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**Annual AFDRSi Summary 2018-2022 AFB Edits
Full Report**

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USAFSAM/PHR**

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Final Report



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711th Human Performance Wing
U.S. Air Force School of Aerospace
Medicine/PHR**

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14. ABSTRACT Methods: All medical events between 2018 - 2022 were abstracted from the Air Force Disease Reporting System internet (AFDRSi). Outbreak data were queried separately for the same time period. Medical event data were merged with the Defense Medical Information System (DMIS) Identifier (ID) table to identify Air Force installations. Suspected case classifications and Reserve and Guard bases were removed from the dataset. The final analysis dataset included any Military Health System (MHS) beneficiary seen at an Air Force Medical Treatment Facility who had a Probable or Confirmed case reported in AFDRSi within the surveillance time period. Reportable Medical Events (RMEs) were categorized by predominate mode of transmission. RMEs by year across the Air Force for MHS beneficiaries and installations and their reporting burden for the same population are summarized. Demographics of RME categories among active duty and retirees are also displayed. The figures present trends across time and category. Outbreak data are categorized by context and etiology for MHS beneficiaries. A summary of outbreak lessons learned is also included in this report. Results: COVID-19 represented the largest burden of RMEs across all investigated timeframes, followed by Chlamydia, then Gonorrhea. Reported Chlamydia and Gonorrhea cases decreased during the pandemic, while reported Syphilis cases decreased for the first two years of the pandemic and trended upward in 2022 to pre-pandemic case counts. Overall reporting burden in AFDRSi increased nearly 1,300 percent from 2018 to 2022. Aside from COVID-19, Sexually Transmitted Diseases (STDs) constituted the largest burden of disease for those deployed. All RMEs trended downward in 2019; most returned to pre-pandemic levels by 2022 with the exception of respiratory organisms which remained more than 50% lower compared to the pre-pandemic burden in 2018. 59 outbreaks occurred over the surveillance period involving 3,589 cases. A majority of outbreaks (n=19) occurred at Childhood Development Centers (CDCs), with norovirus accounting for 10. Deployed locations also accounted for 10 outbreaks, with gastrointestinal organisms contributing to 9. Though there were only 6 COVID-19 outbreaks, they accounted for the majority of cases (n=1,275), while norovirus accounted for 1,262 cases of illness. Conclusion: AFDRSi users should pull their data and track it frequently to understand background rates of disease. Without knowing disease baselines, it will be difficult to detect an increase or know when an outbreak is occurring. Installations should pull their data prior to the archival of records missing a DoD ID or records older than 5 years. Finally, public health technicians should frequently review AFDRSi Training Videos and PowerPoints.			

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Public Health & Preventive Med Dept

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Situation: Air Force Disease Reporting System internet (AFDRSi) summary of Reportable Medical Events (RMEs) entered from 2018 – 2022

Background: Surveillance of communicable diseases and other military relevant medical events of operational significance can help installations understand their background level of disease, prevent future illness and injury, and help inform policy to prevent future occurrences of disease. This report summarizes Reportable Medical Events (RMEs) entered into the Air Force Disease Reporting System internet (AFDRSi).

Assessment: All medical events with a first report date of 01Jan2018 – 31Dec2022 were abstracted from AFDRSi's Data & Analysis module ([Export All Case Data](#)). Outbreak data were queried separately using the Search Outbreaks tab under Outbreaks for the same time period. Medical event data were merged with the Defense Medical Information System ([DMIS](#)) Identifier (ID) table to identify Air Force installations (Readiness Service Code of "F" or "L"). Suspected case classifications and Reserve and Guard bases were removed. The final analysis dataset included any MHS beneficiary seen at an Air Force Medical Treatment Facility (regardless of service affiliation and component) who had a Probable or Confirmed case reported in AFDRSi within the surveillance time period. RMEs were categorized by predominate mode of transmission. (See Appendix 1 for RME categories.)

Table 1 summarizes RMEs by year across the Air Force for MHS beneficiaries, while Table 2 summarizes installations and their reporting burden for the same population. As such, it identifies installations that have not recently reported. Table 3 displays the demographics of RME categories among active duty and retirees. Figures 1 – 3 present trends across time also among active duty and retirees. Finally, Table 4 demonstrates outbreak data categorized by context and etiology for MHS beneficiaries. A summary of outbreak lessons learned is included in Appendix 2.

Table 1. Count of probable and confirmed reportable medical events (RMEs) reported to the Air Force Disease Reporting System internet (AFDRSi) among Military Health System (MHS) beneficiaries seen at an Air Force Medical Treatment Facility (MTF), by RME and year, 2018-2022.

