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**U.S. Army Center for Health Promotion and Preventive Medicine, Armed Forces Health Surveillance Center (AFHSC), 2900 Linden Lane, Suite 200, Silver Spring, MD, 20910**

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Since October 1985, the U.S. military has conducted routine screening for antibodies to HIV-1 among civilian applicants for U.S. military service. Since 1986, all members of the active and reserve components of the U.S. Armed Forces have been periodically screened for antibodies to HIV-1. This report summarizes prevalences and trends of HIV-1 antibody seropositivity among civilian applicants for military service and members of the active and reserve components of the U.S. Army who have been screened since 1990.

For civilian applicants for U.S. military service and members of the U.S. Army, prevalences of HIV-1 antibody seropositivity were estimated by matching specimen numbers and serologic test results to the personal identifiers of the individuals who provided the specimens. All data were accessed from records maintained in the Defense Medical Surveillance System.

For this summary, an incident diagnosis of HIV-1 antibody seropositivity was defined as two “positive” results from serologic testing of two different specimens from the same individual (or one “positive” result from serologic testing of the last specimen provided by an individual). Annual HIV-1 prevalences among civilian applicants for service were calculated by dividing the number of applicants identified as HIV-1 antibody seropositive by the number of applicants tested each year. For calendar year summaries of routine screening in the U.S. Army, denominators were the numbers of individuals from the active component, National Guard, and U.S. Army Reserve who were tested at least once during each year of interest.

During the 18-month period from January 2007 to June 2008, 546,318 tests for antibodies to HIV-1 were conducted among 545,427 civilian applicants for military service. During the period, 225 applicants were detected with antibodies to HIV-1 (seroprevalence: 0.41 per 1,000 tested) (Table 1).

Among male applicants, seroprevalences monotonically increased — by more than one-third overall — between 2003 and 2007 (male applicants, HIV-1 seropositive: 2003, n=95; prevalence: 0.34 per 1,000; 2007, n=132; prevalence: 0.46 per 1,000). The prevalence among males in 2007 was higher than in any year since 1995. In contrast, seroprevalences among female applicants have been low and stable since 2002 (Table 1, Figure 1).

As in the past, in 2007, the seroprevalence was sharply higher among applicants who were Black non-Hispanic (1.57 per 1,000) compared to White non-Hispanic (0.19 per 1,000) or Hispanic/other (0.28 per 1,000) race/ethnicity. For several years, there have been no clear trends of race/ethnicity-specific seroprevalences (Table 2, Figure 2).

### U.S. Army

#### Active component:
During the 18-month period from January 2007 to June 2008, 632,679 tests for antibodies to HIV-1 were conducted among 555,297 soldiers in the active component of the U.S. Army. During the period, 111 soldiers (0.20 per 1,000 tested) were detected with antibodies to HIV-1 (Table 3).

During calendar year 2007, 60 soldiers were detected with antibodies to HIV-1. The overall prevalence of seropositivity was 0.17 per 1,000 soldiers tested; on average, one new HIV-1 infected soldier was detected per 6,797 screening tests (Table 3).

During the 1990s, overall prevalences of HIV-1 seropositivity among active component soldiers declined by more than half (from 0.36 to 0.17 per 1,000). Since 2000, seroprevalences have been fairly stable — among males, females, and overall. Of the 1,435 active component soldiers diagnosed with HIV-1 infections since 1990, 381 (26.6%) remain in service (Table 3, Figure 3).

#### Army National Guard:
During the 18-month period from January 2007 to June 2008, 257,165 tests for antibodies to HIV-1 were conducted among 239,640 members of the U.S. Army National Guard. During the period, 57 soldiers (0.24 per 1,000 tested) were detected with antibodies to HIV-1 (Table 4).
In calendar year 2007, 39 National Guard soldiers were detected with antibodies to HIV-1. The overall prevalence of seropositivity was 0.27 per 1,000 tested. The annual prevalence in 2007 was higher than in any year since 2002 but lower than in any year of the 1990s. In 2007, on average, one new HIV-1 infected soldier was detected per 4,029 screening tests (Table 4, Figure 4).

In 2007, the seropositivity among male National Guard soldiers was 0.30 per 1,000 tested — the highest since 2002; only one female National Guard soldier was HIV-1 seropositive during routine screening. Of 739 National Guard soldiers diagnosed with HIV-1 infections since 1990, 130 (17.6%) remain in service (Table 4).

Army Reserve: During the 18-month period from January 2007 to June 2008, 139,465 tests for antibodies to HIV-1 were conducted among 127,712 soldiers in the U.S. Army Reserve. During the period, 54 soldiers (0.42 per 1,000 tested) were detected with antibodies to HIV-1 (Table 5). In calendar year 2007, 37 U.S. Army Reserve soldiers were HIV-1 seropositive; the overall seropositivity was 0.45 per 1,000 tested. The number of HIV-1 infections detected in 2007 was higher than in any year except one since 1993. Of note, all Army Reservists detected with HIV-1 infections in 2007 were males. Finally, in 2007, on average, one new HIV-1 infected soldier was detected per 2,461 screening tests (Table 5).

In general, seroprevalences among Army Reserves are relatively unstable, and there are no clear trends (Table 5, Figure 5). Of 641 Reservists diagnosed with HIV-1 since 1990, 144 (22.5%) remain in service (Table 5).

Air National Guard: In 2007, 15,296 tests for antibodies to HIV-1 were conducted among 14,044 members of the U.S. Air National Guard. During the year, two airmen (0.14 per 1,000 tested) were detected with antibodies to HIV-1. On average, in 2007, one new HIV-1 infection was detected per 7,648 screening tests (Table 7).

Compared to the previous five years, there were fewer HIV-1 infections detected and the seroprevalence was lower among Air National Guard members who were tested in 2007 (Table 7, Figure 7).

Air Force Reserve: In 2007, 26,824 tests for antibodies to HIV-1 were conducted among 24,953 members of the U.S. Air Force Reserve. During the year, six airmen (0.24 per 1,000 tested) were detected with antibodies to HIV-1. On average, in 2007, one new HIV-1 infection was detected per 4,471 screening tests (Table 8). The seroprevalence among those tested in 2007 was relatively low compared to recent prior years (Table 8, Figure 8).

Data summaries provided by: Ernest Williams, MPH, Jenny Butler, MS, and Natalie Johns, Maj, USAF, BSC, DVM, MPH, dipl ACVPM.

U.S. Navy

Active duty: In 2007, 75 sailors on active duty in the U.S. Navy (0.32 per 1,000 tested) were newly detected with antibodies to HIV-1 (Table 9). The prevalence of seropositivity in 2007 continued a 6-year trend of relative stability (Table 9, Figure 9).


U.S. Marine Corps

Active duty: In 2007, 20 active duty members of the U.S. Marine Corps (0.16 per 1,000 tested) were newly detected with antibodies to HIV-1 (Table 10). The prevalence of seropositivity in 2007 continued a trend of relatively low seroprevalences (Table 10, Figure 10).

The U.S. military began routine screening for antibodies to HIV-1 among civilian applicants for all military Services in October 1985. Routine periodic screening of all members of all components of the Services began shortly thereafter. During the “first rounds” of HIV-1 antibody testing in the Services, detections of “new” infections were relatively frequent because most service members had never been tested — thus, both longstanding (prevalent) and recently acquired (incident) infections were subject to detection through routine screening. By 1990, nearly all service members had been tested at least once — as applicants for and/or while serving in the military. As a result, periodic screening was detecting only infections that had been acquired since service members’ last negative tests (incident infections).

Results of routine, periodic screening for HIV-1 in dynamic (i.e., continuously changing) military populations must be interpreted cautiously — particularly, comparisons of seropositivity from year to year across Services and components. Prevalences of seropositivity in repeatedly screened populations reflect not only infection incidence rates (i.e., rates of acquisition of new HIV-1 infections) but also testing frequencies. If rates of acquisition of HIV-1 infections (infection incidence rates) were identical in two serially tested populations, prevalences of seropositivity during each round of testing would directly vary by the times between rounds (because the longer the interval, the more undetected infections accumulate, between testing rounds). Thus, for example, increases or declines in observed seroprevalences during routine periodic screening could reflect changes in rates of infection acquisition and/or decreases or increases, respectively, in test intervals. In turn, differences in observed seroprevalences across Services or components could reflect differences in infection risks and/or differences in testing policies and practices.

With the above caveats in mind, the monitoring of results and trends of HIV-1 seroprevalences in various military populations can help target and focus prevention initiatives. The results presented here suggest that, in general, prevalences of HIV-1 infection among civilian applicants for military service and infection incidence rates among active and reserve component members of the services are relatively low and stable.

