Trends of Skin and Soft Tissue Infections in the Department of Defense

By
Kermit Huebner

A Master's Paper submitted to the faculty of the University of North Carolina at Chapel Hill In partial fulfillment of the requirements for the degree of Master of Public Health in the Public Health Leadership Program.

Chapel Hill
2010

Advisor signature/printed name
Second Reader Signature/printed name
Date
Abstract

**Background:** Skin and soft tissue infections (SSTI) have risen sharply over the last decade as a result of community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA). Evaluations of national databases have shown an increase in healthcare visits due to CA-MRSA, but do not include federal healthcare facilities, including the military. This study evaluates the trends in SSTI likely related to CA-MRSA across the Department of Defense from 1999-2008.

**Methods:** A dataset was constructed using the Defense Medical Epidemiology Database using ICD-9 codes for carbuncle/furuncle during the time of interest. Data was then stratified to specific service components, Army personnel category, and Army military occupational specialty category. **Results:** There was a 6.3 fold increase in SSTI from 1999-2003. The largest proportion of infections occurred in the Army. Of the 10,950 infections in the Army in 2008, 94% occurred in enlisted personnel. Military occupational specialties with the highest rates of infection included crafts workers and electronic / mechanical repairers. **Limitations:** This study is limited due to use of secondary data and lack of culture data to clearly determine the presence of CA-MRSA. **Conclusions:** SSTI in the Department of Defense has increased in a similar fashion to national civilian reports. Further evaluation of populations with highest rates of infection is warranted to assist with determination of risk factors and effective eradication strategies.
**Background:**

Skin and soft tissue infections (SSTI) traditionally have accounted for 1-2% of all emergency department visits, but the incidence of SSTI’s has risen sharply over the last decade. An evaluation of the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey shows visits for SSTI increased by 59% in outpatient clinics and 31% in emergency departments from 1992-2003.

The typical causative agents of SSTI included *Streptococcus species* and *Staphylococcus aureus*. While traditionally susceptible to most antibiotics, including penicillin, the increased incidence of SSTI has been correlated with an increased incidence of methicillin-resistant *Staphylococcus aureus* (MRSA). MRSA was first discovered in 1960 and was found to be a nosocomial pathogen. Patients at risk for hospital acquired MRSA (HA-MRSA) included those with previous antibiotic use, contact with a healthcare worker or nursing home resident, residence in a long-term care facility, hospitalization, admission to an intensive care unit, hemodialysis or peritoneal dialysis, mechanical ventilation, tracheostomy tube, nasogastric tube, gastrostomy tube, or Foley catheter, total parenteral nutrition or enteral feeding, surgical procedures, and previous isolation of MRSA. More recently MRSA has been implicated in SSTI in outpatients without any risk factors for HA-MRSA. These infections have been deemed community acquired MRSA infections (CA-MRSA).

Distinct microbiologic and biochemical differences separate HA-MRSA and CA-MRSA. Methicillin resistance is a result of a change in the penicillin-binding protein 2a which is encoded on the *mecA* gene of the Staphylococcal cassette chromosome (SCC). Five SCC types have been identified and types I, II, and III are associated with HA-MRSA and type IV is associated with CA-MRSA. In addition to the change in the penicillin-binding protein, CA-MRSA isolates are
more likely to produce exotoxins, such as the Panton-Valentine leukocidin (PVL) toxin which is a dermonecrotic toxin allowing for more aggressive skin penetration and abscess development.\textsuperscript{4} Pulsed Field Gel Electrophoresis evaluation can be used to differentiate between genetic clones. Common clones include USA 400 and USA 300. USA 400 is highly virulent and contains 16 unique superantigen genes in addition to PVL, but is a less frequent source of infection.\textsuperscript{5} USA 300 is much more common and reached epidemic and then endemic proportions in the U.S.\textsuperscript{6} Molecular typing has shown that in some institutions the USA 300 clone caused greater than 80% of CA-MRSA infections in the US mainland\textsuperscript{7}, while the epidemiology of CA-MRSA in Alaska has not shown such USA 300 predominance.\textsuperscript{8}

SSTI resulting from CA-MRSA often present as a tender erythematous abscess, cellulitis, or both and is often initially thought to be secondary to an insect or spider bite.\textsuperscript{4} Approximately 50-75\% of patients present with an abscess and 25-50\% present with cellulitis.\textsuperscript{16} Outbreaks of CA-MRSA have been noted in contact sports teams, such as football\textsuperscript{9}, fencing, and wrestling.\textsuperscript{10,11} A comprehensive review of cutaneous manifestations of CA-MRSA by Cohen notes reports of cases occurring in professional, college and high school football players; rugby players, baseball players, basketball players, canoers, fencers, soccer players, volleyball players, and weight lifters.\textsuperscript{12} Risk factors identified for CA-MRSA include jail detainees, military recruits, children attending day care centers, participants in contact sports, urban dwellers of low socioeconomic status living in crowded conditions, tattoo recipients, homeless youth, men who have sex with men, HIV-infected individuals, African Americans, Pacific Islanders, and Native Americans.\textsuperscript{13} Moreover, public housing was found to be a core group with increased odds of CA-MRSA infection\textsuperscript{14} as well as use of methamphetamine.\textsuperscript{15}
Evaluation of national surveys has shown increased diagnosis of SSTI in several different clinical settings. Pallin, et al, analyzed data from the National Hospital Ambulatory Medical Care Survey (NHAMCS) from 1993-2005 and found that the number of emergency department visits increased markedly from 1.2 million visits to 3.4 million visits. Hersh, et al, used data from the National Ambulatory Medical Care Survey (NAMCS) and the NHAMCS to estimate the annual visit rates for all SSTI and a subset classified as abscess/cellulitis. They report that the rates of visits for SSTI increased from 32.1 to 48.1 visits per 1000 population from 1997 to 2005 reaching 14.2 million visits with greater than 95% of change resulting from abscess/cellulitis. The largest relative increase occurred in the emergency department. Pallin further assessed the NAMCS from 1993 to 2005 and found that the rate of diagnosis of SSTI did not increase in physician office visits and corroborated the results from Hersch that the increased burden of SSTI from CA-MRSA was most commonly seen in the emergency department. Each of these studies relied on data from the NAMCS and the NHAMCS to determine estimates of SSTI incidence. The NAMCS data is collected from a sample of visits to non-federal employed office-based physicians who are primarily engaged in direct patient care. The NHAMCS data is based on a national sample of visits to the emergency departments and outpatient departments of non-institutional general and short-stay hospitals. Neither of these databases includes data from federal facilities, to include prisons and military treatment facilities. This project was completed to evaluate the trends of SSTI in the Department of Defense during a 10 year period from 1999-2008.
Methods:

A descriptive study of nested data in the Defense Medical Epidemiology Database (DMED) was undertaken to determine trends in SSTI in the Department of Defense from 1999 thru 2008. Goals of this project are to determine changes in the occurrence of SSTI in the Department of Defense and to evaluate differences between service components (Army, Navy, Air Force, and Marines). Secondary aims of this study are to evaluate differences between personnel status (officers and enlisted), differences between military occupational specialty categories, and differences in body location of SSTI in the Army sub-group as the prevalence of CA-MRSA has increased in the general population. This project was approved as an exempt protocol by the University of North Carolina-Chapel Hill Institutional Review Board.