Reportable Medical Event	2018	2019	2020	2021	2022
Amebiasis	2	0	3	1	6
Any other unusual condition not listed	4	7	1	0	4
Arboviral Diseases, Neuroinvasive and Non-neuroinvasive	2	0	0	0	0
COVID-19	0	0	34,823	59,696	117,692
Campylobacteriosis	143	166	103	150	134
Chikungunya Virus Disease	0	0	1	0	1
Chlamydia trachomatis	7,174	7,566	6,373	5,678	5,017
Cholera	0	2	0	2	0
Coccidioidomycosis	30	22	23	46	13
Cold Weather Injury	6	8	7	27	27
Cryptosporidiosis	39	27	29	36	19
Cyclosporiasis	29	13	6	5	7
Dengue Virus Infection	2	2	0	0	0

E. Coli, Shiga Toxin Producing	13	18	27	28	39
Reportable Medical Event	2018	2019	2020	2021	2022
Giardiasis	37	43	20	24	27
Gonorrhea	724	723	695	628	589
Haemophilus influenzae, invasive	3	4	0	1	2
Heat Illness	23	16	8	21	13
Hepatitis A	8	8	8	12	12
Hepatitis B	50	54	32	29	37
Hepatitis C	23	31	18	15	22
Influenza-Associated Hospitalization	29	39	31	1	8
Lead Poisoning (Pediatric)	14	18	20	9	28
Legionellosis	3	5	1	1	2
Leishmaniasis	0	1	0	0	1
Leptospirosis	2	2	0	0	0
Listeriosis	1	1	0	0	0
Lyme Disease	27	32	35	14	20
Malaria	8	6	1	1	5
Measles	0	1	0	0	0
Monkeypox	0	0	0	0	16
Mumps	6	6	7	1	0
Norovirus	99	128	37	88	240
Novel and Variant Influenza	1	0	1	1	0
Pertussis	16	41	9	9	6
Plague	1	0	0	0	0
Post-Exposure Prophylaxis (PEP) against Rabies	208	228	128	109	160
Q Fever	2	1	2	0	0
Rubella	2	1	0	0	2
Salmonellosis	70	103	58	29	27
Schistosomiasis	0	0	0	0	1
Severe Acute Respiratory Syndrome (SARS)	0	0	0	0	1
Shigellosis	11	23	13	30	5
Spotted Fever Rickettsiosis	26	16	21	10	15
Syphilis	207	199	159	157	206
Toxic Shock Syndrome	1	1	0	0	0
Trichinellosis	1	0	1	0	0
Trypanosomiasis	0	1	0	0	0
Tuberculosis	4	6	0	0	3
Tularemia	0	1	0	0	0
Typhoid Fever	0	1	0	0	1
Typhus Fever	0	0	1	2	1
Varicella	14	16	12	15	11

Zika Virus	0	2	0	0	0
Total	9,065	9,589	42,714	66,876	124,420

Table 1 Key Findings:

- COVID-19 represented the largest burden of RMEs across all time, followed by Chlamydia, then Gonorrhea.
- Reported Chlamydia and Gonorrhea cases decreased during the pandemic, while reported Syphilis cases decreased for the first two years of the pandemic and trended upward in 2022 to pre-pandemic case counts.

Table 2. Count of probable and confirmed reportable medical events (RMEs) reported to the Air Force Disease Reporting System internet (AFDRSi) among Military Health System (MHS) beneficiaries seen at an Air Force medical treatment facility (MTF), by installation and year, 2018-2022.

Air Force Medical Treatment Facility	2018	2019	2020	2021	2022
332 EMDG OLB	0	6	60	126	286
768 EABS/MED	0	0	0	0	83
AGADEZ AB 201	2	0	0	0	211
AL DHAFRA AB	26	29	67	431	402
AL JABER	11	1	0	0	0
AL UDEID	99	47	177	321	75
ALI AL SALEM AB	13	16	157	207	592
ALTUS AFB	37	47	181	222	653
ANDERSEN JB	152	120	180	300	1,014
ANDREWS JBA	152	140	762	1,648	3,084
AVIANO AB	93	157	322	416	2,098
BAGRAM AIRFIELD	13	22	335	79	0
BARKSDALE AFB	113	98	665	1,077	1,558
BEALE AFB	76	65	263	531	1,219
BOLLING JBAB	37	43	119	377	964
BUCKLEY SFB	44	40	334	651	568
CANNON AFB	119	113	263	539	1,189
CHARLESTON JB	60	100	420	566	1,566
COLUMBUS AFB	24	21	164	223	369
DAVIS-MONTHAN AFB	168	158	532	596	551
DOVER AFB	79	64	490	904	1,436
DYESS AFB	95	88	539	572	928
EDWARDS AFB	53	54	211	394	822
EGLIN AFB	283	406	1,700	2,820	3,445
EIELSON AFB	48	32	316	710	1,341
ELLSWORTH AFB	62	55	420	619	1,129
ELMENDORF JBER	214	247	1,725	3,107	4,440
FAIRCHILD AFB	43	52	287	557	1,240
FE WARREN AFB	100	66	531	712	1,295