### Indication for HIV-1 tests, among soldiers, U.S. Army, by component, January-December 2007

<table>
<thead>
<tr>
<th>Test indication</th>
<th>Active component</th>
<th>National Guard</th>
<th>Reserve</th>
<th>Total</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical (including sexually transmitted diseases)</td>
<td>28,089</td>
<td>1,943</td>
<td>1,435</td>
<td>31,467</td>
<td>4.8</td>
</tr>
<tr>
<td>Routine screening</td>
<td>139,668</td>
<td>45,851</td>
<td>18,983</td>
<td>204,502</td>
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</tr>
<tr>
<td>Physical examination</td>
<td>64,325</td>
<td>64,124</td>
<td>47,408</td>
<td>175,857</td>
<td>26.8</td>
</tr>
<tr>
<td>Other/unknown</td>
<td>175,714</td>
<td>45,215</td>
<td>23,232</td>
<td>244,161</td>
<td>37.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>407,796</strong></td>
<td><strong>157,133</strong></td>
<td><strong>91,058</strong></td>
<td><strong>655,987</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>
Table 1. Diagnoses of HIV-1 infections, by gender, civilian applicants for U.S. military service, January 1990-June 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested*</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total HIV-1 (+)*</th>
<th>HIV-1 (+), males</th>
<th>HIV-1 (+), females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>461,866</td>
<td>403,884</td>
<td>340,514</td>
<td>63,332</td>
<td>356</td>
<td>325</td>
<td>31</td>
<td>0.88</td>
<td>0.95</td>
<td>0.49</td>
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<tr>
<td>1991</td>
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<td>383,532</td>
<td>326,690</td>
<td>56,816</td>
<td>317</td>
<td>286</td>
<td>31</td>
<td>0.83</td>
<td>0.88</td>
<td>0.55</td>
</tr>
<tr>
<td>1992</td>
<td>387,843</td>
<td>340,541</td>
<td>279,344</td>
<td>61,165</td>
<td>185</td>
<td>155</td>
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<td>0.55</td>
<td>0.49</td>
</tr>
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<td>1993</td>
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<td>316,292</td>
<td>258,462</td>
<td>57,828</td>
<td>174</td>
<td>150</td>
<td>24</td>
<td>0.55</td>
<td>0.58</td>
<td>0.42</td>
</tr>
<tr>
<td>1994</td>
<td>329,012</td>
<td>280,879</td>
<td>224,164</td>
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<td>130</td>
<td>97</td>
<td>33</td>
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<td>0.43</td>
<td>0.58</td>
</tr>
<tr>
<td>1995</td>
<td>294,954</td>
<td>239,259</td>
<td>190,394</td>
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<td>136</td>
<td>113</td>
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</tr>
<tr>
<td>1996</td>
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<td>282,776</td>
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</tr>
<tr>
<td>1997</td>
<td>356,389</td>
<td>315,713</td>
<td>243,605</td>
<td>62,743</td>
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<td>103</td>
<td>18</td>
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<td>0.29</td>
</tr>
<tr>
<td>1998</td>
<td>336,566</td>
<td>298,548</td>
<td>234,184</td>
<td>63,399</td>
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<tr>
<td>1999</td>
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<td>326,288</td>
<td>257,298</td>
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<td>21</td>
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<td>0.30</td>
</tr>
<tr>
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<tr>
<td>2001</td>
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<td>381,563</td>
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<td>0.26</td>
</tr>
<tr>
<td>2002</td>
<td>415,046</td>
<td>388,081</td>
<td>307,126</td>
<td>80,850</td>
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<td>0.21</td>
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<td>2003</td>
<td>361,566</td>
<td>341,592</td>
<td>275,949</td>
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<td>110</td>
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</tr>
<tr>
<td>2004</td>
<td>307,229</td>
<td>293,485</td>
<td>237,602</td>
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<td>107</td>
<td>93</td>
<td>14</td>
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</tr>
<tr>
<td>2005</td>
<td>319,131</td>
<td>310,226</td>
<td>251,620</td>
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<td>111</td>
<td>101</td>
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<td>0.40</td>
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</tr>
<tr>
<td>2006</td>
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<td>350,701</td>
<td>283,055</td>
<td>67,621</td>
<td>137</td>
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<td>17</td>
<td>0.39</td>
<td>0.42</td>
<td>0.25</td>
</tr>
<tr>
<td>2007</td>
<td>350,370</td>
<td>349,573</td>
<td>284,029</td>
<td>65,527</td>
<td>143</td>
<td>132</td>
<td>11</td>
<td>0.41</td>
<td>0.46</td>
<td>0.17</td>
</tr>
<tr>
<td>2008*</td>
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<td>195,854</td>
<td>159,796</td>
<td>36,053</td>
<td>82</td>
<td>74</td>
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<td>0.42</td>
<td>0.46</td>
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</tr>
</tbody>
</table>

Total 6,758,740 6,157,900* 4,962,256 1,183,780 2,877* 2,493 378

*Through 30 June 2008
# "Total persons tested" and "total HIV-1 (+)" include "unknown/missing" genders.

Figure 1. Diagnoses of HIV-1 infections, by gender, civilian applicants for U.S. military service, January 1990-June 2008.
Table 2. Diagnoses of HIV-1 infections by race/ethnicity, civilian applicants for U.S. military service, January 1990-June 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested</th>
<th>White non-hispanic tested</th>
<th>Black non-hispanic tested</th>
<th>Hispanic and others tested</th>
<th>Total HIV-1 (+)</th>
<th>Total non-hispanic HIV-1(+)</th>
<th>Black non-hispanic HIV-1(+)</th>
<th>Hispanic and others HIV-1(+)</th>
<th>Overall rate per 1000 tested</th>
<th>White non-hispanic rate per 1000 tested</th>
<th>Black non-hispanic rate per 1000 tested</th>
<th>Hispanic and others rate per 1000 tested</th>
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<tbody>
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<td>1990</td>
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<td>403,884</td>
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<td>185</td>
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<tr>
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</tr>
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<td>57,173</td>
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</tr>
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<td>50,239</td>
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<td>0.14</td>
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<td>68,197</td>
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<td>0.38</td>
<td>0.10</td>
<td>1.52</td>
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</tr>
<tr>
<td>2001</td>
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<td>32</td>
<td>91</td>
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<td>0.37</td>
<td>0.12</td>
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<td>0.30</td>
</tr>
<tr>
<td>2002</td>
<td>415,046</td>
<td>388,081</td>
<td>265,816</td>
<td>63,100</td>
<td>59,165</td>
<td>139</td>
<td>40</td>
<td>86</td>
<td>13</td>
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</tr>
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<tr>
<td>2004</td>
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<td>293,485</td>
<td>198,183</td>
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<td>26</td>
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<td>0.36</td>
<td>0.13</td>
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<td>319,131</td>
<td>310,226</td>
<td>212,487</td>
<td>41,280</td>
<td>56,459</td>
<td>111</td>
<td>41</td>
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<td>0.36</td>
<td>0.19</td>
<td>1.43</td>
<td>0.19</td>
</tr>
<tr>
<td>2006</td>
<td>353,906</td>
<td>350,701</td>
<td>241,290</td>
<td>49,780</td>
<td>59,631</td>
<td>137</td>
<td>44</td>
<td>80</td>
<td>13</td>
<td>0.39</td>
<td>0.18</td>
<td>1.61</td>
<td>0.22</td>
</tr>
<tr>
<td>2007</td>
<td>350,370</td>
<td>349,573</td>
<td>241,638</td>
<td>51,006</td>
<td>56,929</td>
<td>143</td>
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<td>0.19</td>
<td>1.57</td>
<td>0.28</td>
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<td>195,854</td>
<td>136,273</td>
<td>30,109</td>
<td>29,472</td>
<td>82</td>
<td>19</td>
<td>56</td>
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<td>0.42</td>
<td>0.14</td>
<td>1.86</td>
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</tbody>
</table>

