Influenza Laboratory Surveillance

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Outline

- Submitter recruiting and specimen considerations
- Specimen collection and shipping
- Influenza testing

Influenza Laboratory Surveillance Goals

- Determine when and where influenza viruses are circulating
  - Situational awareness
- Detect changes in the influenza viruses
  - Seasonal drift, novel viruses, antiviral resistance)
- Determine if circulating influenza viruses match the vaccine strains
  - Informs vaccine virus selection

Submitter Recruiting and Specimen Considerations

Recruiting Specimen Submitters

- Frequently recruited:
  - Outpatient clinics, hospitals, EDs, university clinics, etc.
  - Cooperative and public-health–minded providers
- Providers must see patients with acute illness (including ILI/flu)
- Ideally, your providers should also report ILI data to the HD or ILINet (or similar)

Considerations for Choosing Patient Specimens

- Target patients with:
  - Symptoms of ILI/flu and no other illness explanation
    - Typical symptoms of flu: fever (typically > 100 ºF), malaise, muscle aches, cough, runny nose, sore throat, chills, and/or headache
  - Recent illness onset (≤ 7 days)
- Try for overall representativeness
- However, providers should submit influenza “specimens of interest”:
  - Unsubtypeable influenza A, travel-related, severe or unusual illness, not responding to antiviral treatment, outbreak/cluster, recent avian/swine contact, vaccinated

APHL's Right Size Flu Laboratory Guidance

- Influenza Virologic Surveillance Right Size Roadmap
  - released July 2013
  - https://www.aphl.org/programs/infectious_disease/influenza/Influenza-Virologic-Surveillance-Right-Size-Roadmap/Pages/default.aspx
- Answers the questions:
  - "How much virologic surveillance is needed?"
  - "What is the most efficient way to achieve needed surveillance objectives?"

Right Size Goals for Texas:

SITUATIONAL AWARENESS (state level, 95% confidence level, 5% error)	
Goal number of ILI specimens tested in the state each week	**When does this sample size apply?**
138	Start of the flu season
322	Peak of flu season

- Contributors: All providers, commercial labs, hospital labs, and public health labs in Texas that test for flu and report numerator and denominator for tests
- Only during official flu season (Oct--May)

Right Size Goals for Texas:

NOVEL EVENT DETECTION **(national level, prevalence level varies with timing, 95% confidence)**	
Goal number of flu POSITIVES tested by TX PHLs each week	**When does this sample size apply?**
1	Summer/off-season
50	“Shoulders” of flu season
172	Peak season

- Contributors: Public health laboratories in Texas (DSHS Austin and the Laboratory Response Network [LRN] laboratories)
- Novel event detection needed year-round

Right Size Roadmap Essential Elements – Sampling

- #4: “Utilize sampling approaches that ensure that specimens submitted throughout the entire surveillance specimen submission and testing process are representative of:
  - Virus types and subtypes
  - The entire year (submissions should be timely!!!)
  - Geographic diversity of the population
  - Age of ILI patients
  - Disease severity
  - Targeted populations when necessary for specific investigations”

Right Size Situational Awareness (Numeric) Goals for Texas DSHS Regions

Note: Population-based goals by DSHS Region; all submissions to a Texas laboratory (that reports flu test results and flu test denominator to public health) count toward goals

Situational Awareness	**Weekly number of ILI specimens to be tested cumulatively by any Texas laboratory**	
Health Service Region	Start of season/ shoulder weeks (~20 weeks)	Peak season (~13 weeks)
HSR 1	4	10
HSR 2/3	40	93
HSR 4/5N	8	18
HSR 6/5S	36	84
HSR 7	17	39
HSR 8	14	33
HSR 9/10	8	18
HSR 11	12	27
Texas	138*	322*

*Provides situational awareness for influenza at the state level with a 95% confidence level and 5% margin of error

Right Size Novel Event Detection (Numeric) Goals for Texas LRN Service Areas

Novel Event Detection	Weekly number of flu positives to be tested cumulatively by PHLs in Texas		
Laboratory Response Network (LRN) Lab	Off-season (~19 weeks)	Shoulder season (~20 weeks)	Peak season (13 weeks)
Lubbock	1	3	9
Tarrant	1	7	24
Dallas	1	8	27
Tyler	1	2	9
Houston	1	13	45
Austin	1	6	21
San Antonio	1	6	19
Corpus Christi	1	1	4
Harlingen	1	3	9
El Paso	1	2	6
Texas	1*	50*	172*

Note: Population-based goals by LRN service area; all submission to a Texas public health laboratory count toward goals

*Detect novel viruses at the national level among influenza positive specimens at the specified threshold and 95% confidence (Peak: 1/700, Shoulder: 1/200, off-season: 1/4)

Right Size – Prescreened vs. Not Prescreened

- Non-prescreened specimens
  - Patients with flu/ILI symptoms are tested (any test) by any lab or provider to see if they have flu
    - Provides “situational awareness” of flu season timing and circulating types, subtypes
    - Any positives detected at PHLs feed into novel event detection
- Prescreened specimens
  - Specimens that are positive for influenza by any test method and are submitted to public health labs to be retested for flu using the CDC flu PCR assay
    - Provides “novel event detection” (novel viruses, antiviral resistance, etc.)
    - Only public health labs run the CDC test
- We need both for flu surveillance

What else should I consider?

- Logistics
  - How many providers in your area will submit specimens?
  - How many specimens will each provider be allowed to submit?
  - How many specimens can the lab test each week?
  - Try for specimen submission year-round
- Communicate with your testing laboratory!
  - Contact Vanessa Telles (512-776-3475) to get LRN contact information
  - Some LRNs have established submitters
  - LRNs do other testing besides flu

Specimen Collection and Shipping

Supplies Needed

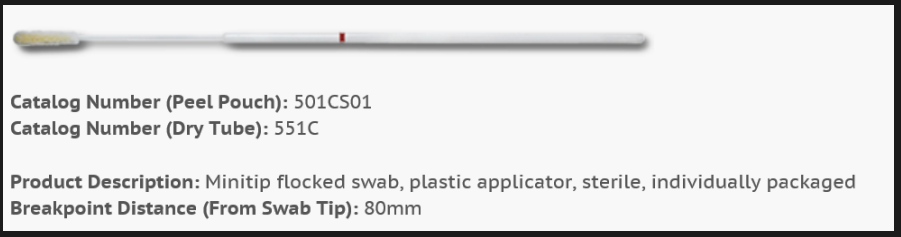
- Specimen collection
  - Viral transport media tube
  - Swab
  - Refrigerator or freezer to store collected samples
- DSHS Influenza Laboratory Surveillance Protocol (instructions)
- Specimen submission form
- Packaging supplies
  - Secondary container
  - Absorbent material to put in secondary containers
  - Shipping boxes
  - Shipping labels
  - Coolant (dry ice or cold packs)

Collection media

- DSHS sends out two kinds for flu surveillance:
  - DSHS-made
    - Media Preparation Section prepares once per year
    - Glass tube; media is clear or slightly yellow when thawed
    - Technically, DSHS media is Flu Transport Media (FTM) not VTM
  - Purchased (aka “commercial VTM”, “Remel”)
    - Currently we purchase Remel M4RT
    - Plastic tube; media is light pink with beads
- Be aware of expiration dates for both commercial and DSHS media.
  - 2016-2017 DSHS media expires 09-30-2017
  - New Remel sent out in September will have expiration date of 11-06-2017
  - If you have media on hand, check dates and throw out any expired or expiring soon

Swabs

- Use synthetic/plastic swabs
- DSHS orders nasopharyngeal swabs
- Standard: One per VTM tube ordered



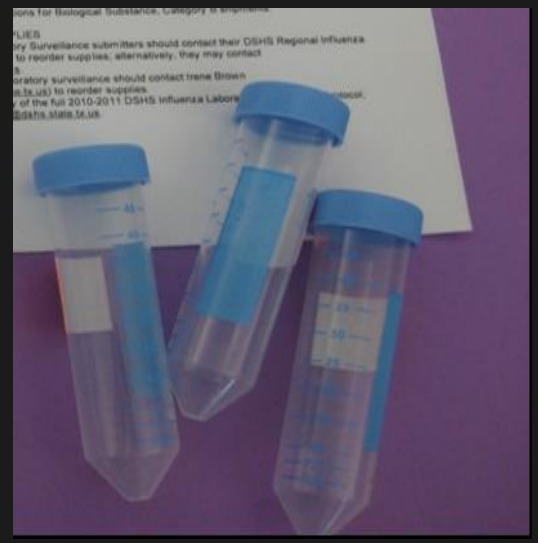
Catalog Number (Peel Pouch): 501CS01
Catalog Number (Dry Tube): 551C

Product Description: Minitip flocked swab, plastic applicator, sterile, individually packaged
Breakpoint Distance (From Swab Tip): 80mm

Expiration date

Secondary Containers

- One secondary container per VTM ordered
- DSHS uses plastic cylinders or conical vials labeled with orange biohazard sticker
- Put the patient specimen tube in the secondary container
- Add absorbent material (e.g., paper towels or commercially available products)
  - Meant to contain specimen leaks completely
  - DSHS does not provide absorbent material
- Close caps tightly

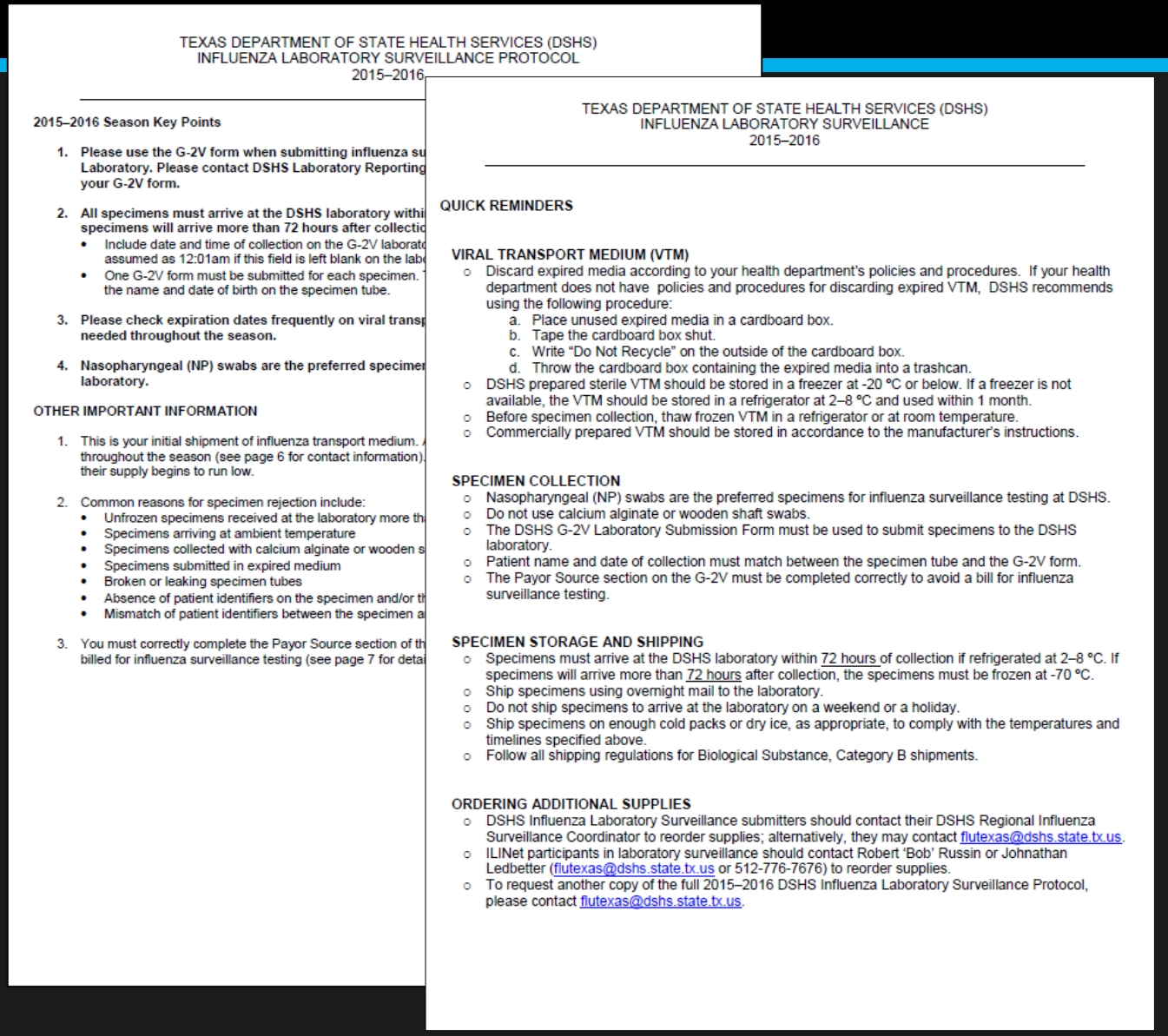


Shipping Boxes, Coolant, Waybills

- DSHS supplies appropriately labeled shipping boxes
  - 2 cold packs included for each box ordered
  - 1 FedEx waybill per box ordered (shipping to DSHS lab)
    - Providers should order 2-3 weeks' worth of boxes pre-season
- DSHS Austin sends empty flu boxes and ice packs back to submitters
- DSHS does not provide dry ice

Laboratory Surveillance Protocol

- Full protocol (9 pages)
- Reminders page (1 page)
- Both sent with all orders



TEXAS DEPARTMENT OF STATE HEALTH SERVICES (DSHS)
INFLUENZA LABORATORY SURVEILLANCE PROTOCOL
2015–2016

2015–2016 Season Key Points

1. **Please use the G-2V form when submitting influenza su**
   Laboratory. Please contact DSHS Laboratory Reporting
   your G-2V form.
2. **All specimens must arrive at the DSHS laboratory withi**
   specimens will arrive more than 72 hours after collectio
   - Include date and time of collection on the G-2V laborato
     assumed as 12:01am if this field is left blank on the labo
   - One G-2V form must be submitted for each specimen.
     the name and date of birth on the specimen tube.
3. **Please check expiration dates frequently on viral transp**
   needed throughout the season.
4. **Nasopharyngeal (NP) swabs are the preferred specimen**
   laboratory.

OTHER IMPORTANT INFORMATION

1. This is your initial shipment of influenza transport medium.
   throughout the season (see page 6 for contact information).
   their supply begins to run low.
2. Common reasons for specimen rejection include:
   - Unfrozen specimens received at the laboratory more th
   - Specimens arriving at ambient temperature
   - Specimens collected with calcium alginate or wooden s
   - Specimens submitted in expired medium
   - Broken or leaking specimen tubes
   - Absence of patient identifiers on the specimen and/or th
   - Mismatch of patient identifiers between the specimen a
3. You must correctly complete the Payor Source section of th
   billed for influenza surveillance testing (see page 7 for detai

TEXAS DEPARTMENT OF STATE HEALTH SERVICES (DSHS)
INFLUENZA LABORATORY SURVEILLANCE
2015–2016

QUICK REMINDERS

VIRAL TRANSPORT MEDIUM (VTM)

- Discard expired media according to your health department's policies and procedures. If your health department does not have policies and procedures for discarding expired VTM, DSHS recommends using the following procedure:
  a. Place unused expired media in a cardboard box.
  b. Tape the cardboard box shut.
  c. Write "Do Not Recycle" on the outside of the cardboard box.
  d. Throw the cardboard box containing the expired media into a trashcan.
- DSHS prepared sterile VTM should be stored in a freezer at -20 °C or below. If a freezer is not available, the VTM should be stored in a refrigerator at 2–8 °C and used within 1 month.
- Before specimen collection, thaw frozen VTM in a refrigerator or at room temperature.
- Commercially prepared VTM should be stored in accordance to the manufacturer's instructions.

SPECIMEN COLLECTION

- Nasopharyngeal (NP) swabs are the preferred specimens for influenza surveillance testing at DSHS.
- Do not use calcium alginate or wooden shaft swabs.
- The DSHS G-2V Laboratory Submission Form must be used to submit specimens to the DSHS laboratory.
- Patient name and date of collection must match between the specimen tube and the G-2V form.
- The Payor Source section on the G-2V must be completed correctly to avoid a bill for influenza surveillance testing.

SPECIMEN STORAGE AND SHIPPING

- Specimens must arrive at the DSHS laboratory within 72 hours of collection if refrigerated at 2–8 °C. If specimens will arrive more than 72 hours after collection, the specimens must be frozen at -70 °C.
- Ship specimens using overnight mail to the laboratory.
- Do not ship specimens to arrive at the laboratory on a weekend or a holiday.
- Ship specimens on enough cold packs or dry ice, as appropriate, to comply with the temperatures and timelines specified above.
- Follow all shipping regulations for Biological Substance, Category B shipments.

ORDERING ADDITIONAL SUPPLIES

- DSHS Influenza Laboratory Surveillance submitters should contact their DSHS Regional Influenza Surveillance Coordinator to reorder supplies; alternatively, they may contact flutexas@dshs.state.tx.us.
- ILINet participants in laboratory surveillance should contact Robert 'Bob' Russin or Johnathan Ledbetter (flutexas@dshs.state.tx.us or 512-776-7676) to reorder supplies.
- To request another copy of the full 2015–2016 DSHS Influenza Laboratory Surveillance Protocol, please contact flutexas@dshs.state.tx.us.

Ordering Supplies – Automatic “Kits”

- When you order VTM you also get:
  - 1 NP swab per VTM tube ordered
  - 1 secondary shipping container sized to the media you order, for each VTM tube ordered
  - 1 full laboratory surveillance protocol and 1 one-page reminders sheet
- When you order shipping boxes you get:
  - (Shipping labels on the box)
  - 2 cold/freezer packs per box ordered
  - 1 Fed-Ex waybill (for specimens submitted to DSHS Austin) per box
- Items can be ordered separately instead of in “kits”– specify this in your order

Ordering Supplies

- Types of orders
  - Initial “pre-season” orders (mailed in September)
  - Replenishment orders – sites can order throughout the season as needed
- Send order requests to flutexas@dshs.state.tx.us
- Bob Russin (DSHS Austin Epidemiology) works with Container Preparation to fill orders: 512-776-6242

Receiving Your Supplies

- Initial supplies come in a box with an “X” on the outside
  - You don’t need to send anything back to DSHS Austin
- Supplies may arrive in multiple boxes
- Unpack supplies promptly and put DSHS VTM in the refrigerator or freezer
- Check expiration dates on any media you still have in your office and discard any that will expire soon

Storing Collection Media

- Sterile DSHS Flu Transport Media
  - Antibiotics in the medium break down more quickly in the refrigerator (vs. freezer)
    - Store frozen at -20 °C if possible
    - Keep refrigerated at 2-8°C for up to 1 month
- Sterile commercial media: Follow manufacturer's instructions

Remel M4RT (8/10/16)

STORAGE
This product is ready for use and no further preparation is necessary. Store product in its original container at 2-30°C until used. Do not overheat. Do not incubate prior to use. Improper storage will result in a loss of antimicrobial activity.

PRODUCT DETERIORATION
This product should not be used if (1) there is evidence of contamination, (2) there is evidence of leakage, (3) the color has changed from light pink, (4) the expiration date has passed, or (5) there are other signs of deterioration.

Specimen Collection Tips

- Allow VTM to thaw before collection
  - Don’t heat in the microwave
- Leave swab in the media; do not need to remove it
- Check media expiration dates before collection
- Complete a specimen submission form for each specimen

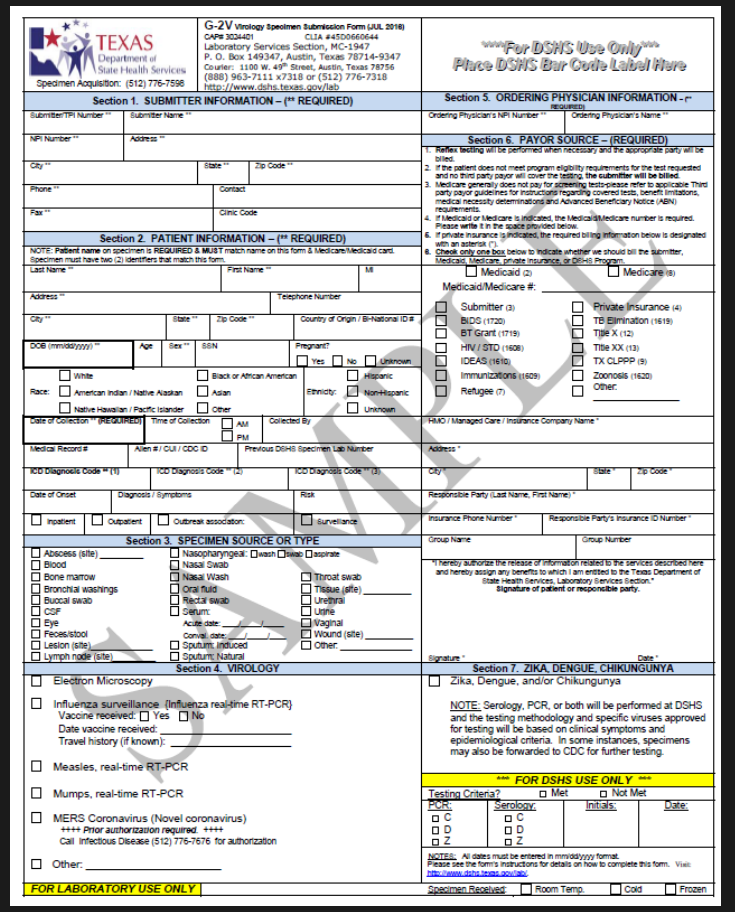
Lab Submission Form

- Check with LRNs for their forms
- For submission to DSHS Austin Lab:
  - Lab Reporting (LR) distributes submission forms: 512-776-7578
    - *New submitters*: Call LR for initial account set up and form copies
    - *Returning submitters*: Call LR to update contact information
  - Submission form Information: http://www.dshs.texas.gov/lab/MRS_forms.shtm
  - Note: Updated G-2V submission form - July 2016 (Zika test update)
    - Will be sent out to all of the current/returning submitters

Completing the DSHS Austin G-2V Submission Form

- Section 1: Submitter information
- Section 2: Patient Information
  - Date and time of collection
  - Name and DOB (or other secondary identifier)
- Section 3: Specimen Source:
  - Note: If nasopharyngeal swab, Please check both “Nasopharyngeal” and “swab”.
- Section 4: Virology
  - Influenza Surveillance
  - Travel history and/or animal contact
  - Vaccine information
- Section 5: Ordering physician
- Section 6: Payor source

- Fill out everything & ensure info on form matches tube



TEXAS Department of State Health Services

Specimen Acquisition: (512) 776-7598

G-2V Virology Specimen Submission Form (JUL 2018)
CAP# 3024401 CLIA #45D0660644
Laboratory Services Section, MC-1947
P. O. Box 1489347, Austin, Texas 78714-9347
Courier: 1100 W. 49th Street, Austin, Texas 78756
(888) 963-7111 x7318 or (512) 776-7318
http://www.dshs.texas.gov/lab

"For DSHS Use Only"
Place DSHS Bar Code Label Here

Section 1. SUBMITTER INFORMATION – (** REQUIRED)
Submitter/TPI Number ** | Submitter Name **
NPI Number ** | Address **
City ** | State ** | Zip Code **
Phone ** | Contact
Fax ** | Clinic Code

Section 2. PATIENT INFORMATION – (** REQUIRED)
NOTE: Patient name on specimen is REQUIRED & MUST match name on this form & Medicare/Medicaid card. Specimen must have two (2) identifiers that match this form.
Last Name ** | First Name ** | MI
Address ** | Telephone Number
City ** | State ** | Zip Code ** | Country of Origin / Bi-National ID #
DOB (mm/dd/yyyy) ** | Age | Sex ** | SSN | Pregnant? Yes No Unknown
Race: White; Black or African American; American Indian / Native Alaskan; Asian; Native Hawaiian / Pacific Islander; Other
Ethnicity: Hispanic; Non-Hispanic; Unknown
Date of Collection ** (REQUIRED) | Time of Collection AM PM | Collected By
Medical Record # | Alien # / CUI / CDC ID | Previous DSHS Specimen Lab Number
ICD Diagnosis Code ** (1) | ICD Diagnosis Code ** (2) | ICD Diagnosis Code ** (3)
Date of Onset | Diagnosis / Symptoms | Risk
Inpatient; Outpatient; Outbreak association: ; Surveillance

Section 3. SPECIMEN SOURCE OR TYPE
Abscess (site) ____; Blood; Bone marrow; Bronchial washings; Buccal swab; CSF; Eye; Feces/stool; Lesion (site) ____; Lymph node (site) ____
Nasopharyngeal: wash swab aspirate; Nasal Swab; Nasal Wash; Oral fluid; Rectal swab; Serum: Acute date: __/__/__ Convlsc. date: __/__/__; Sputum: Induced; Sputum: Natural
Throat swab; Tissue (site) ____; Urethral; Urine; Vaginal; Wound (site) ____; Other: ____

Section 4. VIROLOGY
Electron Microscopy
Influenza surveillance (Influenza real-time RT-PCR)
Vaccine received: Yes No
Date vaccine received: ____
Travel history (if known): ____
Measles, real-time RT-PCR
Mumps, real-time RT-PCR
MERS Coronavirus (Novel coronavirus)
++++ Prior authorization required. ++++
Call Infectious Disease (512) 776-7676 for authorization
Other: ____

FOR LABORATORY USE ONLY

Section 5. ORDERING PHYSICIAN INFORMATION – (** REQUIRED)
Ordering Physician's NPI Number ** | Ordering Physician's Name **

Section 6. PAYOR SOURCE – (REQUIRED)
1. Reflex testing will be performed when necessary and the appropriate party will be billed.
2. If the patient does not meet program eligibility requirements for the test requested and no third party payor will cover the testing, the submitter will be billed.
3. Medicare generally does not pay for screening tests-please refer to applicable Third party payor guidelines for instructions regarding covered tests, benefit limitations, medical necessity determinations and Advanced Beneficiary Notice (ABN) requirements.
4. If Medicaid or Medicare is indicated, the Medicaid/Medicare number is required. Please write it in the space provided below.
5. If private insurance is indicated, the required billing information below is designated with an asterisk (*).
6. Check only one box below to indicate whether we should bill the submitter, Medicaid, Medicare, private insurance, or DSHS Program.

Medicaid (2) Medicare (8)
Medicaid/Medicare #: ____
Submitter (3); Private Insurance (4)
BIDS (1720); TB Elimination (1619)
BT Grant (1719); Title X (12)
HIV / STD (1608); Title XX (13)
IDEAS (1610); TX CLPPP (9)
Immunizations (1609); Zoonosis (1620)
Refugee (7); Other: ____

HMO / Managed Care / Insurance Company Name *
Address *
City * | State * | Zip Code *
Responsible Party (Last Name, First Name) *
Insurance Phone Number * | Responsible Party's Insurance ID Number *
Group Name | Group Number

"I hereby authorize the release of information related to the services described here and hereby assign any benefits to which I am entitled to the Texas Department of State Health Services, Laboratory Services Section."
Signature of patient or responsible party.
Signature * | Date *

Section 7. ZIKA, DENGUE, CHIKUNGUNYA
Zika, Dengue, and/or Chikungunya
NOTE: Serology, PCR, or both will be performed at DSHS and the testing methodology and specific viruses approved for testing will be based on clinical symptoms and epidemiological criteria. In some instances, specimens may also be forwarded to CDC for further testing.

*** FOR DSHS USE ONLY ***
Testing Criteria? Met Not Met

PCR:	Serology:	Initials:	Date:
C	C		
D	D		
Z	Z		

NOTES: All dates must be entered in mm/dd/yyyy format.
Please see the form's instructions for details on how to complete this form. Visit: http://www.dshs.texas.gov/lab/

Specimen Received: Room Temp. Cold Frozen

SAMPLE

NEW!! DSHS Specimen Labeling Requirements: Patient identifiers

- All specimens must be labeled with at least two patient specific identifiers
  - Primary identifier: Must be the patient's name (first and last)
  - Secondary identifier should be one of these:
    - Date of birth (preferred)
    - Medical record number
    - Social security number
    - Medicaid number
    - CDC number
- Both identifiers must appear on the submission form and specimen tube
- Starting 9/1/2016, specimens not meeting this requirements will be

Acceptable Specimens for Flu Surveillance

NP collection videos:
http://www.copanusa.com/index.php/education/videos/

http://www.cdc.gov/pertussis/clinical/diagnostic-testing/specimen-collection.html

- Upper Respiratory
  - Nasopharyngeal swab - preferred
  - Nasal Swab
  - Throat swab
  - Nasal aspirate
  - Nasal wash
  - Dual NP/throat swabs
- Lower Respiratory
  - Bronchoalveolar lavage (BAL)
  - Bronchial wash
  - Tracheal aspirate
  - *Sputum*
  - *Lung Tissue*

After Collection

- Storing collected specimens
  - Store cold at 2-8°C, or
  - Frozen at -70 °C

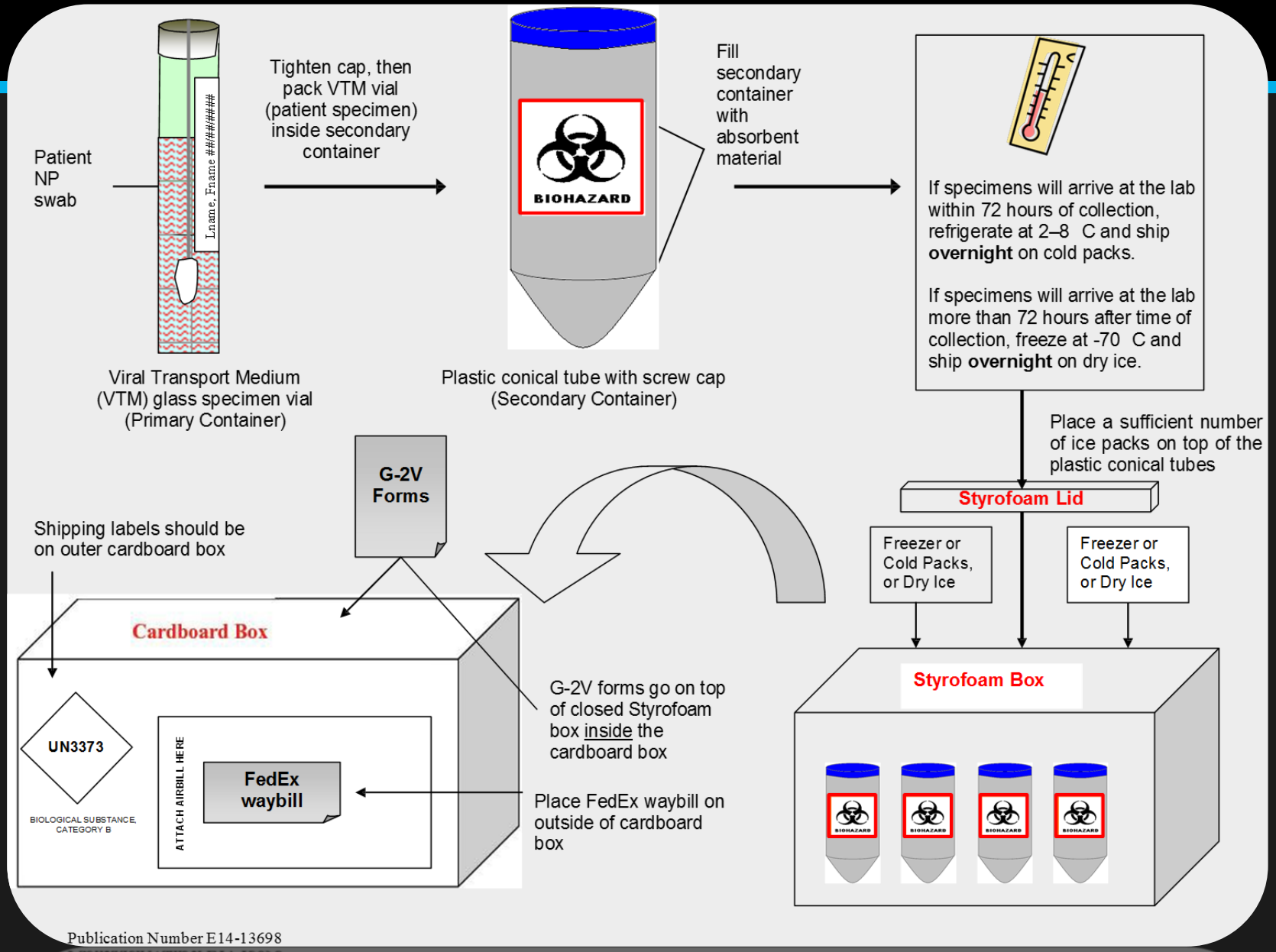
- If the specimen will be received at testing laboratory ***within*** 72 hours of collection, option to ship cold on ice packs OR ship frozen on dry ice.
- If the specimen will be received at testing laboratory ***after*** 72 hours from collection, ship frozen on dry ice.

Double-check before packaging/shipping

- Are there two patient identifiers (including patient name) on the form and the specimen tube?
  - Do the identifiers match between the tube and the form?
- Are specimen collection date and time on the form?
- When will the specimen arrive at the lab?
  - Should I ship frozen on dry ice?
- Have I listed the correct address on the package (no PO boxes)? Is “Laboratory Services” included in the address?

Packaging

- Close caps tightly
- If specimen is frozen, do not allow to thaw
- Pack enough coolant to arrive at the lab at the same temperature you sent it



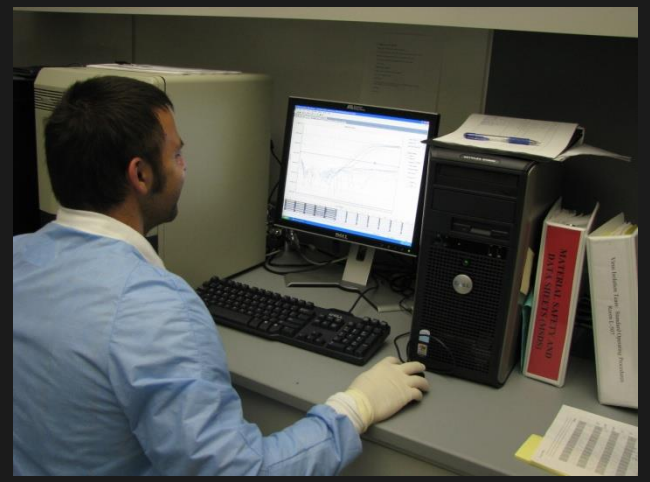
Shipping Reminders

- Ship specimens soon after collection (72 hour window)
- Ship overnight mail
- Any expected delays → store frozen and ship on dry ice
- Do not ship on Fridays or for weekend/holiday delivery!!

Testing

CDC FDA Approved Real Time RT-PCR Assay

- Performed by Texas LRNs and DSHS Austin
- Tests for
  - Influenza A/B
    - Flu A Subtype: Pdm A/H1, Seasonal H3, Seasonal H1
    - Flu B lineage: Victoria, Yamagata
  - Novel/Variants: H5/H7/H3v, Flu A unsubtypeable
    - Preliminary: Send to CDC for confirmation
    - Testing must be approved by epidemiologist or similar
  - Can detect all influenza A
  - 4-6 hours required for testing, report TAT is 48 hours
  - DSHS reports individual patient results reported to submitter



Cell Culture

- Discontinuing at DSHS Austin on 9/1/16 (submitters will no longer be able to request this test)
- DSHS Austin will still do this testing on subset of positive influenza specimens
  - Send to CDC for further studies
    - Antigenic characterization: Strain id
    - Antiviral resistance testing
    - Vaccines
  - Results not reported to submitters

Respiratory Virus Panel (RVP)

- Several RVPs available
- DSHS Austin uses GenMark which detects:
  - Influenza A/H1, A/H3, influenza B
  - Respiratory syncytial virus (RSV) A & B
  - Human metapneumovirus (hMPV)
  - Rhinovirus
  - Adenovirus B/E, Adenovirus C
  - Parainfluenza viruses 1, 2, & 3

- GenMark info:
  - NP swabs only
  - LHDs encouraged to send outbreak specimens for RVP testing
  - Submitters cannot order this test, must request epi approval (512-776-7676)
  - Results are reported to EAIDB
  - TAT varies

Pyrosequencing and Antigenic Characterization

- Pyrosequencing (aka antiviral resistance testing)
  - Looks for influenza viruses that have a marker for antiviral resistance
  - Performed at DSHS Austin, looks for oseltamivir resistance
    - Only done on specific A/H1 viruses (Ct value <30)
    - Results are reported to EAIDB
      - EAIDB alerts HSR/LHD if there is a positive
  - CDC/contract labs do all other pyrosequencing
    - We only hear (quickly) about positives
- Antigenic characterization
  - How we compare circulating strains to vaccine strains
  - Testing done at CDC/contract labs

Current Antigenic Characterization Report

Influenza A(H1N1)pdm09 viruses have circulated in humans since 2009. An A/California/07/2009-like virus has been recommended by WHO as the H1N1 component for both the Northern and Southern Hemisphere vaccine formulations since 2009 and was recommended for the 2015-2016 Northern Hemisphere and 2015 and 2016 Southern Hemisphere vaccine formulations.

Your isolates were antigenically characterized by hemagglutination-inhibition test (HI) using a panel of post-infection ferret antisera.

The results we obtained with your specimen(s) are listed and interpreted below.

CDC ID#	Specimen ID#	Date Coll.	Results
3025625669	1603020012 ORIGINAL	3/1/2016	A/CALIFORNIA/07/2009-LIKE (H1N1)pdm09
3025625674	1603100010 ORIGINAL	3/7/2016	A/CALIFORNIA/07/2009-LIKE (H1N1)pdm09

In our HI test, these viruses were related antigenically to the A/California/07/2009 (H1N1)pdm09 virus.

If you have any questions, please contact us.

Antigenic Characterization Testing - Changes

- CDC attempts antigenic characterization for all submitted flu specimens
  - These reports are send back to state labs (TAT: 1-3 months)
- A growing subset of viruses are also genetically characterized
- CDC changing to “sequence first” algorithm – goal to genetically characterize all viruses first and antigenically characterize only a subset (25%)
  - Process expected to be complete in 2-3 years
- This section of the flu report will be changing – Stay tuned!

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