DMED provides on-line access to subsets of data in the Defense Medical Surveillance System (DMSS), to include hospitalizations and ambulatory visits for all active duty and reserve components. Information collected in DMSS is acquired from over 100 different field sites and contains longitudinal records for all individuals who have served in the armed forces since 1990. DMED allows users to access a searchable database consisting of 4 types of data relevant to active duty service members: demographic data, inpatient hospitalization data, ambulatory data, and reportable events data. Ambulatory data is generated by military treatment facilities and outsourced out-patient healthcare non-DoD clinics using standard diagnostic codes. Personnel demographic information allows evaluation of overall and stratum-specific population statistics (i.e., person-year denominators) based on longitudinal personnel data. DMED queries provide the count of cases, the cumulative person years of experience during the calendar years of interest, and the rates of occurrence of cases for the selected population substrata.20
Queries for this project were made using the *International Classification of Disease, Ninth Revision Clinical Modification* (ICD-9-CM) 3 digit code (680) for carbuncle/furuncle as the primary diagnosis in the ambulatory data set for years 1999-2008. While previous studies have used several subsets of SSTI, carbuncle/furuncle was used for this project as it has been noted in previous studies to correlate to infections with CA-MRSA.\(^{21}\) The ten year period from 1999-2008 was selected to capture time before and after the inflection point for increased CA-MRSA infections in the civilian population that occurred around 2000-2003.\(^ {22}\) Information was set to include all genders, all ages, all races, all marital statuses, all occupations, and all locations. The data set was then filtered to develop an Army specific dataset that was divided into personnel category (enlisted personnel vs officers). Each category was then filtered to sub-sets based on military occupational specialty categories. Enlisted categories consisted of the following:

1) Infantry, Gun Crews, and Seamanship Special

2) Electronic Equipment Repairers

3) Communications and Intelligence Specialist

4) Healthcare Specialists

6) Functional Support and Administration

7) Electrical/Mechanical Equipment Repairers

8) Crafts workers

Lastly, the Army dataset was filtered by ICD-9-CM to specific body location using the following codes:

1) 680.0 - Face

2) 680.1 - Neck
3) 680.2 -Trunk
4) 680.3 – Upper arm and forearm
5) 680.4 - Hand
6) 680.5 - Buttock
7) 680.6 – Leg except foot
8) 680.7 – Foot
9) 680.8 - Other specified site
10) 680.9 - Unspecified site

Each data set was then imported into an Excel spreadsheet for development of graphs and bar charts. Trend analysis was then performed with least squares linear regression using Graphpad Prism 5 to compare the slope selected sub-set data.

**Results:**

*Service Component*

Raw counts for each service component by year increased substantially from 1999 thru 2008 (Table 1). There were a total of 60,144 cases of carbuncle/furuncle in the Department of Defense during this time frame. Most of the infections were in the Army with a total of 28,934 (48%). Similar numbers occurred in the Navy and Air Force, 12,466 (21%) and 12,974 (21%), respectively. The smallest number occurred in the Marines with 5,770 infections (10%). In 1999, there were a total of 1,735 infections, with a similar proportion occurring in the Army (27.2%), Navy (28.4%), and Air Force (31.2%) and a smaller proportion in the Marines (13.2%). There was a 6.3 fold increase in infections from 1999 to 2008. There were 10,950 infections in 2008 with 52.3% occurring in the Army. The Navy, Air Force, and Marines had lower
proportions of 18.7%, 19.6%, and 9.5% respectively. During this ten year period, infections in the Army had a 12-fold increase from 472 to 5,723. Increased counts also occurred in the Navy (4-fold), Air Force (4-fold), and Marines (4.5-fold) during this time, however, at lower amounts. Rates per 1,000 persons per year were similar for each branch of service in 1999, ranging from 1.01 in the Army to 1.34 in the Marines. In 2008, there were substantial differences between the rate in the Army and the other services with 10.79 infections per 1,000 persons in the Army and a range of 5.34 to 6.61 per 1,000 in the Navy, Air Force, and Marines. The lowest rate occurred in the Army in 1999 and the highest rate was in the Army in 2007 at 11.25 per 1,000 per year (Figure 1). Trend analysis revealed a significant difference between rates in the Army compared to rates in all other service components (p <0.0001).

**Army Personnel Category**

Raw data for the Army filtered by personnel category is included in Table 2 and graphed in Figure 2. Ninety-three percent of infections occurred in enlisted personnel. In 1999, 88% of infections occurred in enlisted members and in 2008 they accounted for 94%. Enlisted rates per 1,000 persons went from 1.05 to 11.99 during the study period and the rates for officers increased from 0.72 to 4.06. The lowest rate occurred in officers in 1999 and the highest rate occurred in enlisted members in 2007. Changes in rates per 1,000 persons per year for the Army revealed a significant difference in the incidence of SSTI between officer and enlisted categories (p<0.01) (Figure 3).