GEILENKIRCHEN NATO AB	2	0	36	58	181
GOODFELLOW AFB	69	75	270	530	488
GRAND FORKS AFB	22	27	217	151	372
HANSCOM AFB	15	35	83	128	453
HICKAM JBHP	99	116	304	926	1,356
Air Force Medical Treatment Facility	2018	2019	2020	2021	2022
HILL AFB	91	82	407	1,217	1,630
HOLLOMAN AFB	127	147	408	674	229
HURLBURT FIELD	160	177	843	1,172	1,460
INCIRLIK AB	46	64	101	142	446
KADENA AB	206	191	212	246	3524
KEESLER AFB	229	210	1,403	2,151	3,706
KIRTLAND AFB	97	123	315	391	854
KUNSAN AB	66	92	109	138	1,078
LACKLAND JBASA	1,117	1,241	3,521	5,587	6,891
LANGLEY JBLE	310	269	1,080	1,778	4,475
LAUGHLIN AFB	23	25	131	190	387
LITTLE ROCK AFB	95	83	491	766	1,391
LOS ANGELES AFB	42	35	49	140	197
LUKE AFB	163	183	1,231	1,663	2,399
MACDILL AFB	115	158	954	1,234	1,374
MALMSTROM AFB	85	94	624	898	1382
MAXWELL AFB	93	69	567	859	1943
MCCONNELL AFB	58	81	377	470	704
MCGUIRE JBMDL	80	78	985	1,413	1,431
MINOT AFB	140	180	1,006	849	1,752
MISAWA AB	88	100	110	177	1,791
MOODY AFB	93	80	483	973	1,693
MOUNTAIN HOME AFB	51	122	269	821	1,329
NELLIS AFB	353	270	1,980	3,011	5,964
NIAMEY AB	0	0	0	0	4
OFFUTT AFB	128	121	1,122	1,023	1,263
OSAN AB	205	271	222	449	4,083
PATRICK SFB	47	59	387	722	782
PETERSON SFB	105	133	583	759	1,294
PRINCE SULTAN AB	0	0	38	8	305
RAF ALCONBURY	3	2	18	65	165
RAF CROUGHTON	2	0	54	57	8
RAF LAKENHEATH	216	253	407	1,581	2,449
RAMSTEIN AB	251	292	618	1,101	6,556
RANDOLPH JBASA	133	116	506	539	931
ROBINS AFB	83	86	396	641	1,257
SCHRIEVER SFB	10	11	129	96	267

SCOTT AFB	87	83	886	1,100	522
SEYMOUR JOHNSON AFB	102	83	474	918	1,315
SHAW AFB	103	113	613	1,191	2,297
SHEPPARD AFB	102	109	425	927	1,090
SPANGDAHLEM AB	97	130	159	173	1,244
TINKER AFB	115	93	1,048	959	827
TRAVIS AFB	240	233	856	1,574	3,571
Air Force Medical Treatment Facility	2018	2019	2020	2021	2022
TYNDALL AFB	73	33	211	456	671
USAF ACADEMY	162	181	945	1,291	1,218
VANCE AFB	11	20	247	209	508
VANDENBERG SFB	48	61	244	550	991
WHITEMAN AFB	111	102	678	552	506
WRIGHT-PATTERSON AFB	151	190	1,434	2,109	3,871
YOKOTA AB	129	120	228	368	2,987
Total	9,065	9,589	42,714	66,876	12,4420

Table 2 Key Findings:

- Several deployed locations had lapses in reporting over the surveillance time period.
- The reporting burden increased nearly 1,300 percent from 2018 to 2022.

Table 3. Count of probable and confirmed reportable medical events (RMEs) reported to the Air Force Disease Reporting System internet (AFDRSi) among Active Duty and retirees seen at an Air Force Medical Treatment Facility (MTF), by patient demographic and route of transmission, 2018-2022.

	Environmental	Food/ Water	Other*	Total Respiratory**	Respiratory (without COVID)	STD	Vector
Total	735	1,474	223	156,652	207	30,642	162
Sex							
F	200	316	50	36,495	58	11,854	40
M	535	1,158	173	120,157	149	18,788	122
Age							
<18	4	8	1	943	2	271	0
18-24	237	386	34	46,830	34	20,682	25
25-34	264	565	63	58,057	39	8,237	55
35-44	122	270	45	31,057	38	1,124	45
45-54	40	109	25	9,641	41	205	15
55-64	36	79	30	6,776	36	93	16
65-74	19	45	21	2,150	12	20	3
75+	13	12	4	1,198	5	10	3
Race/Ethnicity							
African American	44	142	41	15,650	23	7,019	20

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Caucasian	379	721	63	65,689	105	10,754	98
Hispanic	12	17	1	1,943	3	840	1
Other/Unk	300	594	118	73,370	76	12,029	43

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	Environmental	Food/ Water	Other*	Total Respiratory**	Respiratory (without COVID)	STD	Vector
Sponsor Service							
Air Force	549	1,214	149	133,593	147	27,433	123
Army	108	141	30	11,484	25	1,473	21
Navy/ Marines	46	75	21	7,543	23	1,520	12
Coast Guard	2	5	3	507	.	33	.
Other/Unk	30	39	20	3,525	12	183	6
Deployed							
No	680	1,206	220	153,140	202	30,292	155
Yes	55	268	3	3,512	5	350	7

*Other includes the following RMEs: Any other unusual condition not listed, Brucella, Hepatitis B and C, Leprosy, Monkeypox, Q Fever, Schistosoma, Toxic Shock Syndrome, and Varicella

**Includes COVID-19 and all other respiratory organisms

Table 3 Key Findings:

- 25-34 year old Active Duty or Retirees had the largest burden of RMEs for all diseases except for STDs where the largest burden fell among the 18-24 year olds.
- Aside from COVID-19, STDs constituted the largest burden of disease for those deployed; more deployers had STDs than illnesses transmitted by food or water.

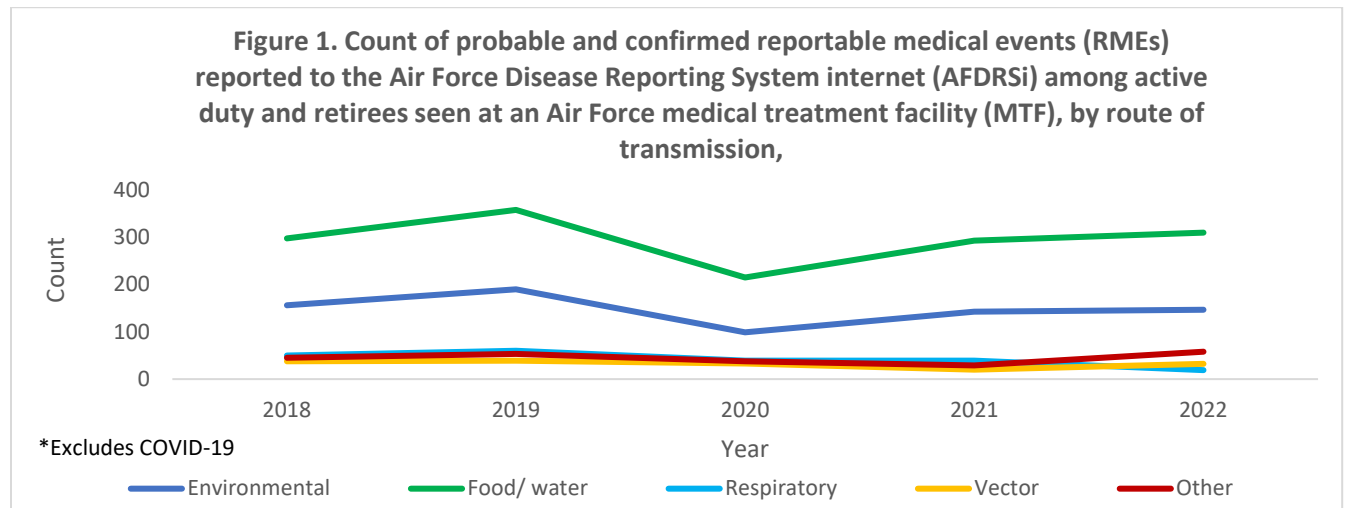


Figure 1 Key Findings:

- All RMEs trended downward in 2019; most returned to pre-pandemic levels by 2022 with the exception of respiratory organisms (besides COVID-19) which remained more than 50% lower compared to the pre-pandemic burden in 2018.

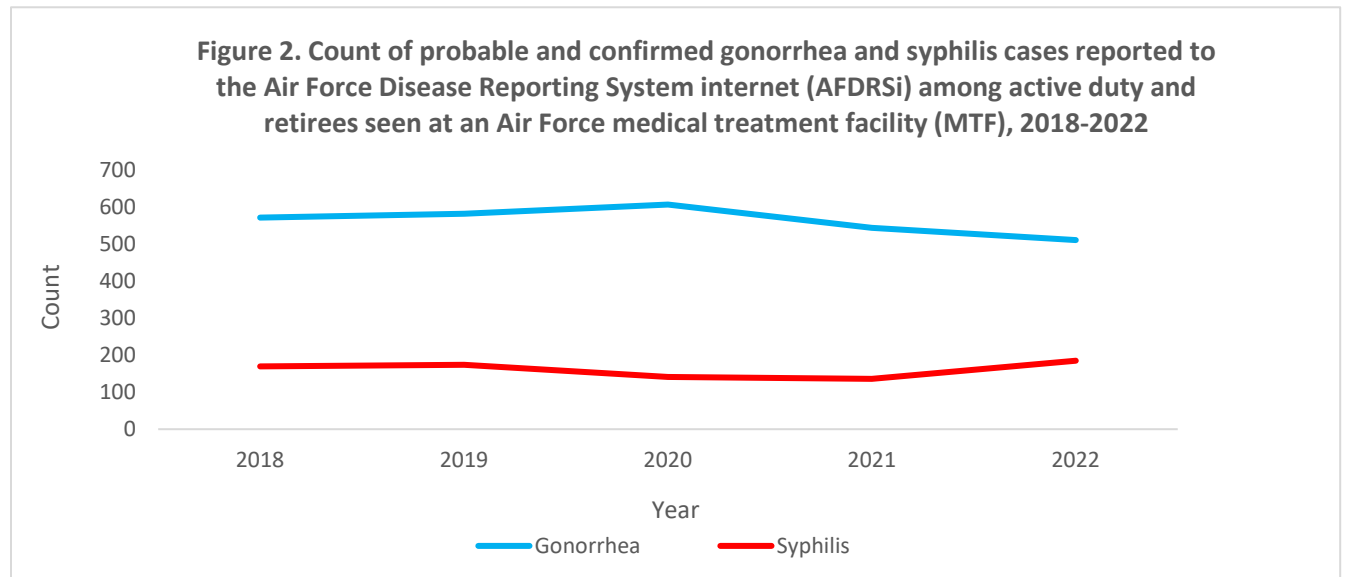


Figure 2 Key Findings:

- Reported gonorrhea cases decreased slightly during the pandemic; this is contrasted with syphilis.

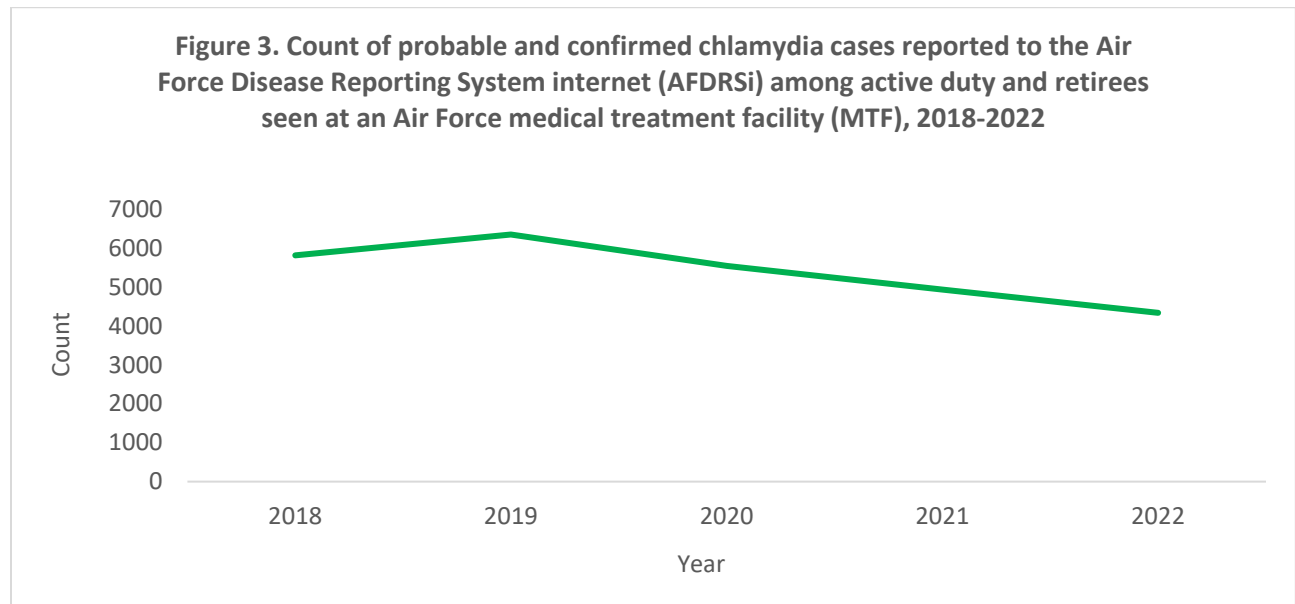


Figure 3 Key Findings:

- Reported chlamydia cases trended downward beginning in 2019 and continued to decline during the pandemic through 2022.