Total 6,758,740 6,157,900 4,220,590 1,022,887 914,423 2,877 827 1,802 248

*Through 30 June 2008

# "Total persons tested" and "total new HIV-1 (+)" include "unknown/missing" genders.

Figure 2. Diagnoses of HIV-1 infections, by race/ethnicity, civilian applicants for U.S. military service, January 1990–June 2008.
Table 3. New diagnoses of HIV-1 infections, by gender, active component, U.S. Army, January 1990-June 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested*</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)*</th>
<th>New HIV-1 (+), males</th>
<th>New HIV-1 (+), females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
<th>HIV-1 (+) still in active service, by year of diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>505,188</td>
<td>423,149</td>
<td>369,855</td>
<td>53,187</td>
<td>154</td>
<td>145</td>
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<td>0.36</td>
<td>0.39</td>
<td>0.17</td>
<td>3</td>
</tr>
<tr>
<td>1991</td>
<td>448,792</td>
<td>385,831</td>
<td>337,290</td>
<td>48,438</td>
<td>136</td>
<td>128</td>
<td>8</td>
<td>0.35</td>
<td>0.38</td>
<td>0.17</td>
<td>4</td>
</tr>
<tr>
<td>1992</td>
<td>500,253</td>
<td>419,865</td>
<td>367,705</td>
<td>52,050</td>
<td>125</td>
<td>119</td>
<td>6</td>
<td>0.30</td>
<td>0.32</td>
<td>0.12</td>
<td>6</td>
</tr>
<tr>
<td>1993</td>
<td>447,215</td>
<td>364,221</td>
<td>316,126</td>
<td>48,025</td>
<td>95</td>
<td>91</td>
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<td>0.26</td>
<td>0.29</td>
<td>0.08</td>
<td>7</td>
</tr>
<tr>
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<td>339,234</td>
<td>292,250</td>
<td>46,923</td>
<td>84</td>
<td>79</td>
<td>5</td>
<td>0.25</td>
<td>0.27</td>
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</tr>
<tr>
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<td>340,352</td>
<td>292,816</td>
<td>47,474</td>
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<td>0.23</td>
<td>0.25</td>
<td>0.11</td>
<td>12</td>
</tr>
<tr>
<td>1996</td>
<td>434,005</td>
<td>326,211</td>
<td>278,467</td>
<td>47,698</td>
<td>66</td>
<td>61</td>
<td>5</td>
<td>0.20</td>
<td>0.22</td>
<td>0.10</td>
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</tr>
<tr>
<td>1997</td>
<td>427,476</td>
<td>312,697</td>
<td>264,558</td>
<td>48,088</td>
<td>69</td>
<td>61</td>
<td>8</td>
<td>0.22</td>
<td>0.23</td>
<td>0.17</td>
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<tr>
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<td>312,206</td>
<td>262,775</td>
<td>49,375</td>
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<td>0.21</td>
<td>0.14</td>
<td>13</td>
</tr>
<tr>
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<td>291,980</td>
<td>245,253</td>
<td>46,681</td>
<td>54</td>
<td>51</td>
<td>3</td>
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<td>0.21</td>
<td>0.06</td>
<td>8</td>
</tr>
<tr>
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<td>289,124</td>
<td>242,034</td>
<td>47,051</td>
<td>48</td>
<td>41</td>
<td>7</td>
<td>0.17</td>
<td>0.17</td>
<td>0.15</td>
<td>20</td>
</tr>
<tr>
<td>2001</td>
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<td>261,842</td>
<td>49,963</td>
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<td>58</td>
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<td>0.20</td>
<td>0.22</td>
<td>0.06</td>
<td>19</td>
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<tr>
<td>2002</td>
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<td>331,470</td>
<td>278,598</td>
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<td>56</td>
<td>54</td>
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<td>0.17</td>
<td>0.19</td>
<td>0.04</td>
<td>25</td>
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<tr>
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<td>366,069</td>
<td>308,698</td>
<td>57,362</td>
<td>61</td>
<td>57</td>
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<td>0.17</td>
<td>0.18</td>
<td>0.07</td>
<td>29</td>
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<td>2004</td>
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<td>374,075</td>
<td>318,856</td>
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<td>0.14</td>
<td>0.17</td>
<td>0.02</td>
<td>28</td>
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<td>53</td>
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<td>0.18</td>
<td>0.04</td>
<td>34</td>
</tr>
<tr>
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<td>372,858</td>
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<td>52,784</td>
<td>66</td>
<td>63</td>
<td>3</td>
<td>0.18</td>
<td>0.20</td>
<td>0.06</td>
<td>42</td>
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<tr>
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<td>347,150</td>
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<td>50,413</td>
<td>60</td>
<td>58</td>
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<td>0.17</td>
<td>0.20</td>
<td>0.04</td>
<td>52</td>
</tr>
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<td>178,025</td>
<td>28,261</td>
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<td>0.25</td>
<td>0.27</td>
<td>0.07</td>
<td>49</td>
</tr>
</tbody>
</table>

*Through 30 June 2008

# “Total persons tested” includes “unknown/missing” genders.

Figure 3. New diagnoses of HIV-1 infections, by gender, active component, U.S. Army, January 1990-June 2008.
### Table 4. New diagnoses of HIV-1 infections, by gender, National Guard, U.S. Army, January 1990-June 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested¹</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)</th>
<th>New HIV-1 (+), males</th>
<th>New HIV-1 (+), females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
<th>HIV-1 (+) still in NG, by year of diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>231,024</td>
<td>213,778</td>
<td>198,708</td>
<td>15,065</td>
<td>75</td>
<td>72</td>
<td>3</td>
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<td>0.36</td>
<td>0.20</td>
<td>0</td>
</tr>
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<td>178,701</td>
<td>166,934</td>
<td>11,764</td>
<td>68</td>
<td>63</td>
<td>5</td>
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<td>0.38</td>
<td>0.43</td>
<td>2</td>
</tr>
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<td>218,430</td>
<td>17,287</td>
<td>68</td>
<td>64</td>
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<td>0.29</td>
<td>0.23</td>
<td>0</td>
</tr>
<tr>
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<td>158,782</td>
<td>147,079</td>
<td>11,701</td>
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<td>48</td>
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<td>0.33</td>
<td>0.09</td>
<td>0</td>
</tr>
<tr>
<td>1994</td>
<td>200,001</td>
<td>186,369</td>
<td>171,689</td>
<td>14,680</td>
<td>52</td>
<td>49</td>
<td>3</td>
<td>0.28</td>
<td>0.29</td>
<td>0.20</td>
<td>0</td>
</tr>
<tr>
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<td>130,427</td>
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<td>39</td>
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<td>0.30</td>
<td>0.29</td>
<td>5</td>
</tr>
<tr>
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<td>65,427</td>
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<td>25</td>
<td>1</td>
<td>0.42</td>
<td>0.44</td>
<td>0.20</td>
<td>0</td>
</tr>
<tr>
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<td>75,156</td>
<td>70,847</td>
<td>64,196</td>
<td>6,651</td>
<td>23</td>
<td>22</td>
<td>1</td>
<td>0.32</td>
<td>0.34</td>
<td>0.15</td>
<td>1</td>
</tr>
<tr>
<td>1998</td>
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<td>70,818</td>
<td>7,338</td>
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<td>0.40</td>
<td>0.14</td>
<td>2</td>
</tr>
<tr>
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<td>0.35</td>
<td>0.13</td>
<td>4</td>
</tr>
<tr>
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<td>73,972</td>
<td>66,233</td>
<td>7,739</td>
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<td>20</td>
<td>4</td>
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<td>0.30</td>
<td>0.52</td>
<td>5</td>
</tr>
<tr>
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<td>23</td>
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<td>0.27</td>
<td>0.20</td>
<td>1</td>
</tr>
<tr>
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<td>0.34</td>
<td>0.19</td>
<td>3</td>
</tr>
<tr>
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<td>176,990</td>
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<td>18,459</td>
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<td>39</td>
<td>4</td>
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<td>0.25</td>
<td>0.22</td>
<td>14</td>
</tr>
<tr>
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<td>0.19</td>
<td>0.27</td>
<td>15</td>
</tr>
<tr>
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<td>0.19</td>
<td>0.21</td>
<td>0.00</td>
<td>18</td>
</tr>
</tbody>
</table>

*Through 30 June 2008

¹”Total persons tested” and “total new HIV-1 (+)” include “unknown/missing” genders.

### Figure 4. New diagnoses of HIV-1 infections, by gender, National Guard, U.S. Army, January 1990-June 2008
Table 5. New diagnoses of HIV-1 infections by gender, U.S. Army Reserve, January 1990-June 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested*</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)</th>
<th>New HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
<th>HIV-1 (+) still in USAR, by year of diagnosis</th>
</tr>
</thead>
<tbody>
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<td>122,376</td>
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<td>60</td>
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<td>0.47</td>
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</tr>
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</tr>
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<td>96,126</td>
<td>75,765</td>
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<td>26</td>
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<td>0.09</td>
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<td>20</td>
<td>0.48</td>
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</tr>
<tr>
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<td>12,713</td>
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<td>113,152</td>
<td>88,219</td>
<td>24,933</td>
<td>62</td>
<td>61</td>
<td>0.55</td>
<td>0.69</td>
<td>0.04</td>
</tr>
<tr>
<td>2004</td>
<td>120,305</td>
<td>99,419</td>
<td>77,717</td>
<td>21,702</td>
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<td>29</td>
<td>0.30</td>
<td>0.37</td>
<td>0.05</td>
</tr>
<tr>
<td>2005</td>
<td>101,542</td>
<td>86,991</td>
<td>68,814</td>
<td>18,177</td>
<td>17</td>
<td>16</td>
<td>0.20</td>
<td>0.23</td>
<td>0.06</td>
</tr>
<tr>
<td>2006</td>
<td>82,472</td>
<td>71,764</td>
<td>56,263</td>
<td>15,501</td>
<td>29</td>
<td>27</td>
<td>0.40</td>
<td>0.48</td>
<td>0.13</td>
</tr>
<tr>
<td>2007</td>
<td>91,058</td>
<td>81,852</td>
<td>64,379</td>
<td>17,473</td>
<td>37</td>
<td>37</td>
<td>0.45</td>
<td>0.57</td>
<td>0.00</td>
</tr>
<tr>
<td>2008*</td>
<td>48,407</td>
<td>45,860</td>
<td>36,081</td>
<td>9,779</td>
<td>17</td>
<td>15</td>
<td>0.37</td>
<td>0.42</td>
<td>0.20</td>
</tr>
</tbody>
</table>