**Army Military Occupational Specialty Category**

Enlisted military occupational specialty categories in DMED include infantry, craft workers, electronic repair, healthcare, communications/intelligence, electrical/mechanical repair, and functional support/administration. Raw counts by category are presented in Table 3 and
rates are shown in Figure 4. In 1999, the majority of infections occurred in the infantry (27.4%) and functional support and administration (25.6%). From 1999 to 2008, there was a 12.5-fold increase in infections among enlisted personnel. The percent occurring in the infantry decreased to 23.3% and functional support and administration decreased to 21.4%, while all other categories increased in percentage of infection with the exception of healthcare workers. In 1999, rates per 1,000 persons ranged from 0.74 in electronic repair to 1.25 in healthcare. In 2008, rates varied from 8.56 per 1,000 in the infantry to 15.65 per 1,000 in craft workers. The lowest rate occurred in electronic repair in 1999 (0.74 per 1,000) and the highest rate occurred in electrical/mechanical repair in 2007 (17.1 per 1,000). There was a significant difference between groups (p = 0.007) with the largest increase in rates occurring with electronic/mechanical repair and craft workers. The lowest increases in rates per 1,000 persons occurred in the infantry and communications/intelligence.

**Body Location**

A graph of raw counts by body location for the Army is shown in Figure 5. In 1999, the majority of infections occurred on the leg (26.8%) and face (20.7%). In 2008, the majority of infections occurred on the arms (21.4%), legs (20.3%), trunk (18%) and buttocks (15.1%). The greatest percentage increase during the study time occurred in the arm, trunk, and buttock. Significant differences existed between body location over the study period (p<0.001). The highest rate of increase occurred in the arm, leg, trunk and buttocks. A chart comparing distribution of SSTI in 1999 and 2008 is shown in Figure 6.

**Discussion:**

The incidence of MRSA has risen sharply and it is now the most common cause of SSTI with 97% being community acquired. This is a significant change from reports in the 1990’s
when no isolates of MRSA was isolated from SSTI and the most common etiology was methicillin-sensitive *Staphylococcus aureus*.\textsuperscript{24} There was an increase in overall diagnosis of carbuncle/furuncle across the DoD from 1999-2008 with an inflection point occurring near 2003. The rates of infection in the DoD were comparable to that of cited civilian rates ranging from 17.3 to 32.5 visits per 1,000 population for the diagnosis of abscess/cellulitis.\textsuperscript{18}

Within DoD, there was a substantially higher number infections and a higher rate of infection in the Army. This may be related to the type of training and living conditions experienced by those in the Army, compared to the other components. Surprisingly, there was a significant difference between the Army and Marines which, intuitively, would be similar given the similar exposure to living in field conditions and training.

A distinct difference in number of infections and rates exists between enlisted members and officers in the Army. This may be a reflection of environmental exposures and living conditions. Military members have traditionally been cited as a group with increased risk for MRSA due to the potential for close contact, sharing of personal equipment, and situations that lack ability to maintain personal hygiene. This is more likely to occur among enlisted members as they are more likely to live in barracks or shared housing. Sharing of personal hygiene items and close physical association with those with SSTI has been shown to be risks for both infection and nasal carriage of CA-MRSA on sports teams.\textsuperscript{25} Sharing of personal hygiene items may occur more often in the close proximity of barracks living. Similar findings in sports personnel have shown that sharing hygiene items or having items in proximity may lead to increased infections and colonization. An evaluation of recurring MRSA infections in a football team revealed that sharing bars of soap and having pre-existing cuts or abrasions were risk factors for
infection and having a locker near a teammate with an SSTI and sharing towels were associated with nasal carriage.\textsuperscript{25}

The higher number of enlisted Army members with carbuncle/furuncles may be related to local outbreaks of CA-MRSA that occur within units or barracks. Outbreaks of CA-MRSA in military personnel in these living conditions have been reported.\textsuperscript{26} The greatest risk factor during an outbreak among military trainees in San Diego, CA included having a roommate with a prior skin infection (odds ratio 3.44).\textsuperscript{27} Given the number of infections in the Army and access to several free healthcare venues (unit medic, battalion aid stations, troop medical clinics, and the emergency department), it is possible for small outbreaks to occur without recognition by public health authorities.

