The Effect of the Breed Ban on Bite Incidences and the Usage of Post-Exposure Prophylaxis on Fort Riley

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MPH Field Experience
Objectives, Part 1

Breed-Specific Legislation and its Effect on Fort Riley

- Conduct literature review on BSL
- Collect data from Irwin Army Community Hospital’s (IACH) medical record database on dog-bite related ER visits between January 2004 and December 2013
- Determine if the Banned Dog Breed Policy has been effective in reducing the incidence of dog bite-related ER visits on Fort Riley
- Analyze demographic characteristics of patients involved in dog bites
Objectives, Part 2

Rabies and the Usage of Post-Exposure Prophylaxis on Fort Riley

- Collect data from IACH’s medical record database on the number of patients that initiated a rabies post-exposure prophylaxis (PEP) series between 2004 and 2013
- Determine the number of PEP series initiated per year
- Determine if the Banned Dog Breed Policy has had an impact on the amount of PEP used annually
Objectives, Part 3

Total Dog Bite Reports and Number of Reports Received

- Collect data from Public Health Command on the number of reports initially reported at any of the healthcare facilities and the number of those reports that were received by Veterinary Services by the next duty day.
- Determine the average percentages of reports that were received at Veterinary Services by the next duty day after the initial dog bite report per year.
- Determine the average percentage of reports received by the next duty day over the whole ten-year period between 2003 and 2012.
Part 1

Breed-Specific Legislation and its Effect on Fort Riley
Background
Background

Breed-Specific Legislation: “any bill that seeks to ban or place severe restrictions on owners of a particular breed of dog or dogs with certain physical characteristics, regardless of whether or not the dog is a problem in the community” (American Kennel Club, 2009).
Background

- Main dog breed registries do not recognize “Pit Bull” as a breed
- The term Pit Bull typically refers to the American Staffordshire Terrier (left) and the Staffordshire Bull Terrier (right)
Famous pit bulls in the 1900s

- Sergeant Stubby
- Petey (My Gang and Little Rascals TV series)

Pit bull used on a propaganda war poster in WWI
Previous studies have been conducted in many countries on analyzing the effect of BSL

- All but one of these studies have concluded that BSL has no effect on reducing the number of dog bite-related injuries
Misidentification

Regardless of profession, one cannot identify the breed of an animal based on visual inspection alone

Study conducted by Voith et al. (2013)

- 986 participants; 20 dogs of various breed mixes
- For 14 of the 20 dogs, less than 50% of participants correctly identified the breeds that matched DNA analysis
Banned Dog Breed Policy:
Fort Riley Regulation 40-18, Pet Control and Disease Prevention (2008)

FR 40-18 States:
- Effective 1 October 2008, Pit Bulls, American/Staffordshire Terriers, and crosses of these breeds will no longer be allowed on Fort Riley. [...] 

- This breed of dog has been bred for the purpose of aggression and may pose a danger to Soldiers, Families and visitors to Fort Riley. The Pit Bull, American/Staffordshire Terrier, or a cross of this breed has a genetic propensity which may lead to unprovoked aggression or attacks. [...]
Breed-Specific Legislation

Methods
Methods

- Conducted literature review and collected data on dog bite-related emergency room visits at Irwin Army Community Hospital (IACH)
  - Primary data from 2004 to 2013 obtained from Beverly Cronn in Health Information Management at IACH
  - Population statistics obtained from Residential Communities Initiative at the Housing Division on Fort Riley
  - Determined incidence rates of dog bite-related ER visits before and after the Banned Dog Breed Policy and the effect the policy may have had on these rates
  - Determined significant difference using alpha value from a chi-square test

- Analyzed the demographic characteristics of patients seen at the IACH ER for dog bite-related injuries
Methods

- Time period for this study was a two-year range before and a two-year range after the Banned Dog Breed Policy, with exactly one year of data before and after the implementation of the policy not used:
  - October 2005-September 2007
  - October 2009-September 2011

- Collected from IACH’s medical records database
  - All encounters that included the diagnostic code ICD-9, E906.0, and V01.5, or any chief complaint containing the text “dog” within the selected time period.
Methods

- Variables studied:
  - Number of cases per year (October-September)
  - Age
  - Gender
  - Patient Category
  - Family Member Prefix
Results
Results

- Total number of cases in both date ranges
  - 239
- Number of cases before breed ban
  - 118
- Number of cases after breed ban
  - 121
Results