Table 4. Number of outbreaks and count of outbreak cases reported to the Air Force Disease Reporting System internet (AFDRSi) among Military Health System (MHS) beneficiaries seen at an Air Force medical treatment facility (MTF), by etiological agent, outbreak context, and continental United States (CONUS) status, 2018-2022

Etiology	Outbreak Context	CONUS		OCONUS	
		Number of outbreaks	Number of Cases	Number of outbreaks	Number of Cases
COVID	Child Development Center (CDC	2	54	1	5
	Deployed setting; large population movement	0	0	1	402
	On base school	0	0	1	206
	On base social event	0	0	1	634
	USAFA cadets	1	79	0	0
	Unit on base	2	18	0	0
	Unknown context	1	54	1	28
	COVID Total	6	205	5	1,275

Campylobacter	Unit potluck	0	0	1	4
	Campylobacter Total	0	0	1	4
Cyclosporiasis	BMT Trainees	1	130	0	0
	Cyclosporiasis Total	1	130	0	0
GI organism; multiple organisms identified	Deployed setting; poor sanitation with port-a-johns	0	0	1	83
	Deployed setting; unknown context	0	0	1	63
	GI organism; multiple organisms identified Total	0	0	2	146
GI organism; unknown etiologic agent	Base-wide Easter luncheon	0	0	1	40
	CDC	0	0	1	16
	Deployed setting; unknown context	0	0	3	141
	Unit pot luck	1	23	1	3
	GI organism; unknown etiologic agent Total	1	23	6	200
Group A Strep Toxic Shock Syndrome	Labor and delivery ward	1	1	0	0
	Group A Strep Toxic Shock Syndrome Total	1	1	0	0
Hand, Foot, Mouth Disease	CDC	1	35	0	0
	Hand, Foot, Mouth Disease Total	1	35	0	0
Impetigo	CDC	1	10	0	0
	Impetigo Total	1	10	0	0
Measles	Unknown context	0	0	1	4
	Measles Total	0	0	1	4
Meningococcal Disease	Isolated case	1	1	0	0
	Meningococcal Disease Total	1	1	0	0

Etiology	Outbreak Context	CONUS		OCONUS	
		Number of outbreaks	Number of Cases	Number of outbreaks	Number of Cases
Monkeypox	Isolated case	1	1	0	0
	Monkeypox Total	1	1	0	0
Mycoplasma pneumoniae	Unknown context	1	1	0	0
	Mycoplasma pneumoniae Total	1	1	0	0
Norovirus	BMT Trainees	1	31	0	0
	CDC	9	723	0	0
	CDC and members participating in a base exercise	1	21	0	0
	Off base	0	0	1	31
	USAFA cadets	1	407	0	0
	Unknown context	1	4	0	0
	Youth Center	1	45	0	0
	Norovirus Total	14	1,231	1	31
Respiratory organism; unknown etiological agent	CDC	0	0	1	26
	Respiratory organism; unknown etiological agent Total	0	0	1	26
Salmonella	Deployed setting DFAC	0	0	2	33
	Deployed setting; unknown context	0	0	2	27
	Raw fish purchased from commissaries	1	23	0	0
	Unknown context	1	3	0	0
	Youth Center	1	21	0	0
	Salmonella Total	3	47	4	60
Scabies	CDC	1	11	0	0
	Scabies Total	1	11	0	0
Shigella	Unknown context	0	0	1	3
	Shigella Total	0	0	1	3
Staphylococcus aureus	Unknown context	1	16	0	0
	Staphylococcus aureus Total	1	16	0	0
Streptococcal Pharyngitis	School aged children and parents	1	64	0	0
	Streptococcal Pharyngitis Total	1	64	0	0
Streptococcus C	Unknown context	1	60	0	0
	Streptococcus C Total	1	60	0	0
Varicella	CDC	0	0	1	2
	Foreign national	1	3	0	0
	Varicella Total	1	3	1	2

CDC = Child Development Center

Table 4 Key Findings:

- 59 outbreaks occurred over the surveillance period involving 3,589 cases.
- A majority of outbreaks (n=19) occurred at CDCs, with norovirus accounting for 10.
- Deployed locations also accounted for 10 outbreaks, with gastrointestinal organisms contributing to 9.
- Though there were only 6 COVID-19 outbreaks, they accounted for the majority of cases (n=1,275), while norovirus accounted for 1,262 cases of illness.

Discussion: These data represent RMEs reported to AFDRSi by the local level base public health office. Data assess the burden of disease across the Air Force and demonstrate trends in time before and during the COVID-19 pandemic. AFDRSi offers two reports to assist with trend analyses: “Export All Case Data” and “Export Event Specific Case Data”. “Export Event Specific Case Data” only allows the export of one RME at a time, but it returns all exposure related questions. “Export All Case Data” only returns exposure related questions common among all RMEs. Additional information describing how to pull these reports can be found in the DRSi User’s Guide – Version 2 (March 2023) on page 46 located on MilSuite under Surveillance Tools [here](#). Page 37 details exporting outbreak data. Users are encouraged to pull these two types of reports in order to determine local-level baseline trends.

