Novel Influenza: Reporting Deep Dive

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Outline

- Novel Influenza As We Know It
- Assessing Risk of Influenza Viruses
- Overview of Reporting Steps
- Key Information to Consider
- Novel Influenza Case Ascertainment and Classification
- Current Reporting Guidance
- Possible Reporting Changes
- Table to assist with Case Classification

Novel Influenza As We Know It

- Immediately reportable condition

- "A human case of infection with an influenza A virus subtype or strain that is different from circulating human influenza H1 and H3 viruses." – Texas Influenza Surveillance Handbook" (https://www.dshs.texas.gov/influenza-flu-provider-information/influenza-flu-surveillance/texas-influenza-surveillance-handbook. Accessed 7/10/24)

- "A novel influenza A virus is one that has caused human infection, but is different from current seasonal human influenza A viruses that circulate among people. Novel influenza A viruses are usually influenza A viruses that circulate among animals." – CDC (https://www.cdc.gov/flu/pandemic-resources/monitoring/viruses-concern.html#:~:text=A%20novel%20influenza%20A%20virus,viruses%20that%20circulate%20among%20animals. Accessed 7/10/24)

Novel Influenza As We Know It

- Influenza A's
  - Avian, Swine/Variant
  - Often sporadic cases

- Several subtypes of avian influenza (AI) known to have caused human infections
  - H5, H6, H7, H9, H10
  - H5 and H7 have caused the most human infections

- Influenza from swine are often identified as variants(v)
  - H1N1v
  - H3N2v
  - H1N2v

*https://www.cdc.gov/flu/pandemic-resources/national-strategy/risk-assessment.html

Assessing Risk of Influenza Viruses

- Influenza Risk Assessment Tool (IRAT)
  - References two questions:
    - Emergence
      - Potential for sustained human-to-human transmission?
    - Public Health Impact
      - If human-to-human sustained transmission occurs; what is the impact (deaths, hospitalization, etc.)?
  - Results in classification as:
    - Low Risk (1 – 3)
    - Moderate Risk (4 – 7)
    - High Risk (8 – 10)

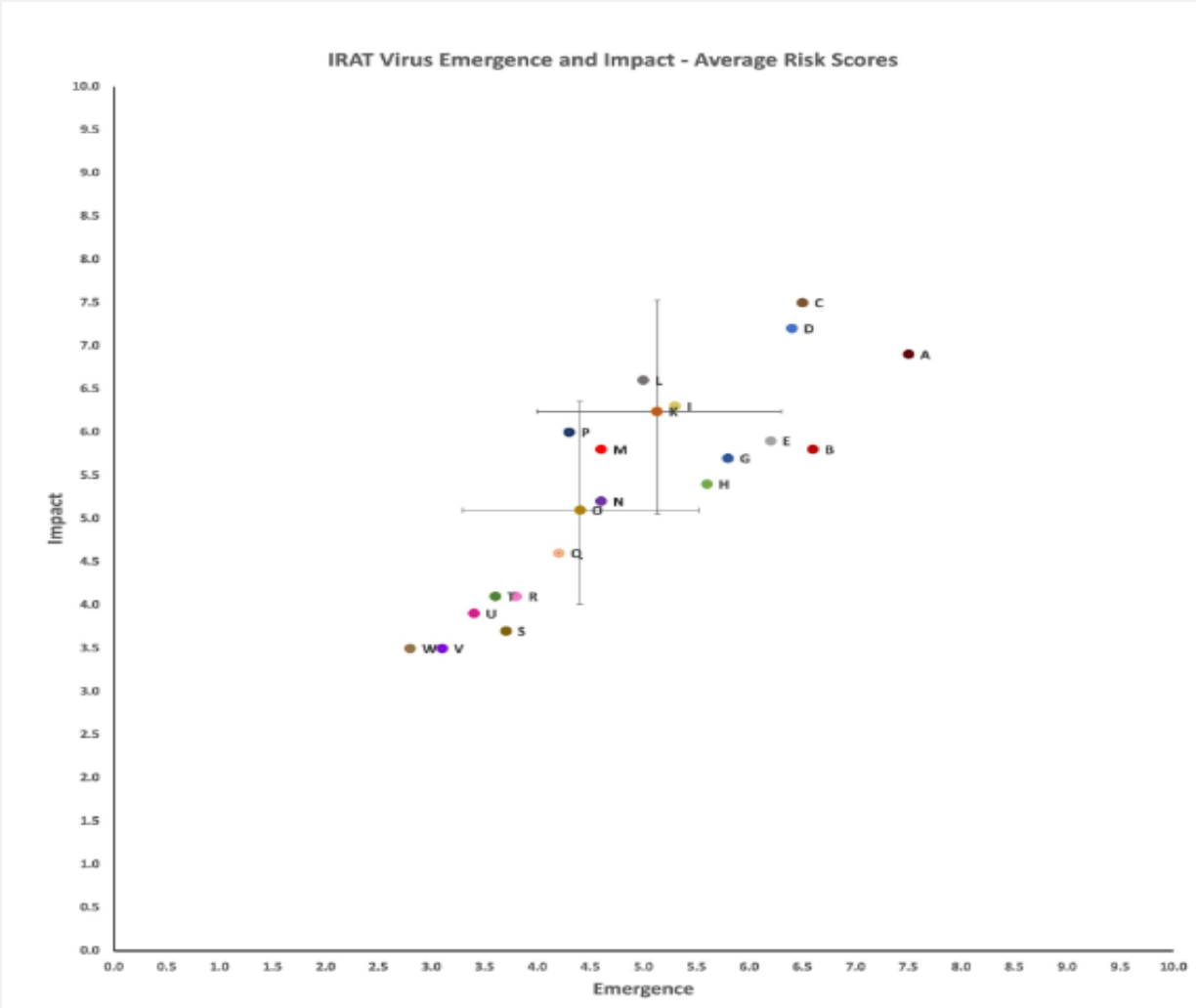
Dot	Date of Risk Assessment	Influenza Virus	Emergence Score	Impact Score
K	4/1/2023	A(H5N1) Clade 2.3.4.4b [A/mink/Spain/3691-8_22VIR10586-10/2022]	5.1	6.2
L	4/1/2016	A(H5N6) [A/Yunnan/14564/2015]-like	5	6.6
M	6/1/2012	A(H7N7) [A/Netherlands/219/2003]	4.6	5.8
N	3/1/2021	A(H5N8) clade 2.3.4.4b [A/Astrakhan/3212/2020]	4.6	5.2
O	3/1/2022	A(H5N1) clade 2.3.4.4b [A/American wigeon/South Carolina/AH0195145/2021]	4.4	5.1
P	2/1/2014	A(H10N8) [A/Jiangxi-Donghu/346/2013]	4.3	6
Q	3/1/2015	A(H5N8) [A/gyrfalcon/Washington/41088/2014]	4.2	4.6
R	3/1/2015	A(H5N2) [A/Northern pintail/Washington/40964/2014]	3.8	4.1
S	6/1/2016	A(H3N2) [A/canine/Illinois/12191/2015]	3.7	3.7
T	3/1/2015	A(H5N1) [A/American green-winged teal/Washington/1957050/2014]	3.6	4.1

https://www.cdc.gov/pandemic-flu/php/monitoring/irat-virus-summaries.html?CDC_AAref_Val=https://www.cdc.gov/flu/pandemic-resources/monitoring/irat-virus-summaries.htm, accessed 7/11/24

Assessing Risk of Influenza Viruses

Other Assessed Influenza Viruses

Dot	Influenza Virus	Date of Risk Assessment	Emergence Score	Impact Score
A	A(H1N1) [A/swine/Shandong/1207/2016]	7/1/2020	7.5	6.9
B	A(H3N2) variant [A/Ohio/13/2017]	7/1/2019	6.6	5.8
C	A(H7N9) [A/Hong Kong/125/2017]	5/1/2017	6.5	7.5
D	A(H7N9) [A/Shanghai/02/2013]	4/1/2016	6.4	7.2
E	A(H9N2) Y280 lineage [A/Anhui-Lujiang/13/2018]	7/1/2019	6.2	5.9
F	A(H3N2) variant [A/Indiana/08/2011]	12/1/2012	6	4.5
G	A(H1N2) variant [A/California/62/2018]	7/1/2019	5.8	5.7
H	A(H9N2) G1 lineage [A/Bangladesh/0994/2011]	2/1/2014	5.6	5.4
I	A(H5N6) clade 2.3.4.4b [A/Sichuan/06681/2021]	10/1/2021	5.3	6.3
J	A(H5N1) Clade 1 [A/Vietnam/1203/2004]	11/1/2011	5.2	6.6
U	A(H7N8) [A/turkey/Indiana/1573-2/2016]	7/1/2017	3.4	3.9
V	A(H7N9) [A/chicken/Tennessee/17-007431-3/2017]	10/1/2017	3.1	3.5
W	A(H7N9) [A/chicken/Tennessee/17-007147-2/2017]	10/1/2017	2.8	3.5
X	A(H1N1) [A/duck/New York/1996]	11/1/2011	2.3	2.4



https://www.cdc.gov/flu/pandemic-resources/monitoring/irat-virus-summaries.htm (accessed 7/11/2024)

Overview of Reporting Steps

Provider

- Assumes possible novel case
- Consults/reports to Local Health Department (LHD)

LHD

- Consults w/provider (exposures and epi criteria, previous testing, current status)
- Ensures proper sample collection (viral transport media for sending, nasopharyngeal)
- Notify (email/call) Region/Central Office for situational awareness if suspected case

RHD

- Coordinates sample shipping to Public Health Lab (PHL) when necessary
- Maintain situational awareness along with Central Office
- Unsubtypeable results trigger sending to CDC for confirmation and immediate investigation

Central Office

- Maintains situational awareness
- Provides guidance
- Coordinates sample shipping to PHL/CDC

Key Information to Consider

- Providers should consult with health departments when considering possible novel influenzas
  - Unexpected or unusually severe illness
  - Recent travel, especially internationally within last 10 days
  - Recent close contact with poultry, water fowl, swine, dairy cattle, raw milk
  - Current vaccination for season influenza
- Samples from these patients are considered “samples of public health interest.”
- Collected with nasopharyngeal (NP) swabs for PHL testing
  - Stored/shipped using viral transport media (VTM)
- **Prophylaxis is recommended** when novel influenza is being considered, even while testing results are pending

Key Information to Consider

- Consult with provider if possible to determine epi criteria, testing need, proper control measures

- Public health lab (PHL) testing is required to determine case status
  - Some facilities may have PCR testing capabilities and can perform initial testing to determine flu positives
  - PHL testing is still required and samples should be collected for submission to State Lab (Austin) or at one of the Texas Laboratory Response Network (LRN) labs.

- 'Unsubtypeable' strain identified by a PHL
  - Considered presumptive positive and should initiate **immediate public health investigation**
  - Utilize case investigation form
    - Key info: Symptoms, onset, occupation, exposures, contacts, testing history

- ***Review Emerging and Acute Infectious Disease Guidance***

Novel Influenza Case: Ascertainment

- Reports should be made based on following criteria:
  - Human infection with novel influenza, unsubtypable flu A virus, or a flu A virus with inconclusive subtyping reported by WHO laboratory

  OR

  - Illness compatible with flu infection occurring in a contact of confirmed or probable case of novel influenza

  OR

  - Compatible illness
  - Close contact with ill animals known to transmit novel flu subtypes
  - Travel within 14 days to any country where novel flu has been recently identified

Novel Influenza Case: Classification

- Clinical Case Definition:
  - Illness compatible with influenza virus infection such as fever >100°F with cough and/or sore throat
- Lab Confirmation:
  - Viral isolation, RT-PCR, gene sequencing, or a 4-fold rise in strain specific serum antibody titers
    - PCR will be most likely source of confirmation
- Disease specific data elements (key data collection)
  - State, county, age, sex, ethnicity, race, date of illness onset, animal exposure, date of travel, flu test type, flu test result

Current Reporting Guidance: Classification

- Confirmed: A case of human infection with a lab confirmed novel/variant influenza A virus
- Probable: A case meeting the clinical criteria and epi linked to a confirmed case, but without confirmatory testing or test results are inconclusive
- Suspect: A case meeting the clinical criteria but is pending lab confirmation. Any case of human infection with an influenza A virus that is different from currently circulating human influenza H1 and H3 viruses is classified as a suspect case until the confirmation process is complete.
  - Typically, sporadic novel/variant influenza cases will have a history of either
    - Close contact with ill animals known to transmit novel/variant subtypes of influenza A (such as wild birds or poultry, swine or other mammals)

    OR
    - Travel within 14 days of onset, to any country where a novel/variant influenza A virus (such as highly pathogenic avian influenza A H5N1) has been recently identified in animals or people.

Possible Reporting Changes

- Confirmed AND **probable cases** will be reported, previously only confirmed
- Addition of hospital and vital statistic records for reporting
- Broadened clinical criteria symptoms for case ascertainment and classification
    - One or more of the following: cough, sore throat, fever, chest or nasal congestion, or conjunctivitis

    OR

    - Two or more of the following: headache, myalgia, arthralgia, fatigue, rhinorrhea, diarrhea, vomiting

Possible Reporting Changes

- Detailed Lab Criteria for Case Classification
  - Confirmatory
    - Broken in categories of lab evidence
      - Confirmed lab evidence: 3 Categories (1-3)
      - Presumptive lab evidence: 2 Categories (1-2)

- Classification based on categories identified
  - Example: Probable case
    - Meets confirmatory lab evidence category 1

    OR
    - Meets clinical criteria AND presumptive lab evidence categories 1

    OR
    - Meets clinical criteria AND epi linkage AND presumptive lab evidence category 2

Table to Assist with Case Classification

- Table from current position statement for case classification
- Possible additional tables for case reporting and classification supplied with new position statement
  - Appendix with flu testing kit results and interpretation

Criterion	Case Definition		
	Confirmed	Probable	Suspected
Clinical Evidence			
Fever		N	N
Cough		O	O
Sore throat		O	O
Laboratory Evidence			
Novel influenza A virus infection confirmed by CDC's influenza laboratory, or once a novel virus has been identified by CDC, confirmation may be made by public health laboratories following CDC-approved protocols for that specific virus, or by laboratories using an FDA-authorized test specific for detection of that novel influenza virus	S		
Test results are inconclusive for novel influenza A virus infection		N	
Infection with influenza A virus different from currently circulating human influenza H1 and H3 viruses until the confirmation process is complete.			N
Laboratory test to confirm novel influenza A virus infection pending			N
Epidemiologic Evidence			
Contact to a confirmed case of novel ant influenza A virus infection		N	

Notes:
S = This criterion alone is Sufficient to classify a case.
N = All —N criteria in the same column are Necessary to classify a case.
O = At least one of these —O (Optional) criteria in each category (i.e., clinical evidence and laboratory evidence) in the same column—in conjunction with all —N criteria in the same column—is required to classify a case.

https://www.cste.org/general/custom.asp?page=PositionStatements, CSTE position statement 13-ID-14, accessed 7/15/24

Thank you!

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