ER Visits
Total Cases

Number of Cases

Date Range

Oct '05 to Sep '06
Oct '06 to Sep '07
Oct '09 to Sep '10
Oct '10 to Sep '11
Results

- Incidence before breed ban
  - October 2005-September 2006
    - 5.32 per 1,000 persons
  - October 2006-September 2007
    - 5.21 per 1,000 persons
  - October 2009-September 2010
    - 4.43 per 1,000 persons
  - October 2010-September 2011
    - 4.08 per 1,000 persons
Results

Dog Bite-Related ER Visit Incidence Rate

Incidence Rate (Per 1,000)

Date Range

Oct '05 to Sep '06  Oct '06 to Sep '07  Oct '09 to Sep '10  Oct '10 to Sep '11
Results

- More males (54%) sought medical attention for dog bite-related injuries in the ER than females (46%)
- Age groups (highest incidence)
  - Ages 1-5 (23.43% of all cases)
  - Ages 21-30 (24.27% of all cases)
- Patient Category (highest incidence)
  - A41 – US Army Family Member Active Duty (73.22%)
- Family Member Prefix
  - 1 – First-born child (28.45%)
  - 20 – Service Member (21.76%)
## Results

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age Category (in Years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;1</td>
<td>2</td>
<td>0.84</td>
</tr>
<tr>
<td>1-5</td>
<td>56</td>
<td>23.43</td>
</tr>
<tr>
<td>6-10</td>
<td>44</td>
<td>18.41</td>
</tr>
<tr>
<td>11-20</td>
<td>47</td>
<td>19.67</td>
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<td>21-30</td>
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<td>31-40</td>
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<td>2.51</td>
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<tr>
<td>51-60</td>
<td>5</td>
<td>2.09</td>
</tr>
<tr>
<td>61+</td>
<td>6</td>
<td>2.51</td>
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<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>128</td>
<td>53.56</td>
</tr>
<tr>
<td>Female</td>
<td>111</td>
<td>46.44</td>
</tr>
</tbody>
</table>
Results

Age of Patients

![Bar chart showing the number of ER visits across different age groups. The chart indicates the highest number of visits in the 1-5 age group, followed by the 6-10 and 11-20 age groups, with a significant drop in visits for older age groups.]
Results

Number of Males and Females per Age Group

- **Number of Males and Females**
- **Age Group**:
  - <1
  - 1-5
  - 6-10
  - 11-20
  - 21-30
  - 31-40
  - 41-50
  - 51-60
  - 60+

Legend:
- Male
- Female
Results

Number of Adults and Children Before and After the Breed Ban

<table>
<thead>
<tr>
<th>Category</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult</td>
<td>40</td>
<td>60</td>
</tr>
<tr>
<td>Child</td>
<td>80</td>
<td>80</td>
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</table>
## Results

<table>
<thead>
<tr>
<th>Demographic</th>
<th>Description</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Category</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A11</td>
<td>USA AD Enlisted or Officer*</td>
<td>41</td>
<td>17.15</td>
</tr>
<tr>
<td>A31</td>
<td>USA Retired LOS **</td>
<td>8</td>
<td>3.35</td>
</tr>
<tr>
<td>A32</td>
<td>USA Retired PDRL***</td>
<td>1</td>
<td>0.42</td>
</tr>
<tr>
<td>A41</td>
<td>USA Family Member AD</td>
<td>175</td>
<td>73.22</td>
</tr>
<tr>
<td>A43</td>
<td>USA Family Member Retired</td>
<td>8</td>
<td>3.35</td>
</tr>
<tr>
<td>A47</td>
<td>USA Family Member Deceased Retired</td>
<td>1</td>
<td>0.42</td>
</tr>
<tr>
<td>A48</td>
<td>USA Un-remarried Former Spouse</td>
<td>1</td>
<td>0.42</td>
</tr>
<tr>
<td>F41</td>
<td>USAF Family Member AD****</td>
<td>2</td>
<td>0.84</td>
</tr>
<tr>
<td>K93</td>
<td>Medicare-Civilian Emergency</td>
<td>1</td>
<td>0.42</td>
</tr>
<tr>
<td>K94</td>
<td>Medicaid-Civilian Emergency</td>
<td>1</td>
<td>0.42</td>
</tr>
</tbody>
</table>

