



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

Michelle J. Hiser¹, Jose L. Sanchez^{1,2}, James F. Cummings¹, Brian K. Agan³, Grace E. Macalino³
¹Division of Global Emerging Infections Surveillance & Response (GEIS), Armed Forces Health Surveillance Center (AFHSC), Silver Spring, MD; ²Cherokee Nation Technology Solutions, Cartoosa, OK; ³Infectious Disease Clinical Research Program, Bethesda, MD



Contact: Michelle Hiser, MPH
Michelle.hiser.ctr@mail.mil
Office: (301) 319-3263

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-GEIS 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) Seroepidemiologic 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

Table 1: Incident cases and incidence rates (per 10,000 person-years) of sexually transmitted infections among active component service members, 2000-2012

| | Human papillomavirus | | Chlamydia | | Genital herpes simplex virus | | Gonorrhea | | Syphilis (all types) | |
|-------------------|----------------------|-------------------|-----------|-------------------|------------------------------|-------------------|-----------|-------------------|----------------------|-------------------|
| | No. | Rate ^a | No. | Rate ^a | No. | Rate ^a | No. | Rate ^a | No. | Rate ^a |
| Total (2000-2012) | 304,021 | 175.5 | 198,274 | 107.3 | 41,108 | 22.4 | 41,713 | 22.6 | 5,764 | 3.1 |
| Service | | | | | | | | | | |
| Army | 102,590 | 163.0 | 98,467 | 148.0 | 16,203 | 24.6 | 24,447 | 36.8 | 2,756 | 4.1 |
| Navy | 69,812 | 164.5 | 29,665 | 65.7 | 9,387 | 21.0 | 6,890 | 15.3 | 1,416 | 3.1 |
| Air Force | 85,622 | 212.4 | 53,464 | 121.8 | 10,663 | 24.5 | 6,270 | 14.3 | 996 | 2.3 |
| Marine Corps | 35,603 | 155.5 | 15,601 | 64.9 | 3,766 | 15.7 | 3,787 | 15.7 | 468 | 1.9 |
| Coast Guard | 10,394 | 221.9 | 1,077 | 21.0 | 1,089 | 21.4 | 319 | 6.2 | 128 | 2.5 |
| Sex | | | | | | | | | | |
| Male | 224,040 | 150.1 | 110,812 | 70.2 | 23,212 | 14.8 | 30,310 | 19.2 | 4,660 | 3.0 |
| Female | 79,981 | 333.9 | 87,462 | 326.6 | 17,896 | 68.5 | 11,403 | 42.6 | 1,104 | 4.1 |

^aSexually-Transmitted Infections, Active Component, US Armed Forces, 2000-2012, MSMR, Vol. 20, No. 2, February 2013

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

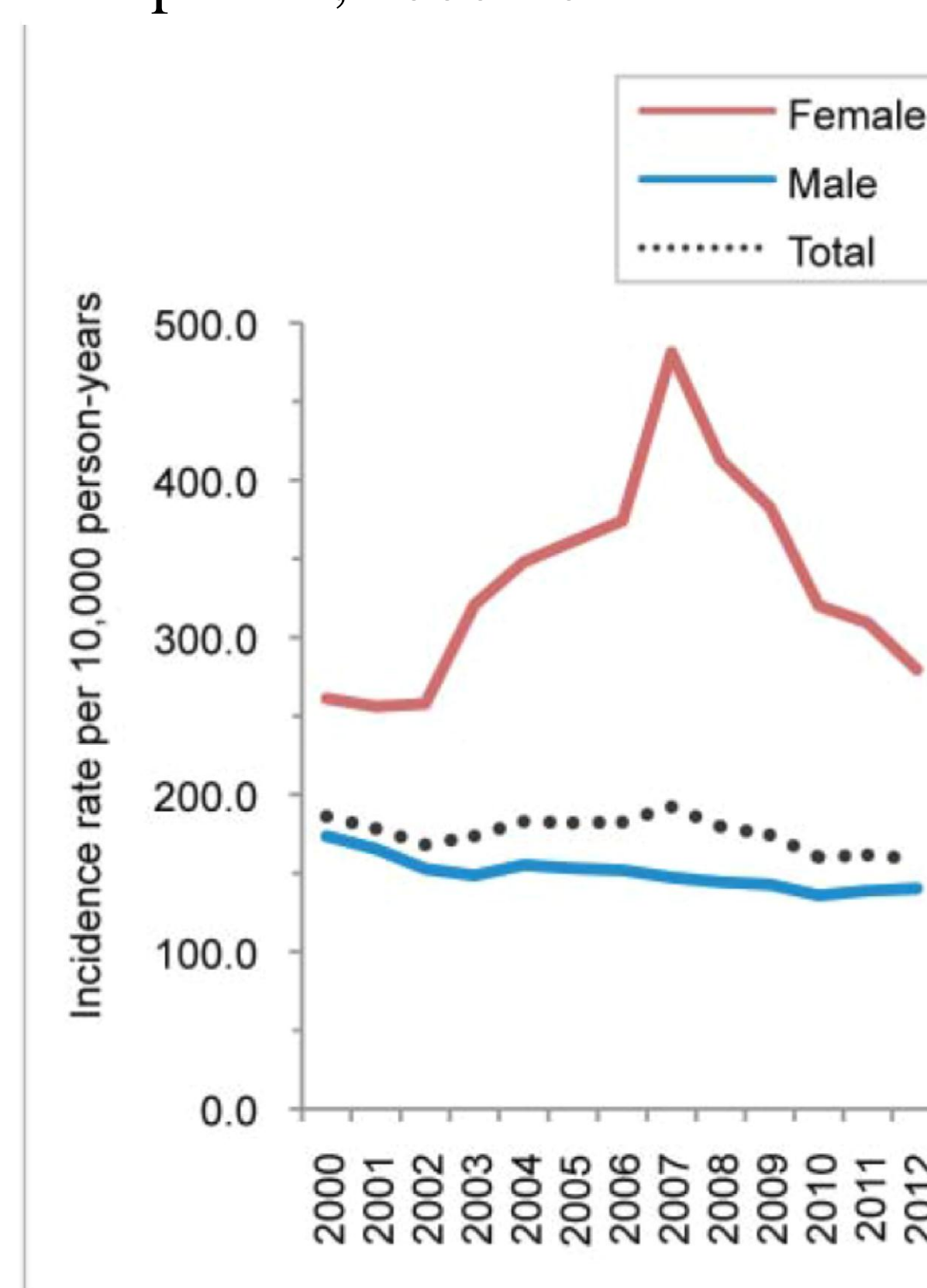
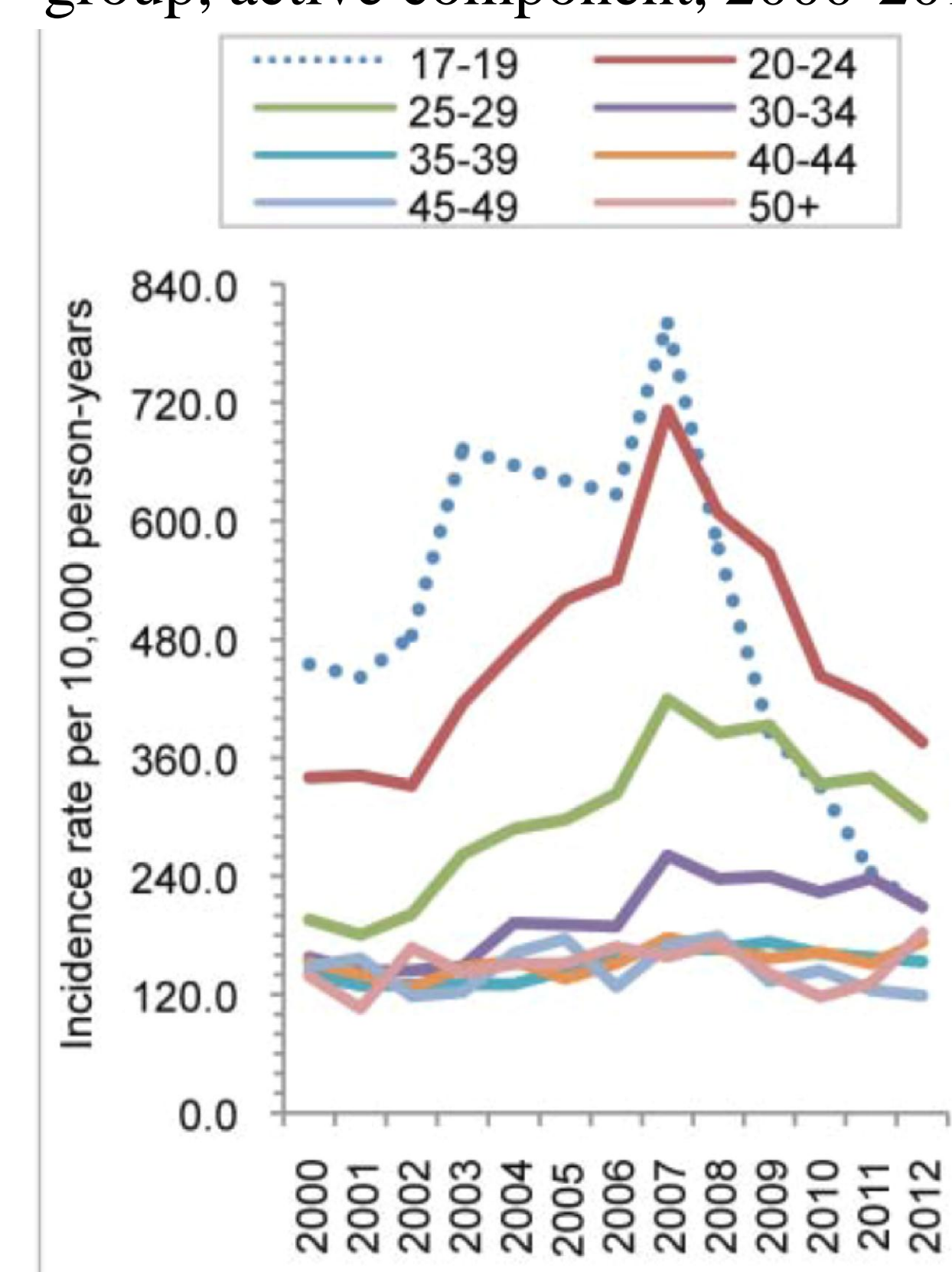


