



**West Virginia Health Care Authority**

# **Healthcare-Associated Infection Control Program**

**2011 Annual Report**

**January 14, 2011**

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## Introduction

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Healthcare-associated infections (HAIs) can be acquired from any healthcare setting, but patients receiving medical or surgical care in a hospital are particularly vulnerable. According to the Centers for Disease Control and Prevention (CDC), HAIs rank as one of the top 10 leading causes of death in the U.S.<sup>1</sup> It is estimated that there were approximately 1.7 million HAIs in U.S. hospitals in 2002, resulting in nearly 99,000 deaths.<sup>2</sup> Direct medical costs of HAIs on the healthcare system are estimated to be \$28-\$45 billion annually.<sup>3</sup> While age and underlying risk factors increase the risk of patients developing infections, 20%-70% of HAIs are often preventable through adherence to infection prevention guidelines. Infection prevention and control activities in healthcare settings are an integral component of patient safety programs.

In 2008, the West Virginia Legislature created §16-5B-17 to make HAI data available to the public and to promote quality improvement initiatives to reduce HAIs in West Virginia hospitals. The legislation mandated hospitals to report HAI data and required the West Virginia Health Care Authority (WVHCA) to create a HAI Control Advisory Panel to assist in performing the following activities:

- Provide guidance to hospitals in their collection of information regarding healthcare-associated infections;
- Provide evidence-based practices in the control and prevention of healthcare-associated infections;
- Establish reasonable goals to reduce the number of healthcare-associated infections;
- Develop plans for analyzing infection-related data from hospitals;
- Develop healthcare-associated advisories for hospital distribution; and
- Determine a manner in which reporting of healthcare-associated infections is made available to the public in an understandable fashion.

The HAI Control Advisory Panel was initially convened by the WVHCA in January 2009. The Panel consists of representatives from hospitals, the Hospital Association, and Public Health with expertise in infectious disease control and prevention, biostatistics, microbiology, and health policy. The Panel members are listed on page 2.

This report is in response to a legislative mandate for the WVHCA to summarize and report progress of the HAI Control Advisory Panel and results of required reporting to the Legislative Oversight Committee on Health and Human Resources Accountability in January of each year, beginning in the year 2011.

## HAI Measures and Reporting

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The HAI Control Advisory Panel chose two measures to be reported by hospitals beginning July 2009. When choosing the measures, the Panel considered the impact of HAIs on patient outcomes and healthcare resources. Reporting guidance was developed and distributed to infection control contacts at each hospital.

### **1) Central Line-Associated Blood Stream Infections**

Hospitals are required to report data on central line-associated blood stream infections (CLABSIs) among patients in medical, surgical, and medical/surgical intensive care units (ICUs). The data are reported to the Centers for Disease Control and Prevention's (CDC) National Healthcare Safety Network (NHSN). NHSN was developed as a voluntary surveillance system for hospitals to identify and monitor HAIs, but is being used by multiple states for mandatory HAI reporting. Thirty-six West Virginia hospitals are reporting monthly CLABSI data to NHSN for 41 ICUs. Hospitals gave permission for the WVHCA to access their data through NHSN.

### **2) Healthcare Personnel Seasonal Influenza Vaccinations**

Hospitals are required to report the number of personnel directly employed by the hospital (excluding contract employees, volunteers, etc.) that received a seasonal influenza vaccination each season (September to March). All 55 acute care, critical access, long-term acute care, and psychiatric hospitals (excluding state psychiatric hospitals) reported during the first year (September 2009 – March 2010). The reporting requirement was extended to rehabilitation hospitals during the current reporting period (September 2010 – March 2011). Due to the complexity of the NHSN healthcare personnel influenza vaccination reporting requirements, the Panel determined that the data would be submitted monthly to the WVHCA.

The WVHCA monitors reporting compliance and provides technical assistance to infection control contacts to ensure timely and accurate data submission. Submitted data are managed and analyzed by the WVHCA and results are disseminated to the HAI Control Advisory Panel for review and approval prior to release. Hospital reporting requirements are outlined in Table 1. The following sections of this report summarize results from the HAI data submitted during the first 12 months of data collection (July 2009 – June 2010).