*Through 30 June 2008

# Total persons tested and total new HIV-1 (+) include unknown/missing genders.

Figure 5. New diagnoses of HIV-1 infections, by gender, U.S. Army Reserve, January 1990-June 2008.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)</th>
<th>New HIV-1 (+) males</th>
<th>New HIV-1 (+) females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>123,922</td>
<td>123,801</td>
<td>93,143</td>
<td>30,385</td>
<td>36</td>
<td>34</td>
<td>2</td>
<td>0.29</td>
<td>0.37</td>
<td>0.07</td>
</tr>
<tr>
<td>1997</td>
<td>144,977</td>
<td>144,834</td>
<td>109,312</td>
<td>33,512</td>
<td>24</td>
<td>21</td>
<td>3</td>
<td>0.17</td>
<td>0.19</td>
<td>0.09</td>
</tr>
<tr>
<td>1998</td>
<td>179,396</td>
<td>178,826</td>
<td>134,975</td>
<td>39,469</td>
<td>34</td>
<td>34</td>
<td>0</td>
<td>0.19</td>
<td>0.25</td>
<td>0.00</td>
</tr>
<tr>
<td>1999</td>
<td>203,096</td>
<td>201,349</td>
<td>155,480</td>
<td>43,244</td>
<td>20</td>
<td>19</td>
<td>1</td>
<td>0.10</td>
<td>0.12</td>
<td>0.02</td>
</tr>
<tr>
<td>2000</td>
<td>228,590</td>
<td>226,224</td>
<td>175,157</td>
<td>48,578</td>
<td>26</td>
<td>24</td>
<td>2</td>
<td>0.11</td>
<td>0.14</td>
<td>0.04</td>
</tr>
<tr>
<td>2001</td>
<td>239,369</td>
<td>237,980</td>
<td>183,467</td>
<td>51,958</td>
<td>35</td>
<td>35</td>
<td>0</td>
<td>0.15</td>
<td>0.19</td>
<td>0.00</td>
</tr>
<tr>
<td>2002</td>
<td>258,981</td>
<td>257,756</td>
<td>198,449</td>
<td>56,132</td>
<td>38</td>
<td>36</td>
<td>2</td>
<td>0.15</td>
<td>0.18</td>
<td>0.04</td>
</tr>
<tr>
<td>2003</td>
<td>261,593</td>
<td>260,764</td>
<td>201,029</td>
<td>57,027</td>
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<td>28</td>
<td>2</td>
<td>0.12</td>
<td>0.14</td>
<td>0.04</td>
</tr>
<tr>
<td>2004</td>
<td>271,384</td>
<td>271,297</td>
<td>208,618</td>
<td>59,835</td>
<td>19</td>
<td>18</td>
<td>1</td>
<td>0.07</td>
<td>0.09</td>
<td>0.02</td>
</tr>
<tr>
<td>2005</td>
<td>245,644</td>
<td>235,706</td>
<td>186,073</td>
<td>48,648</td>
<td>26</td>
<td>24</td>
<td>2</td>
<td>0.11</td>
<td>0.13</td>
<td>0.04</td>
</tr>
<tr>
<td>2006</td>
<td>251,161</td>
<td>228,686</td>
<td>182,501</td>
<td>46,185</td>
<td>34</td>
<td>32</td>
<td>2</td>
<td>0.15</td>
<td>0.18</td>
<td>0.04</td>
</tr>
<tr>
<td>2007</td>
<td>229,556</td>
<td>204,424</td>
<td>162,738</td>
<td>41,686</td>
<td>40</td>
<td>40</td>
<td>0</td>
<td>0.20</td>
<td>0.25</td>
<td>0.00</td>
</tr>
<tr>
<td>Total</td>
<td>2,637,669</td>
<td>2,571,647</td>
<td>1,990,942</td>
<td>556,679</td>
<td>362</td>
<td>345</td>
<td>17</td>
<td>0.14</td>
<td>0.17</td>
<td>0.03</td>
</tr>
</tbody>
</table>

# "Total persons tested" includes "unknown/missing" genders.

Figure 6. New diagnoses of HIV-1 infections, by gender, active component, U.S. Air Force, 1996-2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons testeda</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)</th>
<th>New HIV-1 (+) males</th>
<th>New HIV-1 (+) females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>24,407</td>
<td>24,383</td>
<td>20,532</td>
<td>3,657</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1997</td>
<td>24,473</td>
<td>24,454</td>
<td>20,137</td>
<td>3,894</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
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<td>28,514</td>
<td>28,492</td>
<td>23,041</td>
<td>3,807</td>
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<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1999</td>
<td>28,787</td>
<td>28,761</td>
<td>23,893</td>
<td>4,173</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2000</td>
<td>36,128</td>
<td>36,115</td>
<td>29,992</td>
<td>5,207</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>43,087</td>
<td>43,075</td>
<td>34,180</td>
<td>5,882</td>
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<td>1</td>
<td>0</td>
<td>0.02</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>2002</td>
<td>41,120</td>
<td>41,088</td>
<td>33,666</td>
<td>6,057</td>
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<td>8</td>
<td>0</td>
<td>0.19</td>
<td>0.24</td>
<td>0.00</td>
</tr>
<tr>
<td>2003</td>
<td>41,956</td>
<td>41,922</td>
<td>34,808</td>
<td>6,036</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0.17</td>
<td>0.20</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
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<td>43,666</td>
<td>35,313</td>
<td>7,166</td>
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<td>9</td>
<td>1</td>
<td>0.23</td>
<td>0.25</td>
<td>0.14</td>
</tr>
<tr>
<td>2005</td>
<td>37,999</td>
<td>35,643</td>
<td>28,903</td>
<td>6,093</td>
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<td>11</td>
<td>0</td>
<td>0.31</td>
<td>0.38</td>
<td>0.00</td>
</tr>
<tr>
<td>2006</td>
<td>15,275</td>
<td>14,100</td>
<td>11,269</td>
<td>2,831</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0.57</td>
<td>0.71</td>
<td>0.00</td>
</tr>
<tr>
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<td>14,044</td>
<td>11,321</td>
<td>2,723</td>
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<td>1</td>
<td>1</td>
<td>0.14</td>
<td>0.09</td>
<td>0.37</td>
</tr>
<tr>
<td>Total</td>
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<td>375,743</td>
<td>307,055</td>
<td>57,227</td>
<td>47</td>
<td>45</td>
<td>2</td>
<td>0.13</td>
<td>0.15</td>
<td>0.03</td>
</tr>
</tbody>
</table>

# "Total persons tested" includes "unknown/missing" genders.

Figure 7. New diagnoses of HIV-1 infections, by gender, Air National Guard, U.S. Air Force, 1996-2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Total HIV tests</th>
<th>Total persons tested#</th>
<th>Males tested</th>
<th>Females tested</th>
<th>Total new HIV-1 (+)</th>
<th>New HIV-1 (+) males</th>
<th>New HIV-1 (+) females</th>
<th>HIV-1 (+) per 1000 tested, overall</th>
<th>HIV-1 (+) per 1000 tested, males</th>
<th>HIV-1 (+) per 1000 tested, females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>16,614</td>
<td>16,612</td>
<td>12,790</td>
<td>3,709</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0.06</td>
<td>0.08</td>
<td>0.00</td>
</tr>
<tr>
<td>1997</td>
<td>18,561</td>
<td>18,555</td>
<td>14,101</td>
<td>4,413</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>1998</td>
<td>19,027</td>
<td>19,003</td>
<td>14,346</td>
<td>4,141</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0.11</td>
<td>0.14</td>
<td>0.00</td>
</tr>
<tr>
<td>1999</td>
<td>14,120</td>
<td>14,095</td>
<td>10,613</td>
<td>3,159</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0.21</td>
<td>0.19</td>
<td>0.32</td>
</tr>
<tr>
<td>2000</td>
<td>13,283</td>
<td>13,272</td>
<td>10,157</td>
<td>2,719</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>2001</td>
<td>12,599</td>
<td>12,593</td>
<td>9,347</td>
<td>2,212</td>
<td>9</td>
<td>9</td>
<td>0</td>
<td>0.71</td>
<td>0.96</td>
<td>0.00</td>
</tr>
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<td>22,432</td>
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<td>10</td>
<td>0</td>
<td>0.45</td>
<td>0.59</td>
<td>0.00</td>
</tr>
<tr>
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<td>7,139</td>
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<td>9</td>
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<td>0.25</td>
<td>0.33</td>
<td>0.00</td>
</tr>
<tr>
<td>2004</td>
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<td>31,234</td>
<td>23,675</td>
<td>6,584</td>
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<td>6</td>
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<td>0.19</td>
<td>0.25</td>
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</tr>
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<td>12</td>
<td>0</td>
<td>0.50</td>
<td>0.65</td>
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</tr>
<tr>
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<td>16,746</td>
<td>4,686</td>
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<td>8</td>
<td>0</td>
<td>0.37</td>
<td>0.48</td>
<td>0.00</td>
</tr>
<tr>
<td>2007</td>
<td>26,824</td>
<td>24,953</td>
<td>19,579</td>
<td>5,374</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>0.24</td>
<td>0.26</td>
<td>0.19</td>
</tr>
<tr>
<td>Total</td>
<td>269,256</td>
<td>253,762</td>
<td>194,071</td>
<td>53,338</td>
<td>66</td>
<td>64</td>
<td>2</td>
<td>0.26</td>
<td>0.33</td>
<td>0.04</td>
</tr>
</tbody>
</table>

# “Total persons tested” includes “unknown/missing” genders.

Figure 8. New diagnoses of HIV-1 infections, by gender, Air Force Reserve, U.S. Air Force, 1996-2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Total new HIV-1 (+)</th>
<th>HIV-1 (+) per 1000 tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>249</td>
<td>0.55</td>
</tr>
<tr>
<td>1991</td>
<td>186</td>
<td>0.50</td>
</tr>
<tr>
<td>1992</td>
<td>183</td>
<td>0.47</td>
</tr>
<tr>
<td>1993</td>
<td>161</td>
<td>0.38</td>
</tr>
<tr>
<td>1994</td>
<td>118</td>
<td>0.30</td>
</tr>
<tr>
<td>1995</td>
<td>87</td>
<td>0.23</td>
</tr>
<tr>
<td>1996</td>
<td>94</td>
<td>0.26</td>
</tr>
<tr>
<td>1997</td>
<td>61</td>
<td>0.17</td>
</tr>
<tr>
<td>1998</td>
<td>58</td>
<td>0.17</td>
</tr>
<tr>
<td>1999</td>
<td>57</td>
<td>0.16</td>
</tr>
<tr>
<td>2000</td>
<td>77</td>
<td>0.21</td>
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<tr>
<td>2001</td>
<td>85</td>
<td>0.24</td>
</tr>
<tr>
<td>2002</td>
<td>84</td>
<td>0.28</td>
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<td>87</td>
<td>0.29</td>
</tr>
<tr>
<td>2004</td>
<td>84</td>
<td>0.30</td>
</tr>
<tr>
<td>2005</td>
<td>79</td>
<td>0.28</td>
</tr>
<tr>
<td>2006</td>
<td>85</td>
<td>0.33</td>
</tr>
<tr>
<td>2007</td>
<td>75</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Figure 9. New diagnoses of HIV-1 infections, U.S. Navy, 1990-2007
Table 10. New diagnoses of HIV-1 infections, active component, U.S. Marine Corps, January 1990-December 2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Total new HIV-1 (+)</th>
<th>HIV-1 (+) per 1000 tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>49</td>
<td>0.28</td>
</tr>
<tr>
<td>1991</td>
<td>37</td>
<td>0.26</td>
</tr>
<tr>
<td>1992</td>
<td>29</td>
<td>0.20</td>
</tr>
<tr>
<td>1993</td>
<td>41</td>
<td>0.25</td>
</tr>
<tr>
<td>1994</td>
<td>28</td>
<td>0.17</td>
</tr>
<tr>
<td>1995</td>
<td>18</td>
<td>0.11</td>
</tr>
<tr>
<td>1996</td>
<td>22</td>
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<td>2003</td>
<td>13</td>
<td>0.09</td>
</tr>
<tr>
<td>2004</td>
<td>18</td>
<td>0.15</td>
</tr>
<tr>
<td>2005</td>
<td>16</td>
<td>0.12</td>
</tr>
<tr>
<td>2006</td>
<td>15</td>
<td>0.11</td>
</tr>
<tr>
<td>2007</td>
<td>20</td>
<td>0.16</td>
</tr>
</tbody>
</table>

Figure 10. New diagnoses of HIV-1 infections, U.S. Marine Corps, 1990-2007

Exposure to bloodborne pathogens (BBP) is a risk associated with many occupations. Some health care occupations are particularly risky. The agents most often considered occupational BBP threats are the human immunodeficiency virus (HIV) and the hepatitis B and C viruses (HBV, HCV). Because these and other pathogens can be spread by contaminated blood or body fluids, needlesticks and “sharps” injuries are the focuses of most occupational BBP exposure prevention programs. However, BBP exposures also occur through splashes to the eyes, contact of contaminated fluids with broken skin, and other mechanisms.

There is considerable information regarding BBP transmission and risk reduction in civilian medical settings. However, there are few published studies, surveys, or reviews of occupational BBP exposure risk in military populations and settings. A survey in a U.S. military medical center by Goob and colleagues documented significant underreporting of occupational injuries with BBP exposure potential; in this study, the patient sources of exposures were identified as “positive” for BBPs relatively infrequently: HIV-1 (4.3%), HBV (4.4%), and HCV (7.1%). Clearly, more militarily relevant information is needed to inform risk assessments which, in turn, should guide resource allocations — e.g., for education, training, equipment, supplies, and surveillance. The need for information is especially critical in relation to military medical activities under less than optimal conditions (e.g., combat casualty care in Iraq and Afghanistan) and in areas where bloodborne pathogens such as HIV-1 are hyperendemic.

For this report, passively acquired surveillance data were summarized to estimate the frequencies, trends, and characteristics of U.S. military health care workers who had medical encounters for occupationally-related BBP exposures in military healthcare settings during a recent 10-year period.

**Methods:**

The surveillance period was 1 January 1998 to 31 December 2007. The surveillance population included all individuals in an active component of the U.S. Armed Forces whose records indicated that they served in a medical or healthcare-related occupation. Cases were determined from ambulatory visit records maintained in the Defense Medical Surveillance System (DMSS).

For surveillance purposes, a case of occupationally-related BBP exposure (“BBP exposure-related visit”) was defined as an ambulatory visit with a diagnosis in position 1-4 of the standard ambulatory medical encounter record of ICD-9-CM: 998.2 “accidental puncture or laceration during procedure”; V15.85 “exposure to potentially hazardous body fluids”; and/or E920.5 “accidents caused by cutting and piercing instruments or objects, hypodermic needle.” Because each BBP exposure could result in multiple ambulatory visits, only one exposure-related visit per 30-day period per individual was included for analysis.

For surveillance purposes, service members with Department of Defense Primary Occupation Codes (DODPOCs) beginning with “13” (enlisted, health care specialists) or “26” (officers, health care officers) were considered to have medical and healthcare-related military occupations. Enlisted and officer veterinary care occupations were excluded from this analysis because the focus was human BBP exposure. Service members with undocumented or unidentifiable DODPOCs were also excluded.

The experiences of the Navy and Marine Corps were combined because the medical support of both services is provided by members of the Navy medical department. Job-specific BBP exposure experiences were estimated separately in healthcare-related occupational subgroups of enlisted members (n=5) and officers (n=6).

Enlisted healthcare-related occupational subgroups were defined as: i) Medical care/treatment, general: medical specialist; practical nurse; hospital corpsman; hospitalman; respiratory specialist; cardiovascular technician; independent duty corpsman; ii) Surgery: operating room specialist; OR technician; surgical service apprentice, journeyman, or craftsman; iii) Laboratory services: medical laboratory specialist; cytology specialist; hemodialysis technician; medical, histopathology, cytotecnology apprentice, journeyman, or craftsman; iv) Dental, general treatment and laboratory: dental specialist; dentalman; dental hygienist; dental surgical technologist; dental assistant; dental laboratory specialist; dental laboratory technician; dental laboratory apprentice, journeyman, or craftsman; and v) Behavioral science, therapy/orthopedic, ancillary: behavioral sciences; mental health specialist; psychiatry technician; occupational therapy specialist; physical therapy specialist; orthopedic specialist; cast room technician; aerospace/undersea medicine; pharmacy; radiology; biomedical sciences; environmental health services; optometry; physiology; biomedical equipment maintenance/repair; administration; medical logistics.

Officer healthcare-related occupational subgroups were defined as: i) Physicians, medicine – aviation/aerospace, allergy, ER, anesthesia, dermatology, family medicine, pediatrics,
PM&R, preventive medicine, psychiatry, radiology, nuclear medicine, general internal medicine, medicine subspecialties (pulmonology, gastroenterology, cardiology, nephrology, hematology, rheumatology, infectious disease), physician assistants; ii) Physicians, surgery – OB/GYN, ophthalmology, ENT, pathology, general surgery, surgical subspecialties (colorectal, neurologic, orthopedic, plastic, cardiothoracic, oncologic, pediatric, urologic), podiatry; iii) Dentists – general / comprehensive / public health dentistry, end-, orth-, ped-, peri-, and prosthodontics, OMF surgery, oral pathology; iv) Nurses, general – general nurses, nurse practitioners, flight nurses, mental health nurses, nurse educators, nursing administrators; v) Nurses, OR / surgical / anesthesia – nurse anesthetist, OR nurse, nurse midwife, critical care nurses; and vi) Biomedical science, allied health – audiology, speech pathology, biomedical lab services, environmental health services, optometry, pharmacy, PT/OT, physiology, diet therapy, administration.

During the 10-year surveillance period, there were 30,120 incident ambulatory visits (incidence rate: 26.6 per 1,000 person-years [p-yrs]) for occupationally-related BBP exposures (Table 1). The annual numbers and rates of incident exposure-related visits increased each year — and nearly doubled overall — from 1998 (rate: 16.7 per 1,000 p-yrs) to 2004 (32.8 per 1,000 p-yrs). The rate was stable from 2004 to 2006 and sharply declined in 2007 (Figure 1).

For the entire period, more cases occurred in August (10% of all cases) than in any other month; and the three-month period from June-August accounted for nearly one-third

<table>
<thead>
<tr>
<th>Total</th>
<th>Incident visits</th>
<th>% of total</th>
<th>Incidence rate (per 1,000 person-years)</th>
<th>Rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>30,120</td>
<td>100.0</td>
<td>26.6</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>17,865</td>
<td>59.3</td>
<td>24.0</td>
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</tr>
<tr>
<td>Female</td>
<td>12,255</td>
<td>40.7</td>
<td>31.6</td>
<td>1.32</td>
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<tr>
<td>Age group (years)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20</td>
<td>2,653</td>
<td>8.8</td>
<td>61.7</td>
<td>4.06</td>
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<td>9,768</td>
<td>32.4</td>
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<td>25-29</td>
<td>6,860</td>
<td>22.8</td>
<td>28.2</td>
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<tr>
<td>30-34</td>
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<td>15.7</td>
<td>22.5</td>
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<tr>
<td>35-39</td>
<td>3,149</td>
<td>10.5</td>
<td>17.5</td>
<td>1.16</td>
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<tr>
<td>40+</td>
<td>2,958</td>
<td>9.8</td>
<td>15.2</td>
<td>ref</td>
</tr>
<tr>
<td>Race-ethnicity</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black non-Hispanic</td>
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<td>18.5</td>
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</tr>
<tr>
<td>White non-Hispanic</td>
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<td>54.7</td>
<td>25.1</td>
<td>1.02</td>
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<td>Hispanic</td>
<td>3,365</td>
<td>11.2</td>
<td>28.8</td>
<td>1.18</td>
</tr>
<tr>
<td>Asian/Pacific Island</td>
<td>3,165</td>
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<td>39.0</td>
<td>1.59</td>
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<tr>
<td>Native Am/Alaskan</td>
<td>493</td>
<td>1.6</td>
<td>39.0</td>
<td>1.59</td>
</tr>
<tr>
<td>Military status (grade)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Officer, company (O1-O3)</td>
<td>6,463</td>
<td>21.5</td>
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<tr>
<td>Officer, field (O4-O6)</td>
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<td>20.5</td>
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<tr>
<td>Enlisted, junior (E1-E3)</td>
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<td>32.6</td>
<td>51.0</td>
<td>8.54</td>
</tr>
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<td>Enlisted, mid (E4-E6)</td>
<td>9,880</td>
<td>32.8</td>
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<tr>
<td>Enlisted, senior (E1-E3)</td>
<td>476</td>
<td>1.6</td>
<td>6.0</td>
<td>ref</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Army</td>
<td>6,756</td>
<td>22.4</td>
<td>15.4</td>
<td>1.58</td>
</tr>
<tr>
<td>Navy</td>
<td>20,061</td>
<td>66.6</td>
<td>56.4</td>
<td>5.77</td>
</tr>
<tr>
<td>Air Force</td>
<td>3,303</td>
<td>11.0</td>
<td>9.8</td>
<td>ref</td>
</tr>
</tbody>
</table>

Results:

Figure 1. Overall incidence rates (and incident medical encounters by military status) of occupational exposures to blood/other body fluids among military healthcare workers, active component, U.S. Armed Forces, by year, 1998-2007

<table>
<thead>
<tr>
<th>Number of incident visits</th>
<th>Incidence rate (per 1,000 p-yrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>1.346</td>
</tr>
<tr>
<td>1999</td>
<td>1.534</td>
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<tr>
<td>2000</td>
<td>1.615</td>
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<tr>
<td>2001</td>
<td>1.615</td>
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<tr>
<td>2002</td>
<td>1.947</td>
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<tr>
<td>2003</td>
<td>2.253</td>
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<tr>
<td>2004</td>
<td>2.482</td>
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<tr>
<td>2005</td>
<td>2.444</td>
</tr>
<tr>
<td>2006</td>
<td>2.525</td>
</tr>
<tr>
<td>2007</td>
<td>1.639</td>
</tr>
</tbody>
</table>

Table 1. Incident medical encounters for occupational blood-borne pathogen exposures, among military healthcare workers, active component, U.S. Armed Forces, 1998-2007
Among the most junior of both enlisted and officer health care workers, overall, rates of BBP exposure-related visits were highest among enlisted grades, E1-E3: 51.0 per 1,000 p-yrs; officer grades, O1-O3: 35.2 per 1,000 p-yrs) times higher than among "medical treatment, general" subgroup. While the "surgery" subgroup accounted for relatively few cases overall (7%), the rate among them (70.0 per 1,000 p-yrs) was 5.8- and 3.7-times higher than among their counterparts in the Air Force (9.8 per 1,000 p-yrs) and Army (15.4 per 1,000 p-yrs), respectively.

Overall, rates of BBP exposure-related visits were highest among the most junior of both enlisted and officer health care workers (enlisted grades, E1-E3: 51.0 per 1,000 p-yrs; officer grades, O1-O3: 35.2 per 1,000 p-yrs) (Table 1). Among enlisted health care workers, approximately 40% of all incident BBP exposure-related visits occurred among White healthcare workers; however, incidence rates were similar (approximately 25 per 1,000 p-yrs) among Black and White workers (Table 1).

Approximately two-thirds (67%) of all incident visits for BBP exposures were among Navy healthcare workers. The rate of reported exposure-related visits among Navy medical workers (56.4 per 1,000 p-yrs) was 5.8- and 3.7-times higher than among their counterparts in the Air Force (9.8 per 1,000 p-yrs) and Army (15.4 per 1,000 p-yrs), respectively (Table 1).

Exposures were among Navy healthcare workers. The results establish benchmarks for the analysis, BBP exposures were identified by searching for “indicator” ICD-9 codes that were recorded as diagnoses during outpatient medical encounters of military members with healthcare-related military occupations. Two of the codes (ICD-9-CM codes 998.2 and E920.5) used to detect BBP exposures specify occurrences of accidental injuries, e.g., punctures, lacerations during procedures, but not exposures to potentially contaminated body fluids. Episodes documented with these non-specific codes were included because healthcare workers likely seek medical attention more often after injuries with needles or sharps that they know or suspect are contaminated. Similarly, the code (V15.85) for “exposure to potentially hazardous body fluids” is non-specific in regard to “blood-borne pathogens.” The code was included as a case-defining diagnosis to enable the detection of occupational BBP exposures that occur through splashes or direct contacts not involving sharps. Of note, the code V01.79 “contact with or exposure to communicable diseases, other viral diseases” was not included because few additional potential cases would have been identified (and many “false positive” cases related to pathogens not primarily transmitted in blood or body fluids, e.g., tuberculosis, would have been included).

The indicator diagnosis codes used for this analysis were selected after consulting many occupational health clinics to ascertain how they coded occupational BBP exposures in their practices. The codes most commonly used in clinical practice were consistent with those considered most relevant after reviewing ICD-9 code definitions, coding guidelines, and other relevant sources. To some extent, the finding that more than 90% of all incident visits were reported from occupational health clinics (68.3%) and emergency departments (22.0%) validates the code selection.

There are many occupational BBP exposures of service members that do not result in medical encounters in fixed military medical treatment facilities (e.g., on-board ships, other deployed settings) and/or are documented with diagnoses not considered case indicators for this analysis. For these reasons, the results presented here likely underestimate the actual numbers and rates of occupational BBP exposures of military health care workers. In relation to ascertainment, the significantly higher rates of BBP exposure-related visits among Navy versus other healthcare workers may be due, at least in part, to more complete ascertainment (e.g., medical evaluation, diagnostic coding) of cases in Navy medical treatment facilities.


Editorial comment:

To our knowledge, this is the first systematic estimate of numbers and rates of occupational BBP exposures among U.S. military health care workers. The results establish benchmarks against which future research and surveillance findings can be compared.

There are several limitations of this analysis that should be considered when interpreting the results. For example, for the analysis, BBP exposures were identified by searching for “indicator” ICD-9 codes that were recorded as diagnoses during outpatient medical encounters of military members with healthcare-related military occupations. Two of the codes (ICD-9-CM codes 998.2 and E920.5) used to detect BBP exposures specify occurrences of accidental injuries, e.g., punctures, lacerations during procedures, but not exposures to potentially contaminated body fluids. Episodes documented with these non-specific codes were included because healthcare workers likely seek medical attention more often after injuries with needles or sharps that they know or suspect are contaminated. Similarly, the code (V15.85) for “exposure to potentially hazardous body fluids” is non-specific in regard to “blood-borne pathogens.” The code was included as a case-defining diagnosis to enable the detection of occupational BBP exposures that occur through splashes or direct contacts not involving sharps. Of note, the code V01.79 “contact with or exposure to communicable diseases, other viral diseases” was not included because few additional potential cases would have been identified (and many “false positive” cases related to pathogens not primarily transmitted in blood or body fluids, e.g., tuberculosis, would have been included).

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In 1999, Goob and colleagues estimated an annual incidence of 93.7 exposures per 1,000 workers at a U.S. military medical center and concluded there was widespread underreporting — by at least fourfold — of blood and body fluid exposures. Their findings are generally consistent with the overall estimate in this report of 26.6 occupational BBP exposure-related visits per 1,000 p-yrs.

