *Physician's Hidden Liability* by Jan Dawson, J.D.

Consider the following scenario: As a routine part of an initial conference with a potential new student, a riding instructor asks if the student has any medical condition that would be aggravated by horseback riding or any medical reason that would make it dangerous for the student to ride at all, such as a condition that would cause dizziness or loss of balance. These conditions are pointed out by the instructor as being a part of the release form that the student, parents or guardian of a minor is asked to read and sign prior to the first lesson. The instructor asks if the student is aware of any medical condition that would be aggravated by a fall from a horse.

By asking those questions the riding instructor exempts herself from any liability resulting from injuries sustained as a result of undisclosed medical conditions that would have made it inadvisable for the student to ride a horse.

If the student responds in the affirmative that she has such a condition, the burden of responsibility will shift back to the instructor. The student may inform the instructor that she suffers from anemia, from a seizure disorder, hypoglycemia, or any number of problems that would cause the rider to have balance problems or lose consciousness altogether. The riding instructor knows that any fall from a horse, even a horse that is motionless, can have serious consequences and so she would then need to have the student get permission from the student's personal physician in order for her to

ride.

Most students are responsible about informing the instructor about conditions when dangers are clear to them. Responsible instructors will request a physician's permission before accepting such a student for mounted lessons.

Riding instructors are accustomed to looking for back problems and students seem to always think of back problems when the "medical condition" question arises. The "back problem" may be the least of the worries, although, that is something that requires a physician's permission before proceeding safely as well.

The student may inform the instructor that she is a cancer survivor, or suffers from cardiac arrhythmia, or she may not. There are many medical conditions that would make a fall more likely or that would be seriously worsened or even become life-threatening if the rider were to take a hard fall.

Only a physician could be aware of the danger posed by these conditions. The instructor could not fully understand them. She would not know what to ask nor would she be expected to know what to ask.

A tragic situation would be a cancer survivor who is going to participate in organized, fun activities, one of which is horseback riding. All the participants must be cleared "to ride horses" by their personal physicians. This participant has been cleared by the family physician and goes for a week-end of fun. During a walking trail ride, her horse spooks and the participant falls. She shatters like a piece of China be-

cause her bones are so brittle from so much chemotherapy. The physician is stunned. It never occurred to him that there was any chance of a fall. He was told that this would be a quiet trail ride, quiet horses, and a quiet walk. He had no idea that there was any chance of a fall. He was not a rider himself but he had seen horses on TV.

All experienced horsemen know that there is never any guarantee with any horse unless it is a carousel horse or one in front of the super market that plugs in and takes a quarter for a 60-second ride. Furthermore, due to the pressure of experienced commercial horsemen, 44 states have now passed some form of equine liability statute which has as their core premise the idea that horses by their very nature are unpredictable and can react suddenly to sight, sounds and even to nothing at all. What this means to the family physician who is asked to clear someone to participate in horseback riding is that he or she must view this sport a bit differently than a quiet ride on *My Friend Flicka*.

In many instances, the physician thinks of riding as a gentle trail ride through the woods. Much of the time it is; however, it may also be a canter at breakneck speed over hill and dale. Because any situation on a horse can be interrupted by the unexpected it may be necessary for the family physician, when confronted with the question, "Can I safely ride a horse?" to answer it as if the question had been, "Can I safely fall off of a horse?" For some

situations it would be a good idea if the physician gave the would-be rider a pre-participation examination for sports. We do not usually think of riding as a contact sport but riders who have taken a hard fall, especially regular riders who have taken several, know the risk. Departing the horse suddenly and unexpectedly at a trot is comparable to being pushed off of the roof of a compact car going about 12 - 15 miles per hour. If the horse is running away, it may be traveling close to 30 miles per hour.

The question is not whether the patient is cleared to ride but whether the patient is cleared to fall.



Jan Dawson is an attorney and President for the American Association for Horsemanship Safety. She is the author *Teaching Safe Horsemanship*, and through AAHS, has conducted many clinics teaching safe riding by the *Secure Seat*sm method. Jan and her husband Dr. Bob Dawson (a law professor at the University of Texas) are long time friends of the AMEA and are responsible for maintaining our web-site and provide valuable support. For more information about AAHS, please click on the "Return to AAHS Home Page" link on the AMEA web-site.

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