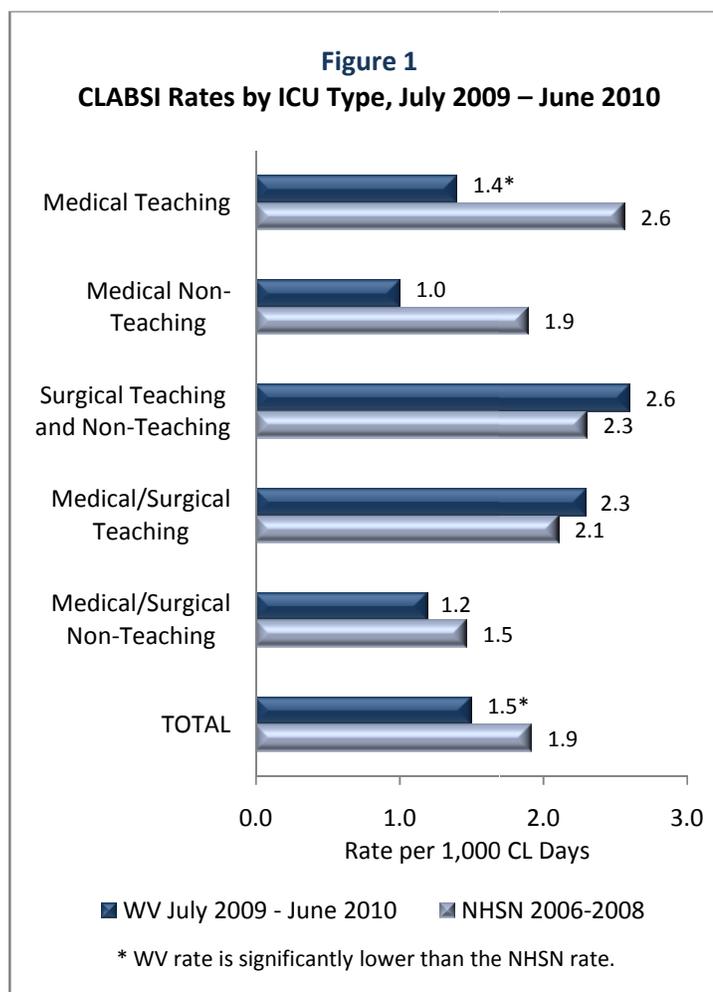
## Central Line-Associated Blood Stream Infections

A central line is a tube inserted into a large vein in the neck, chest, arm, or groin and is used to administer fluids and medications and to withdraw blood. Central line-associated blood stream infections (CLABSIs) occur when microorganisms enter the blood through the tube.

It is estimated that between 250,000 and 500,000 CLABSIs occur in U.S. hospitals each year, causing serious complications including longer inpatient stays, increased costs, and higher risk of death.<sup>4</sup> It is estimated that the non-inflation-adjusted attributable cost of CLABSIs ranges from \$3,700 to \$29,000 per episode.<sup>5</sup> CLABSIs can often be prevented by adherence to evidence based guidelines for the insertion, use, and maintenance of central lines.

### Key Findings

- Between July 2009 and June 2010, 73 CLABSIs in medical, surgical, and medical/surgical ICUs were reported by West Virginia hospitals, resulting in a rate of 1.5 infections per 1,000 central line days.
- The West Virginia CLABSI rate (1.5 per 1,000 central line days) is significantly lower than the total national (NHSN 2006-2008) rate for the same ICUs (1.9 per 1,000 central line days) (see Figure 1).
- CLABSI rates are highest in surgical ICUs and major teaching medical/surgical ICUs, and lowest in non-teaching medical and medical/surgical ICUs.
- Compared to the national NHSN rate, West Virginia has a significantly lower CLABSI rate in medical ICUs in major teaching hospitals (1.4 infections per 1,000 central line days in WV compared to 2.6 per 1,000 central line days nationally).
- In West Virginia, central lines are used for about 40% of patient days spent in a medical, surgical, or medical/surgical ICU (47,177 of the 118,440 patient days), compared to the NHSN average of 51%. The central line utilization ratio is highest in major teaching medical ICUs (73%), major teaching medical/surgical ICUs (62%), and surgical ICUs (51%).

