**eSHARE:**

**Overview of ELR vocabulary associated with**

**Zika, dengue, and chikungunya viruses**

**Questions and Answers**

**3/3/16**

**1. Q: What code should be used when using specimens other than serum and cerebrospinal fluid (CSF), which are the only two specimen types listed in the package insert for rRT-PCR?**

**A:** The first two LOINC codes developed for Zika virus rRT-PCR addressed the specimen types listed in the package insert, but the need for codes to accurately represent testing with other specimen types has now been addressed. There are now three LOINC codes for Zika virus PCR:

|  |  |  |
| --- | --- | --- |
| Code | Concept Name | Preferred Name |
| **Zika virus rRT-PCR** |
| 79190-5 | ZIKV RNA XXX Ql PCR | Zika virus RNA [Presence] in Unspecified specimen by Probe and target amplification method |
| 80825-3 | ZIKV RNA SerPl Ql PCR | Zika virus RNA [Presence] in Serum or Plasma by Probe and target amplification method |
| 80826-1 | ZIKV RNA CSF Ql PCR | Zika virus RNA [Presence] in Cerebral spinal fluid by Probe and target amplification method |

79190-5 has XXX for specimen type, which allows for any specimen. The description for this LOINC term states, “Possible test specimens include: cord blood, blood from the heart postmortem, venous blood, CSF (both fluid and swabs), serum or plasma, (with serial testing of serum for acute and convalescent samples), and mosquitoes."

CDC has requested new LOINC codes for CDC's Trioplex rRT-PCR Assay, which some state public health laboratories will perform. LOINC will probably create a panel for this Trioplex rRT-PCR Assay, with codes for Zika virus RNA, dengue RNA, and chikungunya RNA. Currently, this assay can be used for Zika virus testing with serum, CSF, urine, and amniotic fluid specimens.

**2. Q: Is the Laboratory Response Network (LRN) requiring that public health laboratories report results obtained by using the upcoming Trioplex rRT-PCR Assay or the Zika MAC-ELISA to LRN via LRN Results Messenger or our laboratory information management system (LIMS)?**

**A:** Yes, the LRN will require public health laboratories to report results for the Trioplex rRT-PCR Assay and the Zika MAC-ELISA through either the LRN Results Messenger application or Laboratory Information Management Systems Integration (LIMSi). LRN Results Messenger and Viewer were updated to accept the Trioplex rRT-PCR Assay and the Zika MAC-ELISA results on March 15, 2016. For additional information, please contact the LRN program.

**3. Q: Are the requested LOINC codes for any of the three viruses included in the rRT-PCR Assay intended to be Nominal or Ordinal?**

**A:** Regenstrief will probably create a panel with the following Ordinal LOINC codes:

|  |  |  |
| --- | --- | --- |
| Code | Concept Name | Preferred Name |
| **Possible LOINC Trioplex PCR panel** |
| 80825-3 | ZIKV RNA SerPl Ql PCR | Zika virus RNA [Presence] in Serum or Plasma by Probe and target amplification method |
| 80826-1 | ZIKV RNA CSF Ql PCR | Zika virus RNA [Presence] in Cerebral spinal fluid by Probe and target amplification method |
| TBD | ZIKV RNA Urine Ql PCR | Zika virus RNA [Presence] in Urine by Probe and target amplification method |
| TBD | ZIKV RNA Amn Ql PCR | Zika virus RNA [Presence] in Amniotic fluid by Probe and target amplification method |
| 60260-7 | CHIKV RNA SerPl Ql PCR | Chikungunya virus RNA [Presence] in Serum or Plasma by Probe and target amplification method |
| TBD | CHIKV RNA CSF Ql PCR | Chikungunya virus RNA [Presence] in CSF by Probe and target amplification method |
| TBD | DENV 1+2+3+4 RNA CSF Ql PCR | Dengue virus 1+2+3+4 RNA [Presence] in CSF by Probe and target amplification method |
| TBD | DENV1+2+3+4 RNA Ser/Plas Ql PCR | Dengue virus 1+2+3+4 RNA [Presence] in Ser/Plas by Probe and target amplification method |

CDC is still developing the final version of the Trioplex laboratory procedure and how to result the test, which will determine how Regenstrief creates the new LOINC codes for this test. CDC will send out the LOINC codes for the Trioplex PCR as soon as we have them.

**4. Q: On Slide 7 with the three PCR tests listed, what was meant by “NS1” associated with the dengue PCR test? Does this panel only test for one of the four dengue serogroups?**

**A:** NS1 stands for non-structural protein 1, which refers to a test for dengue virus NS1 antigen. Like PCRs for dengue, NS1 is for use during the first week after symptom onset. There are no U.S. Food and Drug Administration-approved commercial kits for dengue virus NS1 antigen, but some laboratories have developed and validated their own assays for it. Most NS1 antigen assays do not distinguish between the four dengue virus serotypes, although some serotype-specific NS1 assays have been developed in the past several years.

RT-PCR / **NS1**

dengue

**Positive**:

dengue

virus confirmed

**Negative**:

Perform antibody

testing

There is one LOINC for dengue NS1 antigen, with a method of EIA.rapid, which is for a rapid diagnostic test (RDT). Dengue RDTs are used in endemic areas, but it is unlikely that any U.S. laboratories have developed their own RDTs for dengue NS1. If your laboratory is doing a non-RDT dengue NS1 assay on clinical specimens, please let CDC know and we will request a new LOINC code for it.

|  |  |  |
| --- | --- | --- |
| Code | Concept Name | Preferred Name |
| 75377-2 | DENV NS1 Ag SerPlBld Ql EIA.rapid | Dengue virus NS1 Ag [Presence] in Serum, Plasma or Blood by Rapid immunoassay |

**5. Q: Will the requested LOINC codes be assigned within the next 2 weeks?**

**A:** CDC has received new Ordinal LOINC codes for Zika virus IgM and Zika virus neutralizing antibodies. CDC should receive new LOINC codes for CDC's Trioplex rRT-PCR soon after we finalize the laboratory standard operating procedure. CDC will send out the LOINC codes for the Trioplex rRT-PCR as soon as we have them.

**6. Q: Will there be distinct LOINC codes/PLTs for CDC's assays or will we be using the generic ones that have already been established and proposed?**

**A:** New LOINC codes are created on the basis of existing lab tests. CDC's assays for Zika virus IgM and Zika virus neutralizing antibodies were used as the basis for assignment of the new Zika virus LOINCs. However, these LOINC codes are not tied to the CDC assays, and they can be used for other similar assays that are developed in the future. In that respect, LOINC laboratory test codes are generic.

**7. Q: If you have a single LOINC for a combination PCR result, will you have multiple SNOMED codes associated with it? I'm confused as to what the result codes would be for that combination LOINC and how our system would handle it. A single result of positive for this combination result would not let us know what event to create: dengue, chikungunya, or Zika virus.**

**A:** CDC's Trioplex rRT-PCR assay is for detection and *differentiation* of RNA from dengue virus, chikungunya virus, and Zika virus. That means results will indicate which virus is detected. LOINC will probably create a panel for Dengue-Zika-Chikungunya PCR. There will be a LOINC for Zika (Ser/Plas), Zika (CSF), etc. These will probably be Ordinal LOINC codes. See the answer to question 3 (above) for more information.

**8. Q: If I have questions specific to Zika Lab, who should I contact?**

**A:** Send an email to eocevent278@cdc.gov.

**9. Q: For Zika testing in asymptomatic pregnant women, a positive Zika MAC-ELISA result is only presumptive. Is there additional testing that would confirm the presumptive positive?**

**A:** This question refers to CDC's algorithm for Zika virus testing in asymptomatic pregnant women. The algorithm can be found on the last page of the [Revised diagnostic testing for Zika, chikungunya, and dengue viruses in U.S. Public Health Laboratories](http://www.cdc.gov/zika/pdfs/denvchikvzikv-testing-algorithm.pdf).

**Zika Testing in Asymptomatic Pregnant Women**

Antibody testing1 (Serum collected 2–12 weeks post travel)

Zika virus IgM

**Positive**:

Perform dengue IgM

**Negative**

PRNT

(neutralizing Ab) 2,3

**Positive**:

Unspecified flavivirus infection

No further

follow up

**Negative**:

Probable ZIKV 3

1 For women living in areas with ongoing transmission, refer to Update: [Interim Guidance](http://www.cdc.gov/mmwr/volumes/65/wr/mm6512e2er.htm) for Health Care Providers Caring for Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016 for timing of sample collection.

2 Extensive cross-reactivity would be expected in samples from DENV/ZIKV circulation areas. A positive IgM assay with both antigens should be followed up by using PRNT against both ZIKV and DENV as well as any other flavivirus (e.g., SLEV, ZIKV, WNV, etc.) that might be found in that geographic area (including travel areas). Depending on previous flavivirus exposure, resolution of infecting flavivirus may not be possible.

3 Follow-up care should be undertaken as specified in the [Interim Guidance](http://www.cdc.gov/mmwr/volumes/65/wr/mm6512e2er.htm) for Health Care Providers Caring for Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016.

The yellow box represents pregnant women who have tested positive for Zika virus IgM and negative for dengue virus IgM. These patients have probably had Zika virus infections recently. Some patients and clinicians might want more certainty than "probable Zika virus infection." These patients can be tested for neutralizing antibodies to Zika virus for confirmation.

More information on Zika virus testing in pregnant women is available from CDC: Update: Interim Guidance for Health Care Providers Caring for Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016:

* <http://www.cdc.gov/mmwr/volumes/65/wr/mm6512e2er.htm>

These guidelines are dated March 25, 2016. Any subsequent updates to the guidelines can be found on the *Morbidity and Mortality Weekly Report* (*MMWR*) home page: <http://www.cdc.gov/mmwr/index.html>.

For updated electronic laboratory reporting (ELR) information on Zika virus, see PHIN VADS Hot Topics at <https://phinvads.cdc.gov/vads/>.