*=USA refers to United States Army; AD refers to active duty.
**=LOS refers to Length of Service
***= PDRL refers to Permanent Disability Retired List
****= USAF refers to United States Air Force
<table>
<thead>
<tr>
<th>Family Member Prefix</th>
<th>Prefix Description</th>
<th>USA</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>First-born child</td>
<td>68</td>
<td>28.45</td>
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<tr>
<td>2</td>
<td>Second-born child</td>
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<td>16.74</td>
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<td>3</td>
<td>Third-born child</td>
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<td>4</td>
<td>Fourth-born child</td>
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<td>3.35</td>
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<td>Fifth-born child</td>
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<td>0.84</td>
</tr>
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<td>7</td>
<td>Seventh-born child</td>
<td>2</td>
<td>0.84</td>
</tr>
<tr>
<td>20</td>
<td>Service Member</td>
<td>52</td>
<td>21.76</td>
</tr>
<tr>
<td>30</td>
<td>Spouse or Former Spouse of Service Member</td>
<td>38</td>
<td>15.90</td>
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<tr>
<td>31</td>
<td>Second subsequent spouse</td>
<td>4</td>
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<tr>
<td>98</td>
<td>Civilian Emergency</td>
<td>2</td>
<td>0.84</td>
</tr>
</tbody>
</table>

* = USA refers to United States Army; AD refers to active duty.
** = LOS refers to Length of Service
*** = PDRL refers to Permanent Disability Retired List
**** = USAF refers to United States Air Force
The years leading up to the breed ban had 58 and 60 cases, and the years after the breed ban had 61 and 60 cases.

Population living on post was 10,893 and 11,524 before the breed ban and 13,776 and 14,689 after the breed ban.

Adults and children were affected differently by the breed ban.

Chi-square test shows $\alpha = 0.982$.

- If $\alpha > 0.05$, there is no association between the breed ban and the incidence of dog bite-related injuries seen at the ER.
US Army Active Duty Service Members and their family members make up majority of patients seen at IACH ER (90.37%)

- More Active Duty than Retired live in Fort Riley area; thus, Active Duty will predominate
- ~60% of all patients were children of the service member
- ~38% of all patients were the service member or their spouse
Public Health Implications

- Greater awareness of demographics of those affected by dog bites on Fort Riley
- Targeting susceptible populations for education on how to behave around and properly approach dogs
Part 2

Rabies and the Usage of Post-Exposure Prophylaxis on Fort Riley
Rabies and PEP

Background
Rabies is one of the biggest public health concerns today
- Zoonotic disease
- Two forms:
  - Furious – hyperactivity, excited behavior, hydrophobia, occasionally aerophobia, eventual death by cardio-respiratory arrest (70%)
  - Paralytic – gradually become paralyzed, go into a coma, and eventually death (30%)
More than 55,000 people die from rabies every year

About 40% of bite victims are children under the age of 15
Background

Terrestrial Rabies Reservoirs in the United States, 2012 (WHO)
Prevention

PEP consists of:

- Local treatment of the wound, initiated as soon as possible after exposures;
- A course of potent and effective rabies vaccine that meets WHO recommendations; and
- The administration of rabies immunoglobulin, if indicated.
Rabies and PEP

Methods
Methods

- Collected data on post-exposure prophylaxis used at any of the clinics on Fort Riley
  - Primary data from 2004 to 2013 obtained from Health Information Management at IACH
  - Population statistics obtained from Residential Communities Initiative at the Housing Division on Fort Riley
  - Determined the number of PEP series that were initiated per calendar year
  - Compared the number of PEP series initiated to the population living on post
  - Determined the effect the Banned Dog Breed Policy may have had on the number of PEP series initiated
Methods

- Time period for this study was 01 January 2004 to 31 December 2013

- Original dataset listed every vaccination of PEP administered to patients at any of the clinics on Fort Riley
  - Since PEP is a series of vaccinations, only the first vaccination of a series administered to the same patient was taken into account.
  - Any vaccination listed that had a vaccination date of more than 30 days from the initial vaccination date was considered the beginning of another series.
Rabies and PEP

Results
Results

- Total number of PEP series initiated
  - 213
- Largest number of cases in 2011
  - 35 cases
- Smallest number of cases in 2006
  - 8 cases
## Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>15</td>
<td>7.04</td>
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<tr>
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<td>15</td>
<td>7.04</td>
</tr>
<tr>
<td>2006</td>
<td>8</td>
<td>3.76</td>
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<tr>
<td>2007</td>
<td>28</td>
<td>13.15</td>
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<tr>
<td>2008</td>
<td>26</td>
<td>12.21</td>
</tr>
<tr>
<td>2009</td>
<td>20</td>
<td>9.39</td>
</tr>
<tr>
<td>2010</td>
<td>10</td>
<td>4.69</td>
</tr>
<tr>
<td>2011</td>
<td>35</td>
<td>16.43</td>
</tr>
<tr>
<td>2012</td>
<td>32</td>
<td>15.02</td>
</tr>
<tr>
<td>2013</td>
<td>24</td>
<td>11.27</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>213</strong></td>
<td><strong>100.00</strong></td>
</tr>
</tbody>
</table>
Results

Number of PEP Series Initiated

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>15</td>
</tr>
<tr>
<td>2005</td>
<td>15</td>
</tr>
<tr>
<td>2006</td>
<td>5</td>
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<td>2007</td>
<td>30</td>
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<td>2008</td>
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<td>2009</td>
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<td>5</td>
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<tr>
<td>2011</td>
<td>35</td>
</tr>
<tr>
<td>2012</td>
<td>30</td>
</tr>
<tr>
<td>2013</td>
<td>20</td>
</tr>
</tbody>
</table>
Results

Number of PEP Series Initiated and Population on Fort Riley per Year

- **Number of PEP**
  - 2004: 5
  - 2005: 5
  - 2006: 15
  - 2007: 20
  - 2008: 15
  - 2009: 10
  - 2010: 10
  - 2011: 15
  - 2012: 14
  - 2013: 13

- **Population (in thousands)**
  - 2004: 0
  - 2005: 0
  - 2006: 2
  - 2007: 3
  - 2008: 5
  - 2009: 8
  - 2010: 12
  - 2011: 16
  - 2012: 14
  - 2013: 10
Results

Before and After Breed Ban

Number of PEP

Before
October 2005 to September 2007

After
October 2009 to September 2011
Discussion

- Population living on post compared to number of PEP series initiated

- Increase in PEP usage from before to after breed ban
Public Health Implications

- Greater awareness of PEP usage on Fort Riley
- PEP usage varies widely from year-to-year
- The usage of PEP on Fort Riley has increased from 2005 to 2013, but the incidence of bite related-injuries seen at the IACH ER has not significantly changed
Part 3

Total Dog Bite Reports and the Number of Reports Received by Next Duty Day
Background
Patients seen at any of the clinics on Fort Riley that reported a dog bite incident are given a Bite Form to fill out and return to the attending physician at IACH.

Medical personnel at IACH are then responsible for turning these forms in to Veterinary Services by the next duty day to ensure quick action.
Methods
Methods

- Time period for this study was 01 January 2003 to 31 December 2012.

- Collected data on the number of bite reports filled out and the number of bite reports that were received by Veterinary Services by the next duty day
  - Data from 2003 to 2012 was obtained from Public Health Command
  - Determined the number of reports per year that were received by next duty day
  - Determined the average percentage of reports that were and were not received by the next duty day per year
  - Determined the average percentage of reports received and not received for the entire 10-year period
Results
Results

- Total number of Reports
- 701
- Highest percentage of reports received in 2007
- 97%
- Lowest percentage of reports received in 2004
- 56%
Results

- **Overall**
  - 73.75% received by next duty day
  - 27.25% *not* received by next duty day
## Results

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Number of Reports</th>
<th>Number of Reports Not Received</th>
<th>Average Percent of Reports Not Received</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>78</td>
<td>28</td>
<td>35.89</td>
</tr>
<tr>
<td>2004</td>
<td>77</td>
<td>35</td>
<td>45.45</td>
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<td>2005</td>
<td>87</td>
<td>31</td>
<td>35.63</td>
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<td>2006</td>
<td>72</td>
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<td>4.17</td>
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<td>2007</td>
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<td>3.39</td>
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<td>60</td>
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<td>28.33</td>
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<td>2009</td>
<td>71</td>
<td>15</td>
<td>21.13</td>
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<td>2010</td>
<td>80</td>
<td>24</td>
<td>30.00</td>
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<td>2011</td>
<td>72</td>
<td>21</td>
<td>29.17</td>
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<td>2012</td>
<td>45</td>
<td>15</td>
<td>33.33</td>
</tr>
<tr>
<td>Total</td>
<td><strong>701</strong></td>
<td><strong>191</strong></td>
<td><strong>27.25</strong></td>
</tr>
</tbody>
</table>
Results

Number of Reports Received and Not Received by Next Duty Day per Year

Year


Number of Reports

No. Not Received
No. Received

Legend
2006 and 2007 had the highest percentages of reports received by the next duty day.