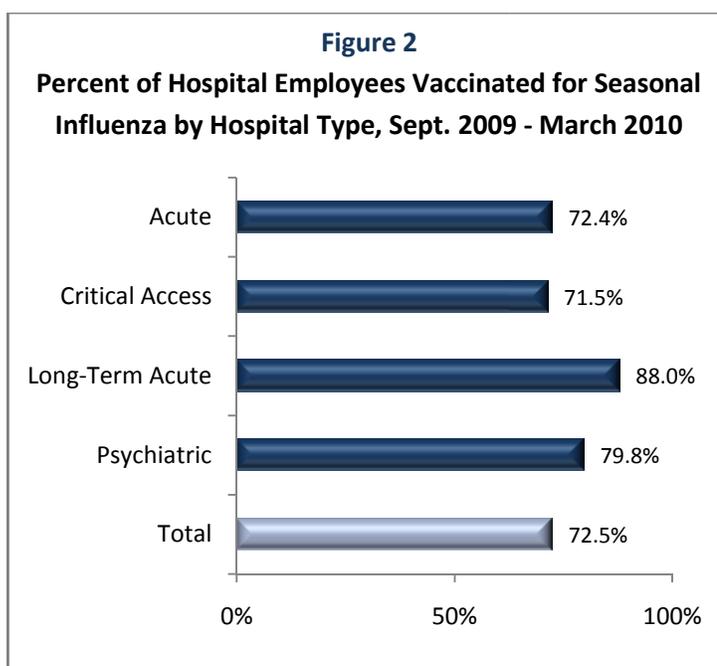


## Healthcare Personnel Influenza Vaccinations

Healthcare workers play an important role in protecting public health. Those who have been vaccinated not only protect their families, but also the patients with whom they interact. Since healthcare workers may care for or live with people at high risk for influenza-related complications, it is especially important for them to get vaccinated annually. The Centers for Disease Control and Prevention (CDC) recommends that all healthcare workers get an annual influenza vaccination, yet less than 50% of all healthcare workers nationally receive the seasonal vaccine.<sup>6</sup> Detailed data on healthcare personnel influenza vaccinations in West Virginia are outlined in Table 2.

### Key Findings

- 72.5% of all hospital employees in West Virginia received a seasonal influenza vaccination between September 2009 and March 2010 (see Figure 2).
- The seasonal influenza vaccination rate was significantly higher in long-term acute care (88.0%) and psychiatric (79.8%) hospitals than acute care and critical access hospitals.
- The percentage of healthcare personnel that received an influenza vaccination varied widely among hospitals, from a low of 20.9% to a high of 100%.



### Hospital Vaccination Programs

At the end of the influenza season, all hospitals completed the *Hospital Seasonal Influenza Survey* to provide general information about the facility and details regarding the hospital vaccination program. Survey results are summarized below.

- All 55 hospitals provided the seasonal influenza vaccine to all employees at no cost, and 91% (50) of hospitals provided the vaccine during all work shifts.
- Hospitals utilized a variety of strategies to promote influenza vaccination to employees. The most common strategies were: A vaccination campaign, including posters, flyers, buttons, or fact sheets (87% of hospitals); Reminders by mail, email, or pager (87%); Coordination of vaccination with other annual programs (24%); Incentives (24%).
- 60% of hospitals conducted formal educational programs on seasonal influenza vaccination for employees. Vaccination was significantly higher among employees from hospitals that provided formal education (75% were vaccinated) than employees from hospitals with no educational program (65% were vaccinated).

## Future HAI Initiatives

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Over the next year, the WVHCA and the HAI Control Advisory Panel will:

- Continue the collection and quality review of HAI data.
- Enhance the analysis of CLABSI data.
- Develop guidelines for the public release of data.
- Revise reporting requirements as necessary to align with state and national priorities.
- Collaborate with the Bureau for Public Health, Office of Epidemiology and Prevention Service's HAI Program to implement a State Plan for reducing HAIs.
- Provide HAI data to the West Virginia Department of Health and Human Resources as requested for consideration in their hospital oversight and epidemiology and disease surveillance programs.