Among enlisted members, the highest rates of infection occurred in craft workers and electrical/mechanical repair personnel. While environmental exposure to field conditions among combat arms personnel would be expected to result in increased infections, this finding may relate to the role of fomites in development of infections. Nasal colonization is an important aspect of the epidemiology of Methicillin-susceptible \textit{Staphylococcus aureus} infection, but may not be as important in the transmission of CA-MRSA.\textsuperscript{28} Sharing of tools among craft workers and repair personnel could be responsible for the increased rate of infection among these soldiers. Moreover, they may be more likely to develop skin abrasions or minor lacerations that could serve as a portal for infection.

Over the 10 year period, there has been a substantial change in the body site location of SSTI with a substantially higher percentage of infections occurring in the arm, leg, trunk, and buttock and a decrease in infections on the face and neck. The data from this study shows a similar prevalence to the anatomic distribution noted in a previous CA-MRSA outbreak in
military recruits. The change in body site location may be related to environmental exposure to fomites and a change in body site location colonization. Nasal colonization has been implicated as an important factor for methicillin susceptible \textit{S. aureus}, and HA-MRSA, while colonization at non-nasal sites has been implicated for transmission and development of infection in patients with CA-MRSA. Colonization is likely to play a lessor role in the development of CA-MRSA SSTI dissemination as the percent of healthy populations with nasal colonization is approximately 1%. While, Zafar, et al, found that household contacts of patients with CA-MRSA SSTI had higher nasal carriage rates than that of the general population, only half of household members carried the same strain as the patient, making direct transmission less likely. Ellis, et al, studied the natural history of CA-MRSA colonization and infection in a cohort of soldiers undergoing advanced individual training over a 10 week period. Of 812 soldiers that participated in the study, 24 were colonized with MRSA and 214 were colonized with methicillin-susceptible \textit{S. aureus}. At the end of the 10 week period, only 8 of the CA-MRSA colonized soldiers remained colonized. None of the methicillin-susceptible \textit{S. aureus} carriers became colonized with MRSA. Of the 523 that were not colonized at all on initial screening, only 4 developed MRSA colonization in the 10 week period while 40 became colonized with methicillin-susceptible \textit{S. aureus}. Of the initial 24 MRSA carriers, 9 developed soft tissue infections compared to 8 soft tissue infections in the group that was colonized with methicillin-susceptible \textit{S. aureus}. This study revealed that carriage of MRSA is associated with a higher attack rate of SSTI compared to carriage of methicillin-susceptible \textit{S. aureus}. However, additional sites of colonization, such as the groin and axilla, were not evaluated.

\textbf{Implications for interventions.} Identification of personnel with higher rates of infection may lead to efforts for eradication of colonization and enforcement of practices to decrease
environmental contact. Such procedures have been used in outbreaks of CA-MRSA among sports participants. Recommendations for preventing staphylococcal skin infections among sports participants includes: 1) cover all wounds, 2) encourage good hygiene, including showering and washing with soap after all practices and competitions, 3) ensure availability of adequate soap and water, 4) discourage sharing of towels and personal items, 5) establish routine cleaning schedules for shared equipment, 6) train athletes and coaches in recognition of wounds that are potentially infected, 7) encourage athletes to report skin lesions.\(^\text{11}\) Use of contact precautions for persons with SSTI is supported by the changing epidemiology of these infections and is recommended by the Centers for Disease Control and Prevention.\(^\text{33}\) This would include identifying potential fomites and developing appropriate handling and cleaning procedures.