Table 2. Incident medical encounters for occupational blood-borne pathogen exposures, by military status and healthcare occupational subgroup, active component, U.S. Armed Forces, 1998-2007

<table>
<thead>
<tr>
<th>Enlisted</th>
<th>Incident visits</th>
<th>% of total</th>
<th>Incidence rate (per 1,000 person-years)</th>
<th>Rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery</td>
<td>2,178</td>
<td>7.2</td>
<td>70.0</td>
<td>6.36</td>
</tr>
<tr>
<td>Laboratory services</td>
<td>1,462</td>
<td>4.9</td>
<td>30.5</td>
<td>2.77</td>
</tr>
<tr>
<td>Dental</td>
<td>2,044</td>
<td>6.8</td>
<td>30.4</td>
<td>2.76</td>
</tr>
<tr>
<td>Medical treatment, general</td>
<td>12,060</td>
<td>40.0</td>
<td>29.3</td>
<td>2.67</td>
</tr>
<tr>
<td>Behavioral science, therapy, ancillary</td>
<td>2,436</td>
<td>8.1</td>
<td>11.0</td>
<td>ref</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Officer</th>
<th>Incident visits</th>
<th>% of total</th>
<th>Incidence rate (per 1,000 person-years)</th>
<th>Rate ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurses, general</td>
<td>3,339</td>
<td>11.1</td>
<td>40.1</td>
<td>4.23</td>
</tr>
<tr>
<td>Physicians, surgery</td>
<td>739</td>
<td>2.5</td>
<td>38.7</td>
<td>3.88</td>
</tr>
<tr>
<td>Dentists</td>
<td>1,146</td>
<td>3.8</td>
<td>36.6</td>
<td>3.87</td>
</tr>
<tr>
<td>Physicians, medicine</td>
<td>3,484</td>
<td>11.6</td>
<td>33.5</td>
<td>3.54</td>
</tr>
<tr>
<td>Nurses, OR/surgery/anesthesia</td>
<td>290</td>
<td>1.0</td>
<td>19.0</td>
<td>2.01</td>
</tr>
<tr>
<td>Biomedical sciences, allied health</td>
<td>942</td>
<td>3.1</td>
<td>9.5</td>
<td>ref</td>
</tr>
</tbody>
</table>

The youngest and most junior healthcare workers are also the most inexperienced; their routine duties often entail exposures to potentially contaminated materials (e.g., needles, syringes, dressings, linen, waste), and they may be more likely than others to report and/or seek care for potentially hazardous exposures. Not surprisingly, rates of BBP exposure-related visits are relatively high among them.

The relatively high rates of BBP exposure related visits among enlisted “surgery” and “laboratory services” workers reflect the relatively high risk of injury during activities closely associated with patient blood and body fluids — e.g., drawing blood; performing laboratory tests; assisting in emergency departments, operating rooms, and treatment rooms. BBP exposure prevention activities should emphasize education, training, and supervision of junior health care workers — particularly those who perform inherently high risk surgery support and laboratory service activities.

In contrast to all other groups, the rate of BBP exposure-related visits in the “dental” group generally increased throughout the period. The finding may reflect increased patient volumes, more complete ascertainment of cases, more frequent and/or higher risk activities, decreased vigilance, and/or other factors. At local levels, occupational health, infection control, and

Figure 2. Incidence rates of occupational blood-borne pathogen (BBP) exposure-related medical encounters, among U.S. military healthcare workers, by military status and grade, by year, 1998-2007
dental personnel should assess the natures and magnitudes of risks, implement policies and practices to counter them, and track the numbers, natures, and rates of incidents over time.

Among officers, "general nurses" had the highest rate of BBP exposure-related medical visits. In the civilian sector, occupational BBP exposure risk is often assessed in relation to bed-days to document relationships between patient volume, staffing levels, and exposure risk. Such assessments may be informative at individual medical treatment facilities.

This analysis was an overall assessment of the incidence of occupational BBP exposures among military healthcare workers in general. The identification of risk factors and high-risk groups may help in designing surveillance, education, and training programs at local levels. However, this analysis did not document the burden to the healthcare system associated with evaluating and treating BBP exposures and their effects (e.g., clinic visits, laboratory tests, prophylactic medications) or assess specific correlates of risk — such as time of day, specific clinical setting, or exposure mechanism (e.g., needlestick, sharp, splash, area of body affected). Detailed studies of such factors would be informative and useful. Finally, the findings of this report should inform planning for training and operational missions overseas — particularly those involving care for non-U.S. military populations in areas highly endemic for bloodborne pathogens (e.g., peacekeeping, humanitarian assistance, disaster relief).

References:


The force health protection strategy of the U.S. Armed Forces is designed to deploy healthy, fit, and medically ready forces, to minimize illnesses and injuries during deployments, and to evaluate and treat physical and psychological problems (and deployment-related health concerns) following deployment.

In 1998, the Department of Defense initiated health assessments of all deployers prior to and after serving in major operations outside of the United States. In March 2005, the Post-Deployment Health Reassessment (PDHRA) program was begun to identify and respond to health concerns that persisted until or emerged within three to six months after redeployment.

This report summarizes responses to selected questions on deployment health assessments completed since 2003. In addition, it documents the natures and frequencies of changes in responses from predeployment to postdeployment.

Methods:

Completed deployment health assessment forms are transmitted to the Armed Forces Health Surveillance Center (AFHSC) where they are incorporated into the Defense Medical Surveillance System (DMSS). In the DMSS, data recorded on health assessment forms are integrated with data that document demographic and military characteristics and medical encounters (e.g. hospitalizations, ambulatory visits) at fixed military and other (contracted care) medical facilities of the Military Health System. For this analysis, DMSS was searched to identify all pre (DD2795) and post (DD2796) deployment health assessment forms completed since 1 January 2003 and all post-deployment health reassessment (DD2900) forms completed since 1 January 2006.

Results:

During the 12-month period from August 2007 to July 2008, there were 354,886 pre-deployment health assessments, 382,610 post-deployment health assessments, and 283,412 post-deployment health reassessments completed at field sites, forwarded to the Armed Forces Health Surveillance Center, and archived in the Defense Medical Surveillance System (Table 1).

Between January 2003 and July 2008, there were peaks and troughs in numbers of pre-deployment and post-deployment health assessments that generally corresponded to times of departure and return of large numbers of deployers (Figure 1). Since April 2006, the numbers of post-deployment health reassessments (PDHRA) completed per month have been relatively stable (Figure 1, Table 1).

From August 2007 through July 2008, nearly three-fourths (73.3%) of deployers rated their “health in general” as “excellent” or “very good” during pre-deployment health assessments. Smaller proportions of redeployers rated their general health as “excellent” or “very good” during post-deployment assessments (58.0%) and post-deployment reassessments (52.8%); also, there were increases in the proportions of deployers who rated their health as “fair” or
In the past 12 months, the proportion of deployers who assessed their general health as “fair” or “poor” was consistently low before deployment (mean, by month: 2.5%), higher at redeployment (mean, by month: 7.2%), and highest 3-6 months after redeployment (mean, by month: 13.5%) (Figure 3). From month to month, there was relatively little variability in the proportions of deployers who rated their health as “fair” or “poor” on predeployment, post-deployment, and post-deployment reassessment questionnaires (Figure 3).

Of deployers who completed health assessments prior to and 3-6 months after returning from deployment, approximately one of 6 (16.3%) indicated significant declines (i.e., change of 2 or more categories on a 5-category scale) in their perceived general health states between the assessments (Figure 4). In general, on post-deployment assessments and reassessments, deployers in the Army and in Reserve components were more likely than their respective counterparts to report health and exposure-related concerns. Particularly among Reserve component members of the Army and Marine Corps, health and exposure-related concerns and indications for referrals were much greater 3-6 months after redeployment (DD2900) than at the time of redeployment (DD2796). For example, at the time of redeployment, active component soldiers were the most likely of all deployers to receive mental health referrals; however, 3-6 months after redeployment, Reserve component members of the Army and Marine Corps were the most likely of all deployers to receive mental health referrals (Table 2, Figures 5,6).

Table 1. Deployment-related health assessment forms, by month, U.S. Armed Forces, August 2007-July 2008

<table>
<thead>
<tr>
<th></th>
<th>Pre-deployment assessment DD2795</th>
<th>Post-deployment assessment DD2796</th>
<th>Post-deployment reassessment DD2900</th>
</tr>
</thead>
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<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>354,886</td>
<td>100</td>
<td>382,610</td>
</tr>
<tr>
<td><strong>2007</strong></td>
<td></td>
<td></td>
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<tr>
<td>August</td>
<td>35,139</td>
<td>9.9</td>
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<tr>
<td>September</td>
<td>32,696</td>
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<td>October</td>
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<td>November</td>
<td>19,396</td>
<td>5.5</td>
<td>31,018</td>
</tr>
<tr>
<td>December</td>
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<td>6.9</td>
<td>37,540</td>
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<td>34,057</td>
<td>9.6</td>
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</tr>
<tr>
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“poor” from pre-deployment to post-deployment to 3-6 months after returning from deployment. For example, prior to deploying, one of 40 (2.5%) deployers rated their health as “fair” or “poor”; at redeployment, one of 14 (6.6%) deployers rated their health as “fair” or “poor”; and 3-6 months after returning from deployment, one of 7 (13.8%) deployers rated their health as “fair” or “poor” (Figure 2). In the past 12 months, the proportion of deployers who assessed their general health as “fair” or “poor” was consistently low before deployment (mean, by month: 2.5%), higher at redeployment (mean, by month: 7.2%), and highest 3-6 months after redeployment (mean, by month: 13.5%) (Figure 3). From month to month, there was relatively little variability in the proportions of deployers who rated their health as “fair” or “poor” on predeployment, post-deployment, and post-deployment reassessment questionnaires (Figure 3). Of deployers who completed health assessments prior to and 3-6 months after returning from deployment, approximately one of 6 (16.3%) indicated significant declines (i.e., change of 2 or more categories on a 5-category scale) in their perceived general health states between the assessments (Figure 4). In general, on post-deployment assessments and reassessments, deployers in the Army and in Reserve components were more likely than their respective counterparts to report health and exposure-related concerns. Particularly among Reserve component members of the Army and Marine Corps, health and exposure-related concerns and indications for referrals were much greater 3-6 months after redeployment (DD2900) than at the time of redeployment (DD2796). For example, at the time of redeployment, active component soldiers were the most likely of all deployers to receive mental health referrals; however, 3-6 months after redeployment, Reserve component members of the Army and Marine Corps were the most likely of all deployers to receive mental health referrals (Table 2, Figures 5,6).