## References

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1. APIC, *Reducing Healthcare-Associated Infections*, March 2009.
2. Klevens, Monina R., DDS, MPH, Edwards, Jonathan R. MS, Richards, Chesley L. Jr., MD, MPH, Horan, Teresa C., MPH, Gaynes, Robert P., MD, Pollock, Daniel A., MD, Cardo, Denise M., MD, Public Health Reports, *Estimating Healthcare-Associated Infections and Deaths in U.S. Hospitals, 2002*, Vol. 122, March-April 2007.
3. Scott, R. Douglas II, Division of Healthcare Quality Promotion National Center for Preparedness, Detection, and Control of Infectious Diseases, Coordinating Center for Infectious Diseases, Centers for Disease Control and Prevention. *The Direct Medical Costs of Healthcare-Associated Infections in U.S. Hospitals and the Benefits of Prevention*. March 2009; website: [http://198.246.98.21/ncidod/dhqp/pdf/Scott\\_CostPaper.pdf](http://198.246.98.21/ncidod/dhqp/pdf/Scott_CostPaper.pdf). January 2011.
4. MHA Keystone Center for Patient Safety & Quality, *Frequently Asked Questions on Central Line-Associated Bloodstream Infections*. 2006; website: [http://www.msic-online.org/pdf/BSI\\_Frequently\\_Asked\\_Questions.pdf](http://www.msic-online.org/pdf/BSI_Frequently_Asked_Questions.pdf); January 2011.
5. Marschall, Jonas, MD, Mermel, Leonard A., DO, ScM, Classen, David, MD, MS, Arias, Kathleen M. MS, CIC, Podgorny, Kelly, RN, MS, CPHQ, Anderson, Deverick J., MD, MPH, . . . Yokoe, Deborah S., MD, MPH, Infection Control and Hospital Epidemiology, *Strategies to Prevent Central Line-Associated Bloodstream Infections in Acute Care Hospitals*, Vol. 29, Supplement 1, October 2008.
6. Centers for Disease Control and Prevention. *Influenza Vaccination of Health-care Personnel: Recommendations of the Healthcare Infection Control Practices Advisory Committee (HICPAC) and the Advisory Committee on Immunization Practices (ACIP)*. MMWR 2006; 55 (No. RR-2):1-13.

**Table 1**  
**West Virginia Healthcare-Associated Infection Public Reporting Requirements**

Hospital	Hospital County	Hospital Type	Influenza Reporting Required	CLABSI Reporting	
				Reporting Required	Number of ICUs
Beckley Appalachian Regional Hospital	Raleigh	Acute	Yes	Yes	1
Bluefield Regional Medical Center	Mercer	Acute	Yes	Yes	1
Boone Memorial Hospital	Boone	Critical Access	Yes	No	
Braxton County Memorial Hospital	Braxton	Critical Access	Yes	No	
Broaddus Hospital Association	Barbour	Critical Access	Yes	No	
Cabell Huntington Hospital	Cabell	Acute	Yes	Yes	2
CAMC Teays Valley Hospital	Putnam	Acute	Yes	Yes	1
Camden-Clark Memorial Hospital	Wood	Acute	Yes	Yes	1
Charleston Area Medical Center	Kanawha	Acute	Yes	Yes	3
Charleston Surgical Hospital	Kanawha	Acute	Yes	No	
City Hospital	Berkeley	Acute	Yes	Yes	1
Cornerstone Hospital of Huntington	Cabell	Long-Term Acute	Yes	No	
Davis Memorial Hospital	Randolph	Acute	Yes	Yes	1
Fairmont General Hospital	Marion	Acute	Yes	Yes	1
Grafton City Hospital	Taylor	Critical Access	Yes	No	
Grant Memorial Hospital	Grant	Critical Access	Yes	Yes	1
Greenbrier Valley Medical Center	Greenbrier	Acute	Yes	Yes	1
Hampshire Memorial Hospital	Hampshire	Critical Access	Yes	No	
Highland Hospital	Kanawha	Psychiatric	Yes	No	
HealthSouth Rehabilitation Hospital of Huntington*	Cabell	Rehabilitation	Yes	No	
Jackson General Hospital	Jackson	Acute	Yes	Yes	1
Jefferson Memorial Hospital	Jefferson	Critical Access	Yes	Yes	1
Logan Regional Medical Center	Logan	Acute	Yes	Yes	1
Minnie Hamilton Health System	Calhoun	Critical Access	Yes	No	
Monongalia General Hospital	Monongalia	Acute	Yes	Yes	1
Montgomery General Hospital	Fayette	Critical Access	Yes	No	
HealthSouth Mountain View Regional Rehabilitation Hospital*	Monongalia	Rehabilitation	Yes	No	
Ohio Valley Medical Center	Ohio	Acute	Yes	Yes	1
Peterson Rehabilitation and Geriatric Hospital*	Ohio	Rehabilitation	Yes	No	
Plateau Medical Center	Fayette	Critical Access	Yes	Yes	1
Pleasant Valley Hospital	Mason	Acute	Yes	Yes	1
Pocahontas Memorial Hospital	Pocahontas	Critical Access	Yes	No	

