



TEXAS
Health and Human
Services

**Texas Department of State
Health Services**

New Case Definitions: Mumps, Polio, Varicella, and Hepatitis B

Elise Huebner, MS, CPH, CIC, Binoj Peter, MPH, and Varsha Misra, MPH

Vaccine Preventable Diseases Team

Disease Surveillance and Epidemiology Section

Office of the Chief State Epidemiologist

Texas Department of State Health Services

February 16, 2024

Case Definitions to Review

- Mumps
- Polio
- Varicella
- Hepatitis B



TEXAS
Health and Human Services

Texas Department of State
Health Services



TEXAS
Health and Human Services

Texas Department of State
Health Services

Mumps Case Definition (NEW)

- Acute parotitis or other (non-parotid) salivary gland(s) swelling lasting at least 2 days, **OR** a mumps-associated complication, including orchitis, oophoritis, aseptic meningitis, encephalitis, hearing loss, mastitis, or pancreatitis, unexplained by another more likely diagnosis
- **Confirmed:** A case that meets confirmatory laboratory evidence
- **Probable:** A case that meets the clinical criteria, AND
 - Has a positive test for serum anti-mumps immunoglobulin M (IgM) antibody AND does not meet epidemiologic linkage criteria,
OR
 - Has exposure to or contact with a confirmed mumps case or is a member of a group or population identified by public health authorities as being at increased risk for acquiring mumps because of an outbreak
- **Suspect:** A case that has parotitis, acute salivary gland swelling, orchitis, or oophoritis unexplained by another more likely diagnosis, OR a has a positive lab result with no mumps clinical symptoms (with or without an epidemiologic link to a confirmed or probable case) AND documentation that mumps was suspected.



TEXAS
Health and Human Services

Texas Department of State
Health Services

Mumps Case Definition **(NEW)**

- Clarifications to laboratory criteria for case ascertainment
 - New confirmatory test: seroconversion (4-fold or greater rise in IgG, AKA titer)
 - IgM+ can't be confirmatory lab
 - Probable and suspect cases only
- Updates to clinical criteria
 - Removal of symptom requirement, including duration of parotitis, from the confirmed case classification and for epi-linked probable cases
 - Confirmed cases still require confirmatory lab criteria



TEXAS
Health and Human Services

Texas Department of State
Health Services

Mumps Case Definition - Impact

- Adding seroconversion to the list of confirmatory tests is a low-frequency scenario, so burden should be low
- Removal of the parotitis duration for confirmatory tests (extremely strong indicators of disease) will reduce the investigation burden when eICRs and medical records may not contain that information
 - Recently, most mumps cases are probable (via IgM or epi-link) so the workload may not change much for investigators

Count	MMWR Year				
	2018	2019	2020	2021	2022
Confirmed	118	450	4		2
Probable	146	333	18	19	46
Grand Total	264	783	22	19	48



TEXAS
Health and Human Services

Texas Department of State
Health Services

Poliomyelitis Case Definition **(NEW)**

- Updates to the confirmatory tests for Paralytic Poliomyelitis
 - Adds Confirmatory Laboratory Evidence component for the confirmed classification
 - Poliovirus detected by sequencing of the capsid region of the genome by the CDC Poliovirus Laboratory, *OR*
 - Poliovirus detected in an appropriate clinical specimen (e.g., stool [preferred], cerebrospinal fluid, oropharyngeal secretions) using a properly validated assay[^], AND specimen is not available for sequencing by the CDC Poliovirus Laboratory
 - Texas already had second lab criteria listed in the Epi Case Criteria Guide, but it's not tied to either case status as a requirement

Poliomyelitis Case Statuses For Review



TEXAS
Health and Human Services

Texas Department of State
Health Services

Case Status	Laboratory Criteria	Clinical Criteria	Case Status Criteria: Clinical Symptoms with...
Confirmed	Isolation of poliovirus type 1, 2, or 3 from a clinical specimen (stool or CSF) [but is this required?]	Acute onset of a flaccid paralysis of one or more limbs with decreased or absent tendon reflexes in the affected limbs, without other apparent cause, and without sensory or cognitive loss	A case that meets the clinical case definition in which the patient has a neurological deficit 60 days after onset of initial symptoms, has died, or has unknown follow-up status
Probable	-		[Clinical criteria only]



TEXAS
Health and Human Services

Texas Department of State
Health Services

Poliomyelitis – Impact

- This change should add little impact to investigation workload as this condition is very infrequent.
- Should clarify the difference between acute flaccid myelitis (AFM) and paralytic poliomyelitis
- Additionally, adding a laboratory component to polio should only strengthen confirmed cases and clarify if a confirmatory lab *is* required for a confirmed case



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella Case Definition (**NEW**)

- In the absence of a more likely alternative diagnosis, an acute illness with a generalized rash with vesicles (maculopapulovesicular rash), **OR** an acute illness with a generalized rash without vesicles (maculopapular rash).
- **Confirmed:**
 - Meets clinical evidence AND confirmatory laboratory evidence,
 - OR**
 - Meets clinical evidence with a generalized rash with vesicles AND confirmatory epidemiologic linkage evidence.