Recent technical upgrades to AFDRSi made the DoD ID a required field for case entry. Archival of AFDRSi records will occur for records missing a DoD ID as well as records older than 5 years (regardless of DoD ID). Archiving of data will impact trend analyses, as the data will not be available for reports. Users are encouraged to pull their own data so they can have a historical record of disease prevalence.

Personnel at deployed locations with missing data should assess reasons data are missing. While draw downs or reduced public health staffing could partially explain missing AFDRSi data, the more plausible explanation is a lapse in submitting a new DRSi SAAR DD 2875 form for every permanent change of station (PCS) or deployment. Submitting a new DD 2875 for all duty station changes assures reported RMEs for the new installation are properly recorded as being acquired at that installation. Forgetting to submit a new DD 2875 results in cases for the new location being recorded under the previous location, thus adversely affecting trend analyses.

A major limitation of this passive surveillance system is data quality. Reporting cases accurately in AFDRSi requires the ability to read, interpret, and understand case definitions (published in the [Armed Forces Reportable Medical Events Guidelines and Case Definitions](#)). Case definitions are oftentimes complex, containing medical and laboratory technical language. AFDRSi reporters may not know how to navigate a patient’s electronic health record or interpret laboratory results to identify if a patient meets the case definition. Additional limitations include lack of notification from providers or laboratory personnel who may not be aware that the condition is reportable to Public Health. Reporters might forget to update their DRSi SAAR DD 2875 form when they are assigned to a new station which would assign RMEs to their previous location. Technical glitches with the MHS GENESIS transition may have resulted in missed RMEs from the Event and Disease Surveillance Report in the GENESIS Discern Reporting Portal. This was especially noted when the USAFSAM Epidemiology Laboratory transitioned to GENESIS; order sets/names were updated but were not updated in the Discern Reporting Portal. This resulted in the RME report querying old test names. Finally, for patients with RMEs who seek care off

base, the local base public health office may not have knowledge of their condition to report it in AFDRSi.

Recommendation: AFDRSi users should pull their data and track it frequently to understand background rates of disease. Without knowing disease baselines, it will be difficult to detect an increase or know when an outbreak is occurring. Additionally, installations should pull their data prior to the archival of records missing a DoD ID or records older than 5 years. Finally, public health technicians should frequently review the [AFDRSi Training PPT and videos](#) (under Training Tools and Tri-Service Epi-Tech Training).

APPENDIX 1: Categories of RME modes of transmission

AFDRSi Diagnosis	RME mode of transmission
Anthrax	Environmental
Lead Poisoning (Pediatric)	Environmental
Cold Weather Injury	Environmental
Heat Illness	Environmental
Post-Exposure Prophylaxis (PEP) against Rabies	Environmental
Rabies; Human	Environmental
Tetanus	Environmental
Amebiasis	Food/water
Botulism	Food/water
Campylobacteriosis	Food/water
Cholera	Food/water
Cryptosporidiosis	Food/water
Cyclospora	Food/water
Cyclospora Infection	Food/water
Cyclosporiasis	Food/water
E0 Coli, Shiga Toxin Producing	Food/water
Giardiasis	Food/water
Hepatitis A	Food/water
Leptospirosis	Food/water
Listeriosis	Food/water
Norovirus	Food/water
Poliomyelitis	Food/water
Salmonella	Food/water
Salmonellosis	Food/water
Shigellosis	Food/water
Trichinellosis	Food/water
Trichinosis	Food/water
Typhoid Fever	Food/water
Any other unusual condition not listed	Other
Brucellosis	Other

Hepatitis B	Other
Hepatitis C	Other
Leprosy	Other
Monkeypox	Other
Q Fever	Other
Schistosomiasis	Other
AFDRSi Diagnosis	RME mode of transmission
Varicella	Other
AVIAN INFLUENZA	Respiratory
Coccidioidomycosis	Respiratory
COVID-19	Respiratory
COVID-19 (No longer reportable)	Respiratory
COVID-19 Associated Hospitalization and Death	Respiratory
Diphtheria	Respiratory
Haemophilus influenzae, invasive	Respiratory
Hantavirus Disease	Respiratory
Influenza-Associated Hospitalization	Respiratory
Legionellosis	Respiratory
Measles	Respiratory
Meningococcal Disease	Respiratory
Mumps	Respiratory
Novel and Variant Influenza	Respiratory
Pertussis	Respiratory
Rubella	Respiratory
Severe Acute Respiratory Syndrome (SARS)	Respiratory
Smallpox	Respiratory
Tuberculosis	Respiratory
Chlamydia trachomatis infection	Sexually transmitted disease
Gonorrhea	Sexually transmitted disease
Syphilis	Sexually transmitted disease
Arboviral Diseases, Neuroinvasive and Non-neuroinvasive	Vector
Chikungunya Virus Disease	Vector
Dengue Virus Infection	Vector
Ehrlichiosis/Anaplasmosis	Vector
Filarial Infections	Vector
Hemorrhagic Fever, Viral	Vector
Leishmaniasis	Vector
Lyme Disease	Vector
Malaria	Vector
Plague	Vector
Relapsing Fever	Vector
Rift Valley Fever	Vector
Spotted Fever Rickettsiosis	Vector

Trypanosomiasis	Vector
Tularemia	Vector
Typhus Fever	Vector
Yellow Fever	Vector
Zika Virus	Vector

APPENDIX 2: Outbreak Lessons Learned

Note: Commonalities in lessons learned include several comments about cleaning contracts for norovirus. This topic has a dedicated section in the [Norovirus Outbreak Toolkit](#).