**Table 1, cont.**  
**West Virginia Healthcare-Associated Infection Public Reporting Requirements**

Hospital	Hospital County	Hospital Type	Influenza Reporting Required	CLABSI Reporting	
				Reporting Required	Number of ICUs
Potomac Valley Hospital	Mineral	Critical Access	Yes	Yes	1
Preston Memorial Hospital	Preston	Critical Access	Yes	No	
Princeton Community Hospital	Mercer	Acute	Yes	Yes	1
Raleigh General Hospital	Raleigh	Acute	Yes	Yes	2
Reynolds Memorial Hospital	Marshall	Acute	Yes	Yes	1
River Park Hospital	Cabell	Psychiatric	Yes	No	
Roane General Hospital	Roane	Critical Access	Yes	No	
Select Specialty Hospital	Kanawha	Long-Term Acute	Yes	No	
Sistersville General Hospital	Tyler	Critical Access	Yes	No	
HealthSouth Southern Hills Regional Rehabilitation Hospital*	Mercer	Rehabilitation	Yes	No	
St. Francis Hospital	Kanawha	Acute	Yes	Yes	1
St. Joseph's Hospital of Buckhannon	Upshur	Acute	Yes	Yes	1
St. Joseph's Hospital of Parkersburg	Wood	Acute	Yes	Yes	1
St. Mary's Medical Center	Cabell	Acute	Yes	Yes	1
Stonewall Jackson Memorial Hospital	Lewis	Acute	Yes	Yes	1
Summers County Appalachian Regional Hospital	Summers	Critical Access	Yes	No	
Summersville Memorial Hospital	Nicholas	Acute	Yes	Yes	1
Thomas Memorial Hospital	Kanawha	Acute	Yes	Yes	1
United Hospital Center	Harrison	Acute	Yes	Yes	1
War Memorial Hospital	Morgan	Critical Access	Yes	No	
Webster County Memorial Hospital	Webster	Critical Access	Yes	No	
Weirton Medical Center	Brooke	Acute	Yes	Yes	1
Welch Community Hospital	McDowell	Acute	Yes	Yes	1
West Virginia University Hospitals	Monongalia	Acute	Yes	Yes	2
HealthSouth Western Hills Regional Rehabilitation Hospital*	Wood	Rehabilitation	Yes	No	
Wetzel County Hospital	Wetzel	Acute	Yes	Yes	1
Wheeling Hospital	Ohio	Acute	Yes	Yes	1
Williamson Memorial Hospital	Mingo	Acute	Yes	Yes	1
<b>TOTAL</b>			<b>60</b>	<b>36</b>	<b>41</b>

\* Hospital began reporting healthcare personnel influenza vaccinations in September 2010.

Note: State Psychiatric Hospitals (Mildred Mitchell-Bateman Hospital and Sharpe Hospital) are exempt from HAI reporting.

**Table 2**  
**West Virginia Healthcare-Associated Infection Public Reporting**  
**Healthcare Personnel Seasonal Influenza Vaccinations, September 2009 - March 2010**