2003, 2004 and 2005 had the lowest percentages of reports received by the next duty day.
No pattern in the percentage of reports received at Veterinary Services by next duty day

Overall, the number of reports that are turned in to Veterinary Services needs to increase to effectively protect the public from further dog bite incidences
Overall Study Limitations

- **Population**
  - Calculated using multiplier of 2.7
  - Only included those that live on post
    - Not included in population numbers: civilian workers, soldiers that commute to Fort Riley everyday for work, family members that commute to Fort Riley for various reasons (commissary, Post Exchange, military event, etc.)
  - Census obtained at one point throughout year
    - Does not take into account the fluctuation in population due to deployments

- **Incomplete data**
  - Original goal of study
    - Veterinary Services
Recommendations

- **Irwin Army Community Hospital**
  - Ensure completion of bite reports and submission of reports to Veterinary Services in a timely manner
  - Designate position that is responsible for ensuring reports are submitted to Veterinary Services by end of duty day

- **Fort Riley**
  - Rescind Banned Dog Breed Policy

- **Veterinary Services**
  - Maintain more accurate and organized records of dog bite forms

- **Education**
  - **In-Processing**
    - Provide educational pamphlets for family members of soldiers upon in-processing to new unit
  - **Events**
    - Provide annual events on Fort Riley on education of rabies and proper behavior and handling of dogs
Field Experience

Fort Riley
Department of Public Health

Preceptor
COL Paul Benne
Chief of Department of Public Health
Rotations

- Environmental Health
- Industrial Hygiene
- Occupational Health
- Army Hearing Program
- Army Public Health Nursing
- Army Wellness Center
- Veterinary Services
Environmental Health

- Food Service Sanitation and Inspections
  - Inspected United Service Organizations, Inc. (USO)
- Water Quality and Surveillance
  - Collected water samples from water wells around post and at the Morale, Welfare and Recreation (MWR) Facility
- Child Development Center Sanitation and Inspections
  - Inspected School-Age Service
- Hospital Waste Management
  - Inspected Farrelly Pharmacy
- Disease Vector Surveillance
  - Learned basics of genus identification of mosquitoes and ticks found in the Fort Riley area
- Other Inspections
  - Airfield Barber Shop
  - Flint Hills Job Corp.
Industrial Hygiene

- Air sampling
- Radiation
- Ergonomics
- Indoor air quality
- Noise
- Ventilation

- Observations
  - Ergonomic chair
  - Surgical suite ventilation
Occupational Health

- Medical surveillance/screening
  - Hearing tests
  - Spirometry tests
  - Vision screening

- Other requirements
  - Immunizations
  - Physicals
  - Tuberculosis screening
  - In-processing
  - Pregnancy surveillance
  - Worksite evaluations
  - Personal protective equipment
Army Hearing Program

- Hearing loss prevention

- Inspected the type of ear plugs and ear plug positioning/fit of soldiers at a long-distance shooting range
  - Fitted soldiers with earplugs based on shape and depth of ear canal
  - Ensured correct fit of ear plugs
Army Public Health Nursing

- Health and Wellness
- Prevention
- Communicable diseases

Inspections
- Three Child Development Centers
  - Record review
  - Classroom walk-through
  - Review of special needs binder
  - Documentation of findings

Community Partner Meetings
- Nurse-Family Partnership
- Maternal Child Health
- Geary County Perinatal Coalition – Delivering Change
Army Wellness Center

- Health assessment review
- Physical fitness testing
- Metabolic testing
- Stress management
- Tobacco education
- Behavior change
Veterinary Services

- Food Sanitation and Inspections
  - Food Safety Codes, Laws and Regulations
  - Inspection of food products on receipt and in storage
  - Determination if storage conditions are within regulation
  - Evaluation of packaging, packing and marking requirements
  - Identification of unsanitary conditions in food storage facilities

- Animal Preventive Medicine
  - Orientation to animal preventive medicine
  - Identification of zoonotic diseases of concern
  - Evaluation of animals for potentially zoonotic disease
  - Treatment/management of disease in the animal population
  - Veterinary involvement in bite cases
  - Child Development Center animal inspections

- Inspected the Commissary
Acknowledgements

- COL Paul Benne
- Dr. Cates, Dr. Nutsch, Dr. Wilkerson
- Barta Stevenson
- Kris Bourland
- Shaun Collins
- Stephen and Deborah Hammonds
Thank you

Questions?