Figure 2. Percent distributions of self-assessed health status as reported on deployment health assessment forms, U.S. Armed Forces, August 2007-July 2008
Finally, in general, soldiers and Reserve component members were more likely than their respective counterparts to report “exposure concerns”; and both active and Reserve component members were more likely to report “exposure concerns” 3-6 months after compared to the time of redeployment (Table 2, Figures 6, 7).

Regardless of the Service or component, deployers rate their general health worse when they redeploy compared to before deploying. This is not surprising because deployments are inherently physically and psychologically demanding. Clearly, there are many more – and more significant – threats to the physical and mental health of service members when they are conducting or supporting combat operations away from their families in hostile environments compared to when serving at their permanent duty stations (active component) or when living in their civilian communities (Reserve component).

However, as a group, redeployed service members rate their general health worse and are more likely to report exposure concerns 3-6 months after returning from deployment compared to the time of redeployment. Symptoms of post deployment stress disorder (PTSD) may emerge or worsen within several months after a life threatening experience (such as military service in a war zone). PTSD among U.S. veterans of combat duty in Iraq has been associated with higher rates of physical health problems after redeployment. Among British veterans of the Iraq war, Reservists reported more “ill health” than their active counterparts. Roles, traumatic experiences, and unit cohesion while deployed were associated with medical outcomes after redeployment; however, PTSD symptoms were more associated with problems at home (e.g., reintegration into family, work, and other aspects of civilian life) than with events in Iraq.

The post-deployment health reassessment at 3-6 months post-deployment is designed to detect service members with symptoms not only of PTSD but also persistent or emerging deployment-related medical and mental health problems. Post-deployment health assessments may be more reliable several months after redeployment compared to earlier. Commanders, supervisors, family members, peers, and providers of health care to redeployed service members should be alert to emerging or worsening symptoms of physical and psychological problems for several months, at least, after redeployment.

References:

2. Assistant Secretary of Defense (Health Affairs). Memorandum for the Assistant Secretaries of the Army (M&RA), Navy (M&RA), and Air Force (M&RA), subject: Post-deployment health reassessment (HA policy: 05-011), dated 10 March 2005. Washington, DC.
Figure 4. Proportion of service members whose self-assessed health status improved (“better”) or declined (“worse”) (by 2 or more categories on 5-category scale) from pre-deployment to reassessment, by month, U.S. Armed Forces, August 2007-July 2008

Figure 5. Percent of deployers with mental or behavioral health referrals, by Service and component, by timing of health assessment, U.S. Armed Forces, August 2007-July 2008
Table 2. Percentages of service members who endorsed selected questions/received referrals on health assessment forms, U.S. Armed Forces, August 2007-July 2008

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<tr>
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<th>Army Post-deploy DD2796</th>
<th>Army Reassessmt DD2900</th>
<th>Navy Pre-deploy DD2795</th>
<th>Navy Post-deploy DD2796</th>
<th>Navy Reassessmt DD2900</th>
<th>Air Force Pre-deploy DD2795</th>
<th>Air Force Post-deploy DD2796</th>
<th>Air Force Reassessmt DD2900</th>
<th>Marine Corps Pre-deploy DD2795</th>
<th>Marine Corps Post-deploy DD2796</th>
<th>Marine Corps Reassessmt DD2900</th>
<th>All service members Pre-deploy DD2795</th>
<th>All service members Post-deploy DD2796</th>
<th>All service members Reassessmt DD2900</th>
</tr>
</thead>
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<td>3.8</td>
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<td>2.7</td>
<td>6.0</td>
<td>11.9</td>
</tr>
<tr>
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<td>29.2</td>
<td>39.2</td>
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<td>9.6</td>
<td>22.2</td>
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<td>13.2</td>
<td>16.0</td>
<td>4.2</td>
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<td>28.9</td>
<td>8.7</td>
<td>21.3</td>
<td>29.7</td>
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<td>Health worse now than before deployed</td>
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<td>19.0</td>
<td>29.3</td>
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<td>6.0</td>
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<td>0.0</td>
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<td>15.0</td>
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<tr>
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<td>9.7</td>
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<td>10.8</td>
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<th>Army Reassessmt DD2900</th>
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<th>Air Force Pre-deploy DD2795</th>
<th>Air Force Post-deploy DD2796</th>
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<th>Marine Corps Pre-deploy DD2795</th>
<th>Marine Corps Post-deploy DD2796</th>
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<th>All service members Pre-deploy DD2795</th>
<th>All service members Post-deploy DD2796</th>
<th>All service members Reassessmt DD2900</th>
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*Includes behavioral health, combat stress and substance abuse referrals
†Record of inpatient or outpatient visit within 6 months after referral
Figure 6. Ratio of percents of deployers who endorse selected questions, Reserve versus active component, on pre-deployment health assessments (DD2795) and post-deployment health reassessments (DD2900), U.S. Armed Forces, August 2007-July 2008

Figure 7. Proportion of service members who endorse exposure concerns on post-deployment health assessments, U.S. Armed Forces, January 2004-July 2008
Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through 31 July 2007 and 31 July 2008

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<tr>
<th>Reporting locations</th>
<th>Number of reports all events†</th>
<th>Food-borne</th>
<th>Vaccine preventable</th>
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<tr>
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<td>Fort Eustis, VA</td>
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*Events reported by August 7, 2007 and 2008
†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.
Note: Completeness and timeliness of reporting vary by facility.
Sentinel reportable events for service members and beneficiaries at U.S. Army medical facilities, cumulative numbers* for calendar years through 31 July 2007 and 31 July 2008

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<td>Chlamydia</td>
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<tr>
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‡Primary and secondary.  
§Urethritis, non-gonococcal (NGU).
Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through 31 July 2007 and 31 July 2008

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<th>Reporting locations</th>
<th>Number of reports all events(^1)</th>
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*Events reported by August 7, 2007 and 2008
†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.
Note: Completeness and timeliness of reporting vary by facility.
Sentinel reportable events for service members and beneficiaries at U.S. Navy medical facilities, cumulative numbers* for calendar years through 31 July 2007 and 31 July 2008

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<th>Reporting location</th>
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‡Primary and secondary.
§Urethritis, non-gonococcal (NGU).
Sentinel reportable events for service members and beneficiaries at U.S. Air Force medical facilities, cumulative numbers* for calendar years through 31 July 2007 and 31 July 2008

<table>
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<th>Reporting locations</th>
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Total 3,206 4,022 10 13 6 12 42 32 10 12 0 0 23 44 24 20

*Events reported by August 7, 2007 and 2008
†Seventy medical events/conditions specified by Tri-Service Reportable Events Guidelines and Case Definitions, May 2004.

Note: Completeness and timeliness of reporting vary by facility.

<table>
<thead>
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<th>Reporting location</th>
<th>Arthropod-borne</th>
<th>Sexually transmitted</th>
<th>Environmental</th>
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Total 23 24 1 4 2,404 2,583 205 250 7 11 2 1 4 5 10 5

‡Primary and secondary.
§Urethritis, non-gonococcal (NGU).
Acute respiratory disease (ARD) and streptococcal pharyngitis rates (SASI*), basic combat training centers, U.S. Army, by week, August 2006-August 2008

* Streptococcal-ARD surveillance index (SASI) = ARD rate x % positive culture for group A streptococcus
ARD rate = cases per 100 trainees per week
ARD rate ≥ 1.5 or SASI ≥ 25.0 for 2 consecutive weeks are surveillance indicators of epidemics
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - July 2008

Traumatic brain injury, hospitalizations (ICD-9: 800-804, 850-854, 959.01)*


*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 30 days of returning from OEF/OIF.

Traumatic brain injury, multiple ambulatory visits (without hospitalization), (ICD-9: 800-804, 850-854, 959.01)†

†Two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - July 2008

Amputations (ICD-9: 887, 896, 897, V49.6 to V49.7, PR 84.0 to PR 84.1)*

Heterotopic ossification (ICD-9: 728.12, 728.13, 728.19)†


*One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.

†One diagnosis during a hospitalization or two or more ambulatory visits at least 7 days apart while deployed to/within 365 days of returning from OEF/OIF.
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - July 2008


Severe acute pneumonia (ICD-9: 518.81, 518.82, 518.3, 480-487, 786.09)†

*Indicator diagnosis (one per individual) during a hospitalization while deployed to/within 90 days of returning from OEF/OIF.

†Indicator diagnosis (one per individual) during a hospitalization or ambulatory visit while deployed to/within 30 days of returning from OEF/OIF.
Deployment-related conditions of special surveillance interest, U.S. Armed Forces, by month and service, January 2003 - July 2008

Leishmaniasis (ICD-9: 085.0 to 085.9)*


*Indicator diagnosis (one per individual) during a hospitalization, ambulatory visit, and/or from a notifiable medical event during/after service in OEF/OIF.
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