Determining an intervention strategy to prevent the spread of CA-MRSA is also likely to have significant financial implications as infections with MRSA requiring hospitalization have been shown to be 2-3 times as costly as those with MSSA infections.\(^\text{34}\) In outpatients, CA-MRSA is likely to require treatment with additional courses of antibiotics which also lead to increased economic impact.\(^\text{35}\) As increase in CA-MRSA SSTI has increased and treatment with B-lactam antibiotics has also decreased, a large percentage of patients are still treated with inactive antimicrobial therapy.\(^\text{36}\) This may lead to increased morbidity and expense for repeat treatment.

Prevention of recurrence is also an issue. Study of CA-MRSA SSTI in an urban jail showed a 6 month recurrence rate of 14% compared to a recurrence rate of 8.8% for patients with MSSA SSTI.\(^\text{37}\) Decolonization for patients with recurrent infections may be of some benefit. A prospective randomized placebo controlled study evaluating the use of whole-body washing with Chlorhexidine showed a significant decrease in groin-area colonization, but not for colonization of the nose, throat, and perineum.\(^\text{38}\) An expert panel in collaboration with the CDC has suggested
that decolonization may be reasonable in 2 clinical situations: 1) for patients with multiple documented recurrences of MRSA infections and 2) for ongoing MRSA transmission in a closely associated and well-defined cohort of individuals (e.g. household). Outbreaks in military personnel may be candidates for decolonization therapy given their close association, specifically for those who live in close quarters, such as in the barracks.

**Limitations:**

This study is limited by the use of secondary data derived from a larger database of reported infections across the DoD. While reporting of diagnosis and diagnostic codes are required for each visit, it is possible for diagnoses to be coded in error. In some instances it is possible that no diagnostic code is reported, especially for personnel with unit level medics or aid stations that may treat soldiers without formal reporting. This may be more likely to occur in combat arms units and could explain why they have a lower rate of infection in the database.

Although this project shows that the incidence of SSTI has increased over the 10 year period, the exact incidence of CA-MRSA cannot be determined as culture information was not available in the database. To minimize this issue only infection that would have a high correlation with CA-MRSA in previous studies were included in this evaluation by limiting the study to a diagnosis of carbuncle/furuncle. While this makes the study more specific to CA-MRSA, it has the potential to underestimate overall SSTIs.

The inflection point for infections occurred around 2003 which is similar to reports in the civilian literature; however, deployment of a large number of personnel to field conditions in Iraq may have had an effect on the incidence of infection. This may explain why the Army had a higher rate of SSTI than the other services, as they provide a larger quantity of soldiers to the battlefield. A higher incidence rate for SSTI has been reported in a small study based at a single
operating base in Baghdad, with an overall calculated incidence rate of 880 per 100,000 persons per year for all SSTI and 600 per 100,000 per year for CA-MRSA infections.\textsuperscript{39}

**Future Research:**

Additional studies to further determine target populations for intervention and risk factors for SSTIs in soldiers are needed. This would include focused questionnaires and environmental sampling in the personnel groups with the highest incidence of infection in this study. Use of cultures will be imperative as it has been shown through a prospective study assessing risk factors that clinical and epidemiological risk factors are not able to distinguish between MRSA and MSSA infections.\textsuperscript{40} Further evaluation of colonization and its effect on development of infection and transmission is needed, specifically evaluating sites other than nasal colonization to include the groin and axilla. A cohort study of soldiers to compare the impact of deployment on infection rates would also provide key information.