Hospital	Hospital Type	Influenza Vaccinations	Total Employees	Percent Vaccinated	Rank* (1=highest)	Significance**
Beckley Appalachian Regional Hospital	Acute	461	649	71.0	28	I
Bluefield Regional Medical Center	Acute	439	865	50.8	50	L
Boone Memorial Hospital	Critical Access	157	165	95.2	4	H
Braxton County Memorial Hospital	Critical Access	160	188	85.1	12	H
Broadus Hospital Association***	Critical Access	106	201	52.7	47	L
Cabell Huntington Hospital	Acute	1,577	2,413	65.4	36	L
CAMC Teays Valley Hospital***	Acute	370	399	92.7	6	H
Camden Clark Memorial Hospital	Acute	771	1,471	52.4	49	L
Charleston Area Medical Center	Acute	6,704	6,733	99.6	3	H
Charleston Surgical Hospital	Acute	54	66	81.8	16	H
City Hospital***	Acute	346	1,159	29.9	54	L
Cornerstone Hospital of Huntington***	Long-Term Acute Care	41	52	78.8	22	h
Davis Memorial Hospital***	Acute	559	560	99.8	2	H
Fairmont General Hospital	Acute	467	739	63.2	39	L
Grafton City Hospital****	Critical Access	135	257	52.5	48	L
Grant Memorial Hospital***	Critical Access	195	360	54.2	46	L
Greenbrier Valley Medical Center	Acute	358	509	70.3	30	I
Hampshire Memorial Hospital***	Critical Access	106	138	76.8	24	h
Highland Hospital***	Psychiatric	152	188	80.9	19	H
Jackson General Hospital	Acute	236	290	81.4	17	H
Jefferson Memorial Hospital***	Critical Access	275	305	90.2	10	H
Logan Regional Medical Center	Acute	442	740	59.7	42	L
Minnie Hamilton Health System	Critical Access	211	317	66.6	34	L
Monongalia General Hospital	Acute	745	1,559	47.8	51	L
Montgomery General Hospital***	Critical Access	212	245	86.5	11	H
Ohio Valley Medical Center***	Acute	905	1,352	66.9	32	L
Plateau Medical Center	Critical Access	237	259	91.5	9	H
Pleasant Valley Hospital	Acute	537	785	68.4	31	L
Pocahontas Memorial Hospital	Critical Access	86	104	82.7	15	H
Potomac Valley Hospital***	Critical Access	196	300	65.3	37	L
Preston Memorial Hospital	Critical Access	154	278	55.4	45	L
Princeton Community Hospital	Acute	884	1,090	81.1	18	H

Table 2, cont.

**West Virginia Healthcare-Associated Infection Public Reporting  
Healthcare Personnel Seasonal Influenza Vaccinations, September 2009 - March 2010**

Hospital	Hospital Type	Influenza Vaccinations	Total Employees	Percent Vaccinated	Rank* (1=highest)	Significance**
Raleigh General Hospital	Acute	1,020	1,097	93.0	5	H
Reynolds Memorial Hospital***	Acute	325	438	74.2	25	h
River Park Hospital***	Psychiatric	179	227	78.9	21	H
Roane General Hospital	Critical Access	244	265	92.1	7	H
Select Specialty Hospital	Long-Term Acute Care	105	114	92.1	7	H
Sistersville General Hospital***	Critical Access	80	138	58.0	43	L
St. Francis Hospital***	Acute	502	713	70.4	29	I
St. Joseph's Hospital of Buckhannon***	Acute	298	351	84.9	13	H
St. Joseph's Hospital of Parkersburg***	Acute	569	774	73.5	26	h
St. Mary's Medical Center***	Acute	2,219	2,640	84.1	14	H
Stonewall Jackson Memorial***	Acute	327	495	66.1	35	L
Summers County Appalachian Regional Hospital***	Critical Access	84	84	100.0	1	H
Summersville Memorial Hospital***	Acute	332	496	66.9	32	L
Thomas Memorial Hospital	Acute	1,021	1,263	80.8	20	H
United Hospital Center	Acute	1,220	1,689	72.2	27	I
War Memorial Hospital****	Critical Access	144	184	78.3	23	h
Webster County Memorial Hospital	Critical Access	31	148	20.9	55	L
Weirton Medical Center***	Acute	539	933	57.8	44	L
Welch Community Hospital***	Acute	209	340	61.5	41	L
West Virginia University Hospitals****	Acute	2,950	4,737	62.3	40	L
Wetzel County Hospital	Acute	129	281	45.9	52	L
Wheeling Hospital	Acute	1,487	2,288	65.0	38	L
Williamson Memorial Hospital***	Acute	142	322	44.1	53	L
<b>WV TOTAL</b>		<b>32,434</b>	<b>44,753</b>	<b>72.5</b>		

\* Hospitals with the same percentage share the same rank.

\*\* Test of significant difference between hospital and the aggregate of all other hospitals: L=Significantly lower; I=Lower, but not significant; h=Higher, but not significant; H=Significantly higher.

\*\*\* Vaccination counts do not include personnel receiving vaccinations off-site.

\*\*\*\* Unknown whether off-site vaccinations are included in reported data.