Figure 2: Incidence rates of HPV infections among females, by age group, active component, 2000-2012



Sexually-Transmitted Infections, Active Component, US Armed Forces, 2000-2012, MSMR, Vol. 20, No. 2, February 2013

- Low initiation (22.5%) and 3-dose completion (45.5% among those vaccinated) is concerning
- Compliance at one-year was only 32.3%

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)

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)

Table 2: *Neisseria gonorrhoeae* Surveillance in Selected Populations of Seven Countries

| | United States | Peru | Ghana | Cameroon | Kenya | Djibouti | Georgia |
|--|-----------------------|---|-------------------------------------|-------------------------------------|---|------------------------|-----------------------|
| Population & Risk Group | Heterosexual military | Heterosexual military, MSM, FCSW/male clients | Heterosexual military and civilians | Heterosexual military and civilians | Heterosexual military and civilians, FCSW | Heterosexual civilians | Heterosexual military |
| Prevalence | | | | | | | |
| Enrolled & Tested Subjects | 54 | 2673 | 436 | 336 | 206 | 168 | 52 |
| Number of NG-Positive (%) | 21 (39%) | 147 (6%) | 79 (18%) | 3 (1%) | 41 (20%) | 38 (23%) | 6 (12%) |
| Antimicrobial Resistance (% resistance or decreased susceptibility) | | | | | | | |
| No. Isolates Tested | 13 | 8 | 21 | 3 | 37 | 24 | 0 |
| Cefepime | - | - | - | - | - | 3 (13%) | - |
| Cefixime | 0 | 0 | 1 (5%) | 0 | 1 (2.7%) | - | 0 |
| Cefpodoxime | 0 | - | - | - | - | - | - |
| Ceftriaxone | 0 | 0 | 1 (5%) | 0 | 1 (2.7%) | 3 (13%) | 0 |
| Ciprofloxacin | 3 (23%) | 5 (62.5%) | 17 (81%) | 0 | 15 (40.5%) | 9 (38%) | 0 |
| Tetracycline | 2 (15%) | 0 | 21 (100%) | 1 (33%) | 31 (83.8%) | 21 (88%) | 0 |
| Azithromycin | 0 | 0 | 6 (29%) | - | 4 (10.8%) | 0 | 0 |
| Penicillin | 1 (8%) | 6 (75%) | 21 (100%) | 1 (33%) | 17 (45.9%) | 6 (25%) | 0 |
| Spectinomycin | 0 | 0 | 2 (9.5%) | - | 2 (5.4%) | - | 0 |

Note: A dash (-) denotes "not tested"

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

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