**Conclusion:**

Skin and soft tissue infections have risen dramatically across the United States, including the Department of Defense. Previous studies have evaluated the impact of CA-MRSA on the increased incidence in the general population, but not the military. This study shows that the rate of infection in the military has risen in a similar fashion. Additionally, trends in the military have shown higher rates of infection in the Army, specifically among enlisted personnel. Military occupational specialty groups with the highest increase in rates include craft workers and repair personnel. This may be related to occupational exposure to CA-MRSA through fomites. Further studies to determine risk factors and environmental exposures are needed.
Table 1. Counts for SSTI in each service component from 1999-2008.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Army</td>
<td>472</td>
<td>1044</td>
<td>1236</td>
<td>1614</td>
<td>1664</td>
<td>2666</td>
<td>4174</td>
<td>4598</td>
<td>5743</td>
<td>5723</td>
</tr>
<tr>
<td>Navy</td>
<td>493</td>
<td>663</td>
<td>646</td>
<td>895</td>
<td>1006</td>
<td>1245</td>
<td>1472</td>
<td>1936</td>
<td>2061</td>
<td>2049</td>
</tr>
<tr>
<td>Air Force</td>
<td>541</td>
<td>813</td>
<td>1006</td>
<td>839</td>
<td>959</td>
<td>1352</td>
<td>1534</td>
<td>1627</td>
<td>2161</td>
<td>2142</td>
</tr>
<tr>
<td>Marines</td>
<td>229</td>
<td>259</td>
<td>305</td>
<td>369</td>
<td>429</td>
<td>613</td>
<td>737</td>
<td>851</td>
<td>942</td>
<td>1036</td>
</tr>
</tbody>
</table>

Figure 1. Rates per 1,000 persons per year of SSTI by service component from 1999-2008.
Table 2. Counts of SSTI for the Army by personnel category from 1999-2008.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Enlisted</td>
<td>412</td>
<td>940</td>
<td>1121</td>
<td>1481</td>
<td>1529</td>
<td>2472</td>
<td>3849</td>
<td>4219</td>
<td>5268</td>
<td>5317</td>
</tr>
<tr>
<td>Officer</td>
<td>56</td>
<td>94</td>
<td>109</td>
<td>120</td>
<td>113</td>
<td>173</td>
<td>292</td>
<td>260</td>
<td>405</td>
<td>353</td>
</tr>
</tbody>
</table>

Figure 2. Counts of SSTI for the Army by personnel category from 1999-2008.
Figure 3. Rates per 1,000 persons per year of SSTI by Army personnel category from 1999-2008.
Table 3. Counts of SSTI for enlisted soldiers by military occupational specialty category from 1999-2008.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Infantry</td>
<td>91</td>
<td>160</td>
<td>191</td>
<td>256</td>
<td>253</td>
<td>444</td>
<td>658</td>
<td>678</td>
<td>915</td>
<td>967</td>
</tr>
<tr>
<td>Craftworkers</td>
<td>12</td>
<td>34</td>
<td>19</td>
<td>27</td>
<td>17</td>
<td>37</td>
<td>110</td>
<td>113</td>
<td>154</td>
<td>166</td>
</tr>
<tr>
<td>Electronic Repair</td>
<td>26</td>
<td>50</td>
<td>63</td>
<td>120</td>
<td>160</td>
<td>190</td>
<td>335</td>
<td>267</td>
<td>344</td>
<td>275</td>
</tr>
<tr>
<td>Healthcare</td>
<td>39</td>
<td>99</td>
<td>99</td>
<td>123</td>
<td>137</td>
<td>196</td>
<td>284</td>
<td>407</td>
<td>376</td>
<td>467</td>
</tr>
<tr>
<td>Communications/Intelligence</td>
<td>32</td>
<td>77</td>
<td>118</td>
<td>123</td>
<td>166</td>
<td>221</td>
<td>306</td>
<td>368</td>
<td>595</td>
<td>523</td>
</tr>
<tr>
<td>Electrical/Mechanical Repair</td>
<td>47</td>
<td>119</td>
<td>186</td>
<td>238</td>
<td>235</td>
<td>472</td>
<td>795</td>
<td>936</td>
<td>1011</td>
<td>862</td>
</tr>
<tr>
<td>Functional Support and Admin.</td>
<td>85</td>
<td>199</td>
<td>243</td>
<td>295</td>
<td>302</td>
<td>481</td>
<td>672</td>
<td>648</td>
<td>819</td>
<td>888</td>
</tr>
</tbody>
</table>

Figure 4. Rates per 1,000 persons per year of SSTI by military occupational specialty category from 1999-2008.
Figure 5. Counts of SSTI for the Army by body location from 1999-2008.

Figure 6. Distribution of SSTI for the Army by body location from 1999-2008.
References:


