

Evaluation of 2022 Infectious Disease Surveillance Data

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Background

- West Virginia infectious disease surveillance has evolved in the past decade:
 - Changes to disease reporting – criteria, reporting requirements, etc.
 - Increased electronic laboratory reporting (ELR)
 - Changes to West Virginia Electronic Disease Surveillance System (WVEDSS)
 - COVID-19 pandemic response redirected infectious disease surveillance and response efforts
- 2016: last surveillance evaluation (hepatitis)
- 2022: evaluation of selected reportable infectious disease completeness and timeliness of reporting

Objectives

1. Establish baseline surveillance data quality measures for reportable infectious diseases.
2. Identify areas for improvement.
3. Develop strategies to improve data quality.
4. Comply with federal and state requirements.

Data

- Source: WVEDSS
- Report (MMWR) Year: 2022
- Selected infectious disease areas:
 1. Vaccine-preventable disease (VPD) and invasive bacterial disease (IBD): Mumps, Measles, Rubella, Diphtheria, Pertussis, Tetanus, Influenza, Varicella, *H. influenzae*, Invasive *N. meningitidis*, Invasive *S. pneumoniae*
 2. Food and waterborne disease (FWBD): Shiga-toxin producing *E. coli* (STEC), Campylobacteriosis, Giardiasis, Salmonellosis, Shigellosis
 3. Multi-drug resistant organisms (MDRO): Carbapenem-resistant Enterobacterales: *Citrobacter* spp., *Edwardsiella* spp., *Enterobacter* spp., *Escherichia* spp., *Klebsiella* spp., *Morganella* spp., *Pantoea* spp., *Plesiomonas* spp., *Proteus* spp., *Providencia* spp., *Salmonella* spp., *Serratia* spp., *Yersenia* spp.
 4. Zoonotic diseases: Anaplasmosis, Arboviral infections, Babesiosis, Ehrlichiosis, Malaria, *Rickettsia* sp.

Methods – (cont'd)

Performance Indicator	VPD and IBD	FWBD	MDRO	Zoonotic Diseases
• Total number of disease investigations	X	X	X	X
• Total number of cases	X	X	X	X
• Percent of disease investigations that are cases	X	X	X	X
• Percent of cases with complete demographic information	X	X	X	X
• Duration of case investigation (in days)	X	n/a	n/a	X
• Percent of cases with vaccine information	X	n/a	n/a	n/a
• Number of participating influenza sentinel providers	Influenza only	n/a	n/a	n/a
• Local Health Departments (LHD) reporting aggregate varicella counts weekly	Varicella only	n/a	n/a	n/a
• Percent of FWB cases with exposure information	n/a	X	n/a	n/a

Methods – (cont'd)

Performance Indicator	Measure	Target
• Total number of disease investigations	Total number of case and non-case investigations	All reports
• Total number of cases	Total number of patients that fit case criteria	All confirmed, probable, suspect cases
• Percent of disease investigations that are cases	Total # investigation/total # cases x 100	n/a
• Percent of cases with complete demographic information	Total # cases with complete demographic info/total # cases X 100	100% of cases
• Duration of case investigation	Minimum, Maximum, and Median number of days (from investigation date to date submitted by regional for State review)	2 weeks: LHD investig. 1 week: RE review 1 week: State review
• Percent of cases with vaccine information	All VPD cases for all ages. Exception: Only for cases ≤ 5 years old for <i>H. influenzae</i> invasive and <i>S. pneumoniae</i> invasive	100% of cases
• Number of participating influenza sentinel providers	Number of counties	1 sentinel provider per county
• LHDs reporting aggregate varicella counts weekly	Number of counties reporting aggregate varicella weekly	Weekly report x 52 weeks
• Percent of FWBD cases with exposure information	FWBD case with any exposure information	100% of cases

Analysis

- Tool: Excel
- Program Area analysis performed by:
 1. Stacy Tressler – VPD and Invasive Bacterial Disease
 2. Jillian Wall – Influenza and Respiratory
 3. Michael Abshire – Zoonotic Disease
 4. Valerie Jividen – Multi-drug Resistance Organisms
 5. Katie Guinther – Food and Waterborne Disease
- Aggregate data - by Program Area
- 6 Surveillance Regions: 55 counties
 - Northwestern (NW) = 14 counties
 - Western (W) = 8 counties
 - Central (C) = 6 counties
 - Northeastern (NE) = 7 counties
 - Eastern (E) = 11 counties
 - Southern (S) = 9 counties

Results

Evaluation of 2022 Surveillance Indicators for Selected Diseases* in WVEDSS

County (n=55)	Region	Total # VPD investigations**	Total # VPD cases	% VPD investigations that were CASES	Duration of VPD Case Investigation*** (in days)			% cases with demographic information****	VPD cases with vaccine info^	% of VPD with vaccine info	# of participating Flu Sentinel Providers	% reporting Varicella counts weekly^^	Total # FWB investigations	Total # FWB diseases cases	% FWB investigations that were CASES	% of FWBD with complete demographic information****	% of FWBD with complete demographic information****	Total # ZD investigations**	Total # ZD diseases cases	% of ZD that were CASES	Duration of Zoonotic Disease Case Investigation*** (in days)			% of ZD with complete demographic information****	Total # CRO Investigations**	Total # CRO Cases	% of CRO that were CASES	% of CRO with complete demographic information****
					min	max.	med.														min	max.	med.					
Braxton,WV	C	6	1	17%	131	131	131	100%	0	0	0	73%	14	13	93%	100%	85%	1	1	100%	41	41	41	100%	1	1	100%	100%
Kanawha,WV	C	137	53	39%	3	83	29	98%	3/5	60%	0	0%	78	75	96%	95%	87%	10	3	30%	13	331	32	100%	25	15	60%	92%
Lewis,WV	C	9	7	78%	7	36	21	71%	1/1	100%	1	0%	14	11	79%	82%	100%	0	0	N/A	N/A	N/A	N/A	0	0	N/A	N/A	
Putnam,WV	C	17	7	41%	11	111	29	100%	0/1	0%	0	0%	24	24	100%	79%	46%	5	2	40%	38	118	72	80%	4	2	50%	100%
Upshur,WV	C	7	5	71%	26	191	35	80%	0	0%	4	100%	20	19	95%	100%	84%	1	1	100%	71	71	71	100%	1	1	100%	0%
Webster,WV	C	3	2	67%	24	29	27	100%	0	0%	1	0%	1	1	100%	100%	100%	0	0	N/A	N/A	N/A	N/A	0	0	N/A	N/A	
CENTRAL = 6		179	75	42%	3	191	121	92%	4	3 LHD	3 LHDs	2 LHD	151	143	95%	93%	84%	17	7	41%	13	331	56	63	31	19	61%	32
Berkeley,WV	E	18	12	67%	7	111	50	100%	0	0%	1	100%	69	68	99%	94%	13%	9	1	11%	7	297	53	78%	5	4	80%	100%
Grant,WV	E	4	4	100%	35	70	66	100%	0/1	0%	0	98%	6	6	100%	100%	33%	5	1	20%	25	182	78	80%	0	0	N/A	N/A
Hampshire,WV	E	6	5	83%	8	43	12	100%	0	0%	0	98%	10	8	80%	100%	88%	1	0	0%	14	14	14	100%	3	2	67%	100%
Hardy,WV	E	1	1	100%	28	28	28	100%	0	0%	0	0%	7	7	100%	86%	29%	1	0	0	35	35	35	100%	0	0	N/A	N/A
Jefferson,WV	E	7	5	71%	61	232	93	80%	1/2	50%	0	2%	40	37	93%	92%	38%	4	2	50%	0	57	31	25%	3	2	67%	33%
Mineral,WV	E	5	5	100%	8	48	40	80%	0	0%	0	2%	13	13	100%	92%	46%	1	0	0%	284	284	284	100%	1	0	N/A	100%
Morgan,WV	E	5	1	20%	154	154	154	0%	0	0%	0	0%	14	13	93%	92%	69%	1	0	0%	260	260	260	0%	0	0	N/A	N/A
Pendleton,WV	E	1	0	N/A	N/A	N/A	0	0	0	0	1	96%	12	12	100%	83%	100%	1	0	0%	14	14	14	100%	1	0	N/A	100%
Pocahontas,WV	E	1	1	100%	43	43	43	100%	0	0	3	94%	8	6	75%	83%	100%	0	0	N/A	N/A	N/A	N/A	N/A	1	1	100%	100%
Randolph,WV	E	8	8	100%	0	80	3	50%	0	0	0	2%	17	15	88%	93%	73%	0	0	N/A	N/A	N/A	N/A	N/A	5	1	20%	100%
Tucker,WV	E	4	3	75%	29	64	33	67%	0	0%	1	0%	1	1	100%	100%	100%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
EASTERN = 11		60	45	75%	0	232	153	71%	1	1 LHD	4 LHDs	8 LHDs	197	186	94%	92%	63%	23	4	17%	0	297	149	53%	19	10	53%	58%
Barbour,WV	NE	7	4	57%	8	191	191	25%	N/A	N/A	0	0%	4	4	100%	100%	0%	2	2	100%	11	71	41	50%	4	0	0	100%
Doddridge,WV	NE	2	1	50%	7	7	7	100%	N/A	N/A	1	98%	5	3	60%	100%	100%	0	0	N/A	N/A	N/A	N/A	N/A	1	1	100%	100%
Harrison,WV	NE	30	19	63%	1	45	26	95%	1/1	100%	2	83%	33	28	85%	82%	96%	0	0	N/A	N/A	N/A	N/A	N/A	5	5	100%	100%
Marion,WV	NE	21	16	76%	31	229	74	100%	N/A	N/A	1	0%	23	22	96%	86%	45%	0	0	N/A	N/A	N/A	N/A	N/A	7	2	28%	100%
Monongalia,WV	NE	15	11	73%	7	41	13	64%	N/A	N/A	0	100%	41	41	100%	71%	83%	2	0	0%	40	60	50	50%	5	2	40%	83%
Preston,WV	NE	106	5	5%	7	28	14	80%	N/A	N/A	0	100%	27	23	85%	96%	100%	1	1	100%	13	13	13	100%	1	1	100%	0%
Taylor,WV	NE	6	4	67%	3	245	135	50%	0/1	0%	1	0%	12	12	100%	92%	0%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
NORTHEASTERN = 7		187	60	32%	1	245	245	73%	1	1 LHD	4 LHDs	4 LHDs	145	133	92%	90%	61%	5	3	29%	13	71	65	29%	23	11	53%	69%

Results – (cont'd)

Evaluation of 2022 Surveillance Indicators for Selected Diseases* in WVEDSS

County (n=55)	Region	Total # VPD Investigations**	Total # VPD cases	% VPD Investigations that were CASES	Duration of VPD Case Investigation*** (in days)			% cases with demographic information****	VPD cases with vaccine info^	% of VPD with vaccine info	# of participating Flu Sentinel Providers	% reporting Varicella counts were kly^^	Total # FWB Investigations	Total # FWB diseases cases	% FWB investigations that were CASES	% of FWBD with complete demographic information****	% of FWBD with EXPOSURE^^^ information	Total # ZD Investigations**	Total # ZD diseases cases	% of ZD that were CASES	Duration of Zoonotic Disease Case Investigation*** (in days)			% of ZD with complete demographic information****	Total # CRO Investigations**	Total # CRO Cases	% of CRO that were CASES	% of CRO with complete demographic information****
					min	max.	med.														min	max.	med.					
Brooke,WV	NW	8	4	50%	33	135	80	25%	0/1	0%	1	0%	7	7	100%	43%	86%	0	0	N/A	N/A	N/A	N/A	N/A	14	4	36%	71%
Calhoun,WV	NW	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	38%	2	2	100%	100%	100%	1	0	0%	89	89	89	100%	0	0	N/A	N/A
Clay,WV	NW	3	3	100%	73	90	75	100%	N/A	N/A	3	63%	6	6	100%	100%	100%	1	0	0%	110	110	110	0%	0	0	N/A	N/A
Gilmer,WV	NW	2	0	N/A	N/A	N/A	N/A	0%	N/A	N/A	1	0%	2	1	50%	100%	0%	0	0	N/A	N/A	N/A	N/A	N/A	1	1	100%	100%
Hancock,WV	NW	6	1	17%	36	36	36	100%	N/A	N/A	3	0%	5	5	100%	80%	60%	0	0	N/A	N/A	N/A	N/A	N/A	1	1	100%	100%
Marshall,WV	NW	4	3	75%	2	224	42	67%	1/1	100%	0	0%	10	7	70%	57%	86%	2	2	100%	36	60	48	100%	2	0	N/A	50%
Ohio,WV	NW	9	9	100%	34	315	245	56%	N/A	N/A	1	100%	8	8	100%	75%	25%	0	0	N/A	N/A	N/A	N/A	N/A	7	5	71%	71%
Pleasants,WV	NW	1	1	100%	56	56	56	100%	N/A	N/A	1	38%	5	4	80%	75%	100%	1	1	100%	14	14	14	100%	1	1	100%	100%
Ritchie,WV	NW	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	38%	3	3	100%	67%	100%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Roane,WV	NW	2	1	50%	28	28	28	100%	N/A	N/A	0	38%	17	17	100%	94%	65%	2	0	0%	13	56	45	100%	1	0	N/A	100%
Tyler,WV	NW	4	4	100%	57	224	180	100%	N/A	N/A	0	0%	1	1	100%	100%	100%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Wetzel,WV	NW	4	3	75%	34	323	143	100%	N/A	N/A	0	0%	5	5	100%	100%	80%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Wirt,WV	NW	1	1	100%	72	72	72	100%	0/1	0%	0	38%	2	2	100%	100%	100%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Wood,WV	NW	26	25	96%	11	253	43	100%	4/4	100%	1	38%	33	32	97%	88%	72%	0	0	N/A	N/A	N/A	N/A	N/A	5	2	50%	80%
NORTHWESTERN = 14		70	55	79%	2	323	322	68%	5	1 LHD	9 LHDs	8 LHDs	106	100	94%	84%	77%	7	3	43%	13	60	30	0	32	14	44%	49%
Fayette,WV	S	10	5	50%	1	92	67	80%	N/A	N/A	0	0%	25	24	96%	54%	75%	3	3	100%	2	56	18	100%	11	9	82%	82%
Greenbrier,WV	S	9	3	33%	19	70	56	100%	N/A	N/A	1	0%	7	7	100%	71%	29%	1	0	0%	182	182	182	0%	0	0	N/A	N/A
McDowell,WV	S	5	4	80%	52	84	72	50%	0/1	0%	0	0%	8	8	100%	13%	0%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Mercer,WV	S	35	25	71%	0	32	8	96%	2/3	67%	1	0%	22	21	95%	100%	90%	1	0	0%	123	123	123	0%	4	3	75%	100%
Monroe,WV	S	10	9	90%	7	18	11	100%	7/7	100%	1	98%	19	17	89%	100%	100%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Nicholas,WV	S	12	11	92%	55	268	71	100%	0/1	0%	1	58%	14	12	86%	58%	25%	0	0	N/A	N/A	N/A	N/A	N/A	0	0	N/A	N/A
Raleigh,WV	S	44	26	59%	2	42	15	92%	N/A	N/A	1	90%	36	35	97%	94%	100%	1	1	100%	24	24	24	100%	31	28	90%	90%
Summers,WV	S	5	3	60%	76	148	79	67%	N/A	N/A	1	98%	4	4	100%	100%	75%	1	1	100%	82	82	82	100%	2	1	50%	100%
Wyoming,WV	S	9	6	67%	6	47	35	33%	N/A	N/A	1	90%	9	9	100%	67%	89%	1	0	0%	17	17	17	100%	8	7	88%	88%
SOUTHERN = 9		139	92	66%	0	268	134	80%	9	2 LHDs	7 LHDs	5 LHDs	144	137	95%	73%	65%	8	5	63%	2	182	181	44%	56	48	86%	51%
Boone,WV	W	11	5	45%	84	205	167	100%	N/A	N/A	0	0%	10	9	90%	56%	0%	0	0	N/A	N/A	N/A	N/A	N/A	1	0	N/A	100%
Cabell,WV	W	31	25	81%	1	224	22	88%	3/3	100%	2	0%	29	29	100%	79%	66%	17	2	12%	21	188	116	12%	6	1	17%	67%
Jackson,WV	W	18	13	72%	6	26	13	85%	N/A	N/A	1	0%	20	20	100%	85%	95%	2	1	50%	23	250	137	50%	0	0	N/A	N/A
Lincoln,WV	W	7	6	86%	6	29	16	83%	1/1	100%	1	0%	9	9	100%	89%	44%	4	4	100%	51	118	82	50%	0	0	N/A	N/A
Logan,WV	W	17	8	47%	66	252	94	88%	N/A	N/A	2	0%	14	12	86%	67%	0%	2	1	50%	55	316	186	0%	3	3	100%	100%
Mason,WV	W	6	5	83%	11	33	17	60%	N/A	N/A	1	4%	18	16	89%	100%	100%	10	3	30%	7	263	18	80%	2	2	100%	100%
Mingo,WV	W	2	1	50%	22	22	22	100%	N/A	N/A	2	0%	12	11	92%	82%	82%	2	1	50%	36	255	146	0%	0	0	N/A	N/A
Wayne,WV	W	10	8	80%	13	63	38	88%	N/A	N/A	1	0%	20	21	105%	62%	24%	6	2	33%	15	238	48	17%	1	0	N/A	100%
WESTERN = 8		102	71	70%	1	252	252	86%	4	2 LHDs	7 LHDs	1 LHD	132	127	96%	77%	51%	57	14	41%	7	316	313	26%	13	6	27%	58%

Results – (cont'd)

Performance Indicator	VPD and IBD	FWBD	MDRO	ZD	Total
Total number of disease investigations	737	875	117	174	1903
Total number of cases	398	826	36	108	1368
Percent of disease investigations that are cases	54%	94%	31%	62%	--

Case detection and investigation

- FWBD – highest yield (94%)
- MDRO – lowest yield (31%)
- VPD (54%) and ZD (62%)

- Kanawha county (C) = 240 disease investigations and cases
- Ritchie county (NW) = No investigations of VPD, ZD, MDRO

Results – (cont'd)

Demographic information: age, gender, race, ethnicity, county of residence

- Target = 100%
- 51% (28 of 55) of counties with demographic information on over 75% of cases
- MOVHD (NE) – almost 100% for all counties
- Counties with low % completeness ($\leq 70\%$) - Morgan (E), Barbour (NE), Taylor (NE), Monongalia (NE) Brooke (NW), Marshall (NW), McDowell (S), Wyoming (S)

Duration of case investigation

- Counties with median ≤ 30 days to complete investigation (mostly VPDs) = 12 (22%) of 55

- Kanawha
- Lewis
- Putnam
- Hampshire
- Hardy
- Doddridge
- Harrison
- Preston
- Roane
- Mercer
- Monroe
- Raleigh

County (n=55)	Region	Duration of VPD Case Investigation*** (in days)			Duration of Zoonotic Disease Case Investigation*** (in days)		
		min	max.	med.	min	max.	med.
CENTRAL = 6		3	191	121	13	331	56
EASTERN = 11		0	232	153	0	297	149
NORTHEASTERN = 7		1	245	245	13	71	65
NORTHWESTERN = 14		2	323	322	13	60	30
SOUTHERN = 9		0	268	134	2	182	181
WESTERN = 8		1	252	252	7	316	313

Results – (cont'd)

Vaccine information (for VPD cases)

- All VPD cases of all ages. *H. influenzae* invasive and *S. pneumoniae* invasive: only ≤ 5 years old
- Target = 100%
- VPD cases with vaccine information:
- Counties NOT reporting vaccine info. = 45 (82%)
- Counties reporting vaccine info. = 10 (18%)
 - Central = 4 cases (Kanawha, Lewis)
 - Eastern = 1 case (Jefferson)
 - Northeastern = 1 case (Harrison)
 - Northwestern = 5 cases (Marshall, Wood)
 - Southern = 9 cases (Mercer, Monroe)
 - Western = 4 cases (Cabell, Lincoln)

Influenza Sentinel Provider (ISP)

- Target = LHD recruit and maintain at least 1 ISP per county
- Counties with NO ISP = 21 (38%)
- Counties with ISP = 34 (62%)
 - Central = 3 (Kanawha, Lewis, Upshur)
 - Eastern = 4 (Berkeley, Pendleton, Pocahontas, Tucker)
 - Northeastern = 4 (Doddridge, Harrison, Marion, Taylor)
 - Northwestern = 9 (Brooke, Calhoun, Clay, Gilmer, Hancock, Ohio, Pleasants, Ritchie, Wood)
 - Southern = 7 (Greenbrier, Mercer, Monroe, Nicholas, Raleigh, Summers, Wyoming)
 - Western = 7 (Cabell, Jackson, Lincoln, Logan, Mason, Mingo, Wayne)

Results – (cont'd)

Aggregate varicella counts

- Report weekly in WVEDSS. If no cases, report “0”
- Target = 100% reporting weekly for 52 weeks
- No report = 27 (49%) counties
- Counties reporting:
 - Reported 100% = 5 (Upshur, Berkeley, Monongalia, Preston, Ohio)
 - Reported 75% - 99% = 10 (Grant, Hampshire, Pendleton, Pocahontas, Doddridge, Harrison, Monroe, Raleigh, Summers, Wyoming)
 - Reported 50% - 74% = 3 (Braxton, Clay, Nicholas)
 - Reported \leq 49% = 10 (Jefferson, Mineral, Randolph, Calhoun, Pleasants, Ritchie, Roane, Wirt, Wood, Mason)

Exposure information for FWB cases

- Target = 100% of FWB cases
- No report = 6 (11%) counties: Barbour, Taylor, Gilmer, McDowell, Boone, Logan
- Counties reporting >90% of cases with exposure information = 19 (35%) counties
 - Central: Lewis, Webster
 - Eastern: Pendleton, Pocahontas, Tucker
 - Northeastern: Doddridge, Harrison, Preston
 - Northwestern: Calhoun, Clay, Pleasants, Ritchie, Tyler, Wirt
 - Southern: Mercer, Monroe, Raleigh
 - Western: Jackson, Mason

Findings (1)

- Case detection depends on case criteria:
 - FWBD – highest yield, case ascertainment rely on lab result (culture, PCR)
 - VPD and ZD – medium yield, require clinical and lab result to ascertain
 - MDRO – lowest yield, require interpretation of anti-microbial susceptibility test results
- By county:
 - Kanawha county – highest number of disease investigations and cases
 - Ritchie county – no investigations of VPD, ZD, MDRO
 - Report preliminary information in WVEDSS while waiting for additional info so public health is made aware
- Completeness of demographic information
 - 28 (51%) counties - demographic information on <75% of cases
 - MOVHD (NE) – almost 100% for all counties
 - 8 (15%) counties – demographic information on <70% of cases
 - Complete demographic information is required per 64 CSR-7

Findings (2)

- Duration of investigation
 - 12 (22%) counties with median ≤ 30 days to complete investigation
 - Many counties complete the investigation > 300 days
 - VPD case investigations take longer to complete compared with ZD cases
- Completeness of vaccine information for VPD cases
 - Counties NOT reporting vaccine info. = 45 (82%)
 - Counties reporting vaccine info. = 10 (18%), not all cases with vaccine info.
 - Important to document vaccine information as it impacts response, see WVSIS for vaccine information
- Influenza Sentinel Providers (ISP)
 - Counties with NO ISP = 21 (38%)
 - Counties with ISP = 34 (62%)
 - Counties can share strategies on how to recruit ISPs

Findings (3)

- Completeness of aggregate weekly Varicella counts
 - Close to half of the counties did not report aggregate varicella counts
 - Less than a third of the counties reported $\geq 75\%$ of the time
 - Reported 100% = 5 (9%)
 - Reported 75% to 99% = 10 (18%)
 - Reported 50% to 74% = 3 (5%)
 - Reported $\leq 49\%$ = 10 (18%)
 - No report = 27 (49%)
 - Consistent reporting and documentation in WVEDSS even if “0” report is important.
- Completeness of FWB Exposure Information
 - 6 (11%) counties zero reports
 - 19 (35%) counties reporting $>90\%$ of cases
 - Complete exposure information is essential in understanding source of infection to prevent/control outbreak

Conclusion – (cont'd)

Limitations and Barriers

1. Turn-over of LHD staff including prolonged vacancies affected transfer of knowledge and information
2. Limited public health training for LHDs due to DIDE staff turn-over and Covid response
3. WVEDSS: data not readily available, no date stamp when investigations are submitted

2023 DIDE Activities

- Program specific trainings for LHDs: VPD and Influenza (31), FWB (27), HAI, ZD
- Updated disease protocols, information sheets, websites, etc.
- Dedicated VPD, Influenza, and FWBD Epidemiologists

Recommendations and Plans

- Regional epis work closely with LHDs to identify needs and offer training
- LHDs should enter results of paper labreports to document effort
- Utilize WV public health conferences/trainings to share barriers and successful strategies
- 2024: evaluate 2023 surveillance data, consider public health assessment

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