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella Case Definition **(NEW)**

- ***Probable:***

- Meets clinical evidence with a generalized rash with vesicles,

OR

- Meets clinical evidence with a generalized rash without vesicles AND:

- Confirmatory or presumptive epidemiologic linkage evidence,

OR

- Supportive laboratory evidence.

OR

- Meets healthcare record criteria AND:

- Confirmatory or presumptive epidemiologic linkage evidence,

OR

- Confirmatory or supportive laboratory evidence



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella Case Definition (NEW)

- Focusing on laboratory evidence to confirm cases
 - Confirmed cases
 - Confirmatory laboratory results (criteria did not change)
 - Cases with generalized rash with vesicles in persons who (new criteria):
 - Have an epi-link to a lab-confirmed varicella case
 - 2021-2022: 0.6% of cases
 - Person with herpes zoster/shingles
 - 2021-2022: 0.7% of cases
 - Varicella cluster/outbreak containing at least one lab-confirmed case
 - 2021-2022: 0.3% of cases
 - Obtaining the rash description from reporters will now be paramount for investigators to classify cases correctly

This description was provided in 11.8% of cases 2021-2022



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella – Supportive Lab Change **(NEW)**

- Update to laboratory criteria
 - IgM test is now considered supportive laboratory criteria with no improvements to this testing (notoriously inaccurate)
 - Supportive laboratory criteria are only linked with probable case statuses



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella – Not a Case (**NEW**)

- What's Not a Case (NAC) now
 - Cases that meet clinical evidence with a *generalized rash without vesicles (or no rash description), without epi-links, and without lab evidence* will be considered NAC
 - From 2021-2022, this accounted for **29%** of cases



TEXAS
Health and Human Services

Texas Department of State
Health Services

Varicella – Potential Impacts

- Cases lacking lab evidence may reflect providers in less affluent areas, patients without health insurance, or other vulnerable populations
- This change could overestimate confirmed cases' demographics and future potential funding
- Seemingly, investigators will have a reduction in caseload overall, but investigators should dedicate more time to obtaining rash descriptions, potential lab-confirmed epi-links, and contact with anyone with shingles
 - Without this information, the true burden of varicella cases will be vastly underreported



TEXAS
Health and Human Services

Texas Department of State
Health Services

Hepatitis B – No Changes, But...

- The Texas 2024 case definition and status remain unchanged
- Council of State and Territorial Epidemiologists (CSTE) passed a new case definition for 2024
 - Confirmed and probable case statuses
 - New labs to consider
 - Confirmatory and presumptive laboratory evidence
 - Confirmed cases are Tier 1 (two confirmatory labs required) and Tier 2 (one confirmatory lab and symptoms required)

CSTE Hepatitis B Changes – Clinical Criteria



TEXAS
Health and Human Services

Texas Department of State
Health Services

- CSTE 2024
 - In the absence of a more likely, alternative diagnosis, acute onset or new detection of at least one of the following:
 - Jaundice
 - Total bilirubin >3.0mg/dL
 - Elevated serum alanine aminotransferase (ALT) levels >200 IU/L

“Absence of other diagnosis” new

No symptoms mentioned

Bilirubin new

Increased from 100

CSTE Hepatitis B Changes – Confirmatory Lab Evidence



TEXAS
Health and Human Services

Texas Department of State
Health Services

- CSTE 2024
 - Laboratory Criteria for Reporting if Reactive
 - IgM antibody to hepatitis B core antigen (IgM anti-HBc) Hepatitis B surface antigen (HBsAg)
 - Hepatitis B e antigen (HBeAg)
 - Detection of HBV DNA by nucleic acid test, including qualitative, quantitative, or genotype testing

CSTE Hepatitis B Changes – Confirmatory Lab Evidence



TEXAS
Health and Human Services

Texas Department of State
Health Services

- CSTE 2024
 - Tier 1
 - HBsAg + IgM anti-HBc
 - HBeAg + IgM anti-HBc*
 - HBV DNA + IgM anti-HBc*
 - Detection of HBsAg, HBeAg, or HBV DNA ≤ 12 months of a negative HBsAg result*
 - Tier 2
 - HBsAg + IgM anti-HBc test not done or result not available
 - HBV DNA + IgM anti-HBc test not done or result not available*

*New

CSTE Hepatitis B Changes – Presumptive Lab Evidence



TEXAS
Health and Human Services

Texas Department of State
Health Services

- CSTE 2024
 - IgM anti-HBc + Negative or not done for HBsAg, HBV DNA, or HBeAg*

*New



TEXAS
Health and Human Services

Texas Department of State
Health Services

CSTE Hepatitis B Changes – Confirmed Case Classifications

- CSTE 2024
 - Meets Tier 1 confirmatory laboratory evidence of acute HBV infection*
 - Meets clinical criteria AND Tier 2 confirmatory laboratory evidence of acute HBV infection

*New

CSTE Hepatitis B Changes – Probable Case Classifications



TEXAS
Health and Human Services

Texas Department of State
Health Services

- CSTE 2024
 - Meets clinical criteria AND presumptive laboratory evidence of acute HBV infection*

*New

Hepatitis B Labs that Meet the 2024 Laboratory Criteria: 2018-2022



TEXAS
Health and Human Services

Texas Department of State
Health Services

Lab Type	MMWR Year						Grand Total
	2018	2019	2020	2021	2022	Unknown	
HBV DNA	15,994	16,511	16,768	22,562	25,494	2	97,331
HBsAg	17,214	17,522	13,061	16,809	20,080	106	84,792
IgM anti-HBc	1,492	1,135	1,466	2,478	3,357	10	9,938
HBeAg	1,729	1,608	1,156	1,413	1,245	10	7,161
Grand Total	36,429	36,776	32,451	43,262	50,176	128	199,222



TEXAS
Health and Human Services

Texas Department of State
Health Services

Hepatitis B Changes – Impact

- This change will greatly increase the volume of hepatitis B cases in Texas and, therefore, increase the workload burden on regional and local health departments
- While Tier 1 cases will only require lab evidence (no eICRs or medical records needed), creating those cases will be simple but lack detail and quality
- Tier 2 cases rely on clinical criteria, which LHDs already struggle to prioritize and maintain caseload
 - This change may result in mostly Tier 1 cases reported in NEDSS and very few Tier 2 cases, reducing the quality of HBV cases, true burden of all case classifications, and our ability to detect and intervene during outbreaks



TEXAS
Health and Human Services

Texas Department of State
Health Services

One Solution Proposed: Automation in NEDSS

- Positive Tier 1 labs are detected, and chronic hepatitis B is ruled out based on hepatitis B labs older than 6 months
- These labs would be associated to a single acute hepatitis B investigation and sent up for approval (or auto-approved)

Quantity of Automation for Tier 1 Cases based on 5-Year Average



TEXAS
Health and Human Services

Texas Department of State
Health Services

Lab Detected 1	Lab Detected 2	Total Labs	Time Frame to be Acute Case
HBsAg (16,937)	IgM anti-HBc (1,986)	18,923	<6 months apart
HBeAg (1,430)	IgM anti-HBc (1,986)	3,416	<6 months apart
HBV DNA (19,466)	IgM anti-HBc (1,986)	21,452	<6 months apart
HBsAg, HBeAg, or HBV DNA (-) = ?	HBsAg, HBeAg, or HBV DNA (+) = 37,833	75,666?	<12 months
Unknown/not well captured currently ?			

Note: currently only row 1 is part of the acute hepatitis B case definition. If the other labs are added to the case definition, we may see an increase in quantity of the other labs reported.



TEXAS
Health and Human Services

Texas Department of State
Health Services

DSHS VPD Team

- Whitney Tillman, MPH, VPD Group Manager
- Elise Huebner, MS, CPH, CIC, VPD Epidemiologist III, Team Lead
- Binoj Peter, MPH, VPD Team Epidemiologist II
- Varsha Misra, MPH, VPD Team Epidemiologist I
- Raymond Dinnan, MS, VPD Team Public Health and Prevention Specialist III

VPDTexas@dshs.texas.gov



TEXAS
Health and Human
Services

**Texas Department of State
Health Services**

Questions





TEXAS
Health and Human
Services

**Texas Department of State
Health Services**

Thank you!

VPDTexas@dshs.texas.gov