1. PH collected incomplete epidemiological information during initial interviews and failed to look for commonalities other than food. For this reason, investigations into the CDC were not conducted until 2 weeks later.
2. The CDC was provided with the Norovirus Outbreak Toolkit from USAFSAM Kx on Nov 26 so that they could properly clean and sanitize the facility. However, when new cases started appearing on Dec 3-5 PH found out that the CDC was not using the correct bleach concentration. They said that they current guidelines prohibited them from using a chlorine solution greater than 200pm. CDC was re-educated and strongly advise in using the recommended chlorine solution from the toolkit.

Be more specific on interview questionnaire to prevent oversight and repeat visits to affected units. There were no means to secure government funds to rent required equipment for POD (tables, chairs) due to card holders being on leave0 Recommend a process to procure contingency equipment/supplies. Medication reconciliation was not preformed prior to POD, there was medical record reviewing capability at the POD0 For future PODs, a list of individuals will be obtained to ensure medication reconciliation can be done prior to dispersing medications0 Laboratory had few/no stool specimen kits on hand initially. Lab obtained necessary kits and subsequent patients were able to completed testing. MCRP checklist should be revised to include corrections for these lessons learned.

Child Youth Program Centers were not equipped—no prior training. Cleaning contracts are not universal and trying to get a cleaning protocol administered was challenging.

GI Illness protocol was not properly utilized at the beginning of this outbreak. Protocol established. Communication with night shift med techs not ideal.

Investigation Techniques:

- Depending on the case population, only one agency will be the POC regarding the investigation. For example, if majority of the patients are Air Force AD/beneficiaries, the AF Public Health office will take the lead on the investigation to include conducting all interviews with assistance as needed. This will ensure multiple agencies are not contacting the same patients and will reduce the chance of information being lost.
- Ensure the same method for interviewing patients.
- Encourage Provider teams to obtain stool samples if they suspect FBI.

Communication:

- Once a suspected FBI cluster is identified at the lab, ensure military and local Public Health offices are notified immediately to start an investigation.
- Establish a battle rhythm of communication to applicable personnel. This includes Executive Summaries to leadership, messages to the public, etc.
- There should be consistent PA messaging in your AR. In addition, messages will vary by the audience (leadership, the public, Public Health peers).
- Try to get ahead of public communication. Utilize social media.

Resources/Relationships:

- Maintain a key listing of contacts in the event you need expertise/insight.
- Know your laboratory resources (accreditation, turnaround times, locations-time zones).
- Have an already established relationship with your DeCA Consumer Safety Officer, State Health Department, Food Facility Managers.

MDS Laboratory ran into issues receiving formal test results from county health dept. Recommend establishing multiple channels of communication to collect data and information in a timely manner.

PH wanted provider to test for norovirus, but provider opted to test for rotavirus.

Preventive measure could have been applied with Food Handlers outreach prior to Thanksgiving.

Provide guidance on food handling for individuals bringing in dishes from home, provide guidance on what dishes may or may not be appropriate for large potlucks.

Refrain from consuming raw/undercooked food products especially from non-approved sources.

That the base did not have adequate supply of cleaners that disinfect surfaces exposed to norovirus.

Work closely with contracting to create Statement of Work; Record specific work centers and living locations for suspected cases when you contact them (dorms, DFAC workers, etc).

You cannot determine if a member has Strep C specifically from a Strep Test, a throat culture must be ordered to determine Strep C.

1. PH should have requested preservation of leftovers from the facility as soon as the source was established.
2. PH should be involved in any large catering event. It would be beneficial for all vendors on base to have PH oversight of their process when preparing food for a larger group than usual in a short amount of time.

Serious hygiene issue in the portable toilets on the flight line. Public Health (PH) should be involved in the writing of contract for cleaning companies.

Sick employees coming to work.

Understanding limitations of our clinic lab and downtown specialty hospitals lab, and a more comprehensive understanding of processes involved in shipping or delivering biological samples to agencies and/or resources outside of the deployed setting. Additionally, Public Health now has better line lists templates and literature saved for succeeding Public Health personnel. Lastly, a look at modifying contracts is taking place to improve base sanitation.