Lab Dept:	**Microbiology/Virology**
Test Name:	**CMV RAPID FA**

General Information

Lab Order Codes:	RCMV
Synonyms:	CMV Shell vial culture; Cytomegalovirus Rapid FA
CPT Codes:	87254 x2 - Virus isolation; shell vial, includes identification with immunofluorescence stain, each virus
Test Includes:	Shell vial isolation technique with immunofluorescent staining of CMV early nuclear antigen. Viral culture must be ordered with this test. Refer to Viral Culture

Logistics

Lab Testing Sections:	Virology
Phone Numbers:	MIN Lab: 612-813-5806 STP Lab: 651-220-6555
Test Availability:	Daily, 24 hours
Turnaround Time:	1 - 2 days
Special Instructions:	**Do Not** use calcium alginate swabs. Requisition must state **specific site** of specimen and **date/time of collection.**

Specimen

Specimen Type:	Urine, throat, bronchoalveolar lavage, bronchial washings, appropriate autopsy and biopsy specimens, blood, bone marrow, tracheal aspirates, respiratory sources
Container:	Viral transport media (available in Microbiology), sterile container, swab transport system, Lavender top (EDTA) tube

Volume:

Whole blood: 5 mL

Urine: 5 mL

Washings/aspirates: 1 - 2 mL

1 swab

Aspirate or sputum: 0.5 mL

Collection:

BLOOD:

Venipuncture for patients greater than 26 weeks gestation OR greater than 2 weeks of age:

Prep with CloraPrep Sepp® Applicator with 2% CHG

1. Disinfect the stopper of the Lavender top tube (EDTA) with 70 % alcohol. Allow to dry.
2. Break the Sepp® ampule to release the 2% CHG.
3. Apply the CloraPrep® solution using a back-and-forth friction scrub for 30 seconds.
4. Allow the area to dry for 30 seconds.
5. If the site must be touched during venipuncture, disinfect the gloved fingers.
6. Collect 5 mL of blood and aseptically inoculate the Lavender top tube (EDTA).
7. Gently invert the tube 4-5 times to mix contents.
8. Forward unprocessed whole blood promptly at ambient temperature only.

Prep with CloraScrub™Swab with 3.15% CHG

1. Disinfect the stopper of the Lavender top tube (EDTA) with 70 % alcohol. Allow to dry.
2. Open the Chlorascrub™Swab package, do not unfold wipe.
3. Apply the Chlorascrub™ wipe using a back-and-forth friction scrub for 15 seconds.
4. Allow the area to dry for 30 seconds.
5. If the site must be touched during venipuncture, disinfect the gloved fingers.
6. Collect 5 mL of blood and aseptically inoculate the Lavender top tube (EDTA).
7. Gently invert the tube 4-5 times to mix contents.
8. Forward unprocessed whole blood promptly at ambient temperature only.

Venipuncture for patients less than 26 weeks gestation AND less than 2 weeks of age:

Prep with 2% tincture of iodine:

1. Disinfect the stopper of the Lavender top tube (EDTA) with 70 % alcohol. Allow to dry.
2. Scrub venipuncture site with 70% alcohol for 1 minute using the Frepp® applicator. Allow to dry.
3. Using the Sepp® applicator, apply 2% tincture of iodine to site

starting at the center and moving outward in concentric circles. Allow to dry, approximately 30 seconds.
4. If the site must be touched during venipuncture, disinfect the gloved fingers.
5. Collect 5 mL of blood and aseptically inoculate the Lavender top tube (EDTA).
6. Gently invert the tube 4-5 times to mix contents.
7. Forward unprocessed whole blood promptly at ambient temperature only.
8. Following collection, remove the iodine using the Frepp® applicator or an alcohol pad.

Line Draw (All ages):

1. Prep catheter port by scrubbing the hub for 30 seconds using chlorhexidine gluconate (CHG) and allowing to dry.
2. Aseptically collect 5 mL of blood through the injection port. Blood may be collected without first drawing a discard.
3. Aseptically inoculate the Lavender top tube (EDTA). Forward unprocessed whole blood promptly at ambient temperature only.

Bone Marrow:

Place 1 – 5 mL of bone marrow in Lavender top (EDTA) tube(s). Invert several times to mix bone marrow. **Do Not** centrifuge. Send in original Vacutainer™ tube. Forward unprocessed bone marrow promptly at ambient temperature only.

Throat Swab:

1. Depress the tongue with a tongue depressor so the swab does not touch the tongue.
2. Sample the posterior pharynx, tonsils, and inflamed areas with a sterile swab.
3. If specimen cannot be transported to the lab immediately, place swab in transport media and refrigerate.

Tissue:

Submit specimen in a screw capped, sterile container.

Urine:

Males:

1. Clean glans with soap and water.
2. Rinse area with wet gauze pads.
3. While holding foreskin retracted, begin voiding.
4. After several mL have passed, collect a minimum of 5.0 mL without stopping flow of urine.
5. Maintain sterility and forward immediately to the Microbiology Lab. Refrigerate.

Females:

1. Thoroughly clean urethral area with soap and water.
2. Rinse area with wet gauze pads.
3. While holding labia apart, begin voiding.

4. After several mL have passed, collect a minimum of 5.0 mL without stopping flow of urine.
5. Maintain sterility and forward immediately to the Microbiology Lab. Refrigerate.

Bