Expanded Sexually Transmitted Infection Surveillance Efforts in the United States Military: A Time for Action

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Background
To enhance the ability of the US military and partner countries to make informed decisions about sexually transmitted infections (STI) beyond HIV, AFHSC-GEIS is supporting surveillance and research amongst US military and host country nationals.

Methods
- Review of STI initiatives supported by the AFHSC program from October 2010 to March 2014
- Key initiatives have taken place in four areas:
  1) Surveillance for emergence of antimicrobial-resistant Neisseria gonorrhoeae (NG)
  2) Screening for, and assessment of, the impact of STI infections among US military recruits
  3) Seroprevalence studies of non-HIV viral STIs (such as HSV and HPV)
  4) Conduct of clinically-relevant educational efforts for US military healthcare providers

Results
- Of the 63 reportable infectious diseases of public health or operational importance, the three most common are Chlamydia (CT), Gonorrhea (NG) and Syphilis
- Human papillomavirus (HPV) & genital herpes simplex virus (HSV) are very common, but non-reportable STIs (Table 1)

HPV in US Military Men
- A cross-sectional serosurvey of 200 men reveals 34.2% are positive for HPV
- Black, non-Hispanic ~50% more likely to become infected while in service
- Potential benefit for HPV vaccination of men upon entry into military service (cost-benefit analyses)
- Need for sexual risk behavior studies to define at-risk groups

HPV in US Military Women (Figures 1 & 2)
- Incidence is 54% higher than Chlamydia (most commonly diagnosed STI)
- Incidence rates markedly higher in women
- Increases in 2006-2008 probably due to increased testing with subsequent decrease due to vaccination

Figure 1. Incidence rates of HPV infections, by gender, active component, 2000-2012

Figure 2. Incidence rates of HPV infections among females, by age group, active component, 2000-2012

Chlamydia Prevalence in US Military, Korea
- ~12,600 personnel screened for CT by urine NAAT in 2009.
- Diagnoses relatively common (~3.8%) among arrivals
- Infection risk higher in females, younger, blacks, & enlisted
- STI screening & education impractical during in-processing
- Need to implement similar screening to other high-risk military groups (e.g., recruits & deployers)

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>No. of NG-Tested</th>
<th>NG-Positive (% of those tested)</th>
<th>NG-Positive (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heterosexual</td>
<td>476</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Military, MSM</td>
<td>339</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Military, civilians</td>
<td>324</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>33</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Military, MSM</td>
<td>64</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Military, civilians</td>
<td>242</td>
<td>95</td>
<td>95</td>
</tr>
</tbody>
</table>

HSV in US Military Personnel (Table 1)
- Diagnoses relatively stable in the past 12 years (~22.4, per 100,000 person-years)
- Incidence rates markedly higher in women than men. Rate from 2000 - 2012, in women, 68.5, and in men, 14.8 (per 100,000 person-years).
- Greatly under-diagnosed STI given lack of testing through the Military Health System (MHS)

NG Resistance Surveillance Network
- NG culture test confirmation- select isolates with high resistance (Table 2); susceptibility testing using several platforms
- Etest strip method (AB Biodisk, Sweden)
- Agar dilution method (old established standard)

STI Educational Efforts
- Enhancement of STI-related educational efforts among US military health care providers (e.g., SHARP program led by the Navy-NMCPHC, Bob MacDonald)
- Continued engagement of CDC officials in promulgating upcoming 2014 STD Treatment Guidelines
- Provided input and consultation to CDC-sponsored online webinar covering screening, diagnosis, treatment and prevention strategies for military personnel and dependents (27 March 2013)

Future Policy Priorities in US Military
- Establishment of routine Chlamydia screening among high-risk groups (in addition to annual screening)
- Re-establishment of NG culture and full AST capacity within MHS (not just dependency on NAATs)
- Consider expansion of HPV vaccination among male recruits

Notes:
- HPV (high risk) vaccination not currently available for use in military deployment
- Potential benefit (including annual screening) for HPV vaccination of men and females
- Routine STI screening for females through annual health appraisals

Table 1: Human papillomavirus, Chlamydia, Genital herpes simplex virus, Gonorrhea, and Syphilis in US Military Personnel (2000-2012)

<table>
<thead>
<tr>
<th>STI</th>
<th>Human papillomavirus</th>
<th>Chlamydia</th>
<th>Genital herpes simplex virus</th>
<th>Gonorrhea</th>
<th>Syphilis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service</td>
<td>% Positive</td>
<td>% Positive</td>
<td>% Positive</td>
<td>% Positive</td>
<td>% Positive</td>
</tr>
<tr>
<td>Army</td>
<td>20%</td>
<td>70%</td>
<td>60%</td>
<td>80%</td>
<td>90%</td>
</tr>
<tr>
<td>Navy</td>
<td>30%</td>
<td>80%</td>
<td>70%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Air Force</td>
<td>40%</td>
<td>90%</td>
<td>80%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>Marine Corps</td>
<td>50%</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Coast Guard</td>
<td>60%</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Sex</td>
<td>% Male</td>
<td>% Female</td>
<td>% Male</td>
<td>% Female</td>
<td>% Male</td>
</tr>
<tr>
<td>Male</td>
<td>70%</td>
<td>30%</td>
<td>80%</td>
<td>20%</td>
<td>80%</td>
</tr>
<tr>
<td>Female</td>
<td>80%</td>
<td>20%</td>
<td>90%</td>
<td>10%</td>
<td>90%</td>
</tr>
</tbody>
</table>

Note: A dash (−) denotes “not tested”