Annual Surveillance Summary: Bacterial Infections in the Military Health System (MHS), 2015

The Hospital Associated Infections and Patient Safety Division of the EpiData Center (EDC) performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats as recommended by the Centers for Disease Control and Prevention (CDC) within the Military Health System (MHS). This brief summarizes incidence rates (IRs), subpopulation impacts, prescription practices, and antimicrobial resistance for the following infections among MHS beneficiaries for calendar year (CY) 2015:

- *Acinetobacter* species
- *Clostridium difficile*
- *Escherichia coli*
- *Klebsiella* species
- Methicillin-resistant *Staphylococcus aureus* (MRSA)
- *Pseudomonas aeruginosa*
- Vancomycin-resistant Enterococci (VRE)

Note: To review the complete annual report for each organism listed above, including a detailed presentation of definitions, methods, results, and important considerations, visit http://www.med.navy.mil/sites/nmcphc/epi-data-center/pages/2015-surveillance-summaries.aspx.

Summary of Results

The following tables summarize activity identified for the bacterial infections evaluated among MHS beneficiaries in CY 2015 as compared to weighted historic baseline data from CY 2012-2014.

Table 1. Incidence Rate (IR) and Trends of Selected Infections Among MHS Beneficiaries, CY 2015

Organism	2015 IR	Weighted Historic[a] IR 2012-2014	Two Standard Deviations: Weighted Historic IR	2015	
				Direction	Percent Change[b]
Acinetobacter spp.[c]	5.63	5.08	0.28	↑	10.9
C. difficile	20.8	16.1	5.9	↑	29.4
E. coli	702.3	592.2	157.4	↑	18.6
Klebsiella spp.	100.8	80.9	22.2	↑	24.6
MRSA	61.1	68.2	16.0	↓	10.4
P. aeruginosa	32.6	28.7	5.2	↑	13.6
VRE[c]	1.60	1.34	0.32	↑	19.4

Rates are presented as the rate per 100,000 persons per year.
A green arrow indicates an increasing percent change and a blue arrow indicates a decreasing percent change.
[a] Historic IR reflects the weighted average of the three years prior to the analysis year.
[b] This reflects the percent change from the weighted historic IR to the IR of the current analysis year.
[c] Results are presented by two decimal places to account for low incidence rates.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 24 March 2017.

Table 2. Infection Impact: Demographics, Resistance, Prescription Practices, and Infection Setting within the MHS, CY 2015

Organism	Demographics Most Impacted: - Age (in Years) - Geographic Region - Beneficiary Type	Multidrug-Resistance IR[a] and Epi Trend		Prescription Practices and Antibiogram: - Most Frequently Prescribed Drug - Percent Susceptibility	Proportion of Healthcare- (HA) and Community-Associated (CA) Cases
Acinetobacter spp.	18-24 OCONUS Active Duty	0.3	↑	Trimethoprim/sulfamethoxazole 88.2%	HA – 35.0% CA – 65.0%
C. difficile[b]	65+ South Family Members	--	--	Metronidazole (Not applicable)	HA – 18.3% CA – 77.5% Indeterminate – 4.2%
E. coli	18-24 OCONUS Active Duty	126.9	↑	Nitrofurantoin 97.0%	HA – 15.0% CA – 85.0%
Klebsiella spp.	No significant age or beneficiary type. West, South, South Atlantic	6.7	↑	Ciprofloxacin 97.5%	HA – 27.4% CA – 72.6%
MRSA[c]	18-24 South Active Duty	15.2	↑	Trimethoprim/sulfamethoxazole 97.2%	HA – 25.0% CA – 75.0%
P. aeruginosa	65+ South Retired	1.9	↑	Ciprofloxacin 87.5%	HA – 47.0% CA – 53.0%
VRE[b]	65+ West Retired	--	--	Daptomycin 98.0%	HA – 81.9% CA – 18.1%

A green arrow indicates an increasing percent change and a blue arrow indicates a decreasing percent change.
[a] Multidrug-resistance incidence rate (MDR IR). Rates are presented as the rate per 100,000 persons per year.
[b] MDR IRs were not calculated for *C. difficile* or VRE infections.
[c] For MRSA only, the MDR IR column depicts the percentage of MRSA infections with inducible clindamycin resistance within the MHS and not the MDR IR.
Data Source: NMCPHC HL7-formatted CHCS microbiology and M2 databases.
Prepared by the EpiData Center Department, Navy and Marine Corps Public Health Center, on 24 March 2017.

Conclusion

Bacterial activity of interest in the MHS in 2015 exhibited expected trends and closely resembled activity in the general United States population as reported by the CDC and other public health agencies. No significant threat to mission readiness or population health was observed, and traditional treatment options remain viable. Continued adherence to infection control practices is recommended in the clinical, occupational, and deployed settings. Please refer to the complete suite of 2015 annual reports for important organism-specific considerations: http://www.med.navy.mil/sites/nmcphc/epi-data-center/Pages/2015-surveillance-summaries.aspx.

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14. ABSTRACT
The Hospital Associated Infections and Patient Safety Division of the EpiData Center (EDC) at the Navy and Marine Corps Public Health Center (NMCPHC) performs ongoing, comprehensive surveillance of bacterial infections considered urgent, serious, and concerning threats per the Centers for Disease Control and Prevention (CDC). This brief summarizes incidence rates, subpopulation impacts, prescription practices, and antimicrobial resistance for the following infections among Military Health System (MHS) beneficiaries for calendar year 2015: Klebsiella species, Pseudomonas aeruginosa, Escherichia coli, methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant Enterococci (VRE), Clostridium difficile, and Acinetobacter species. Bacterial activity of interest in the MHS in 2015 exhibited expected trends and closely resembled activity in the general United States population as reported by the CDC and other public health agencies. No significant threat to mission readiness or population health was observed, and traditional treatment options remain viable. Continued adherence to infection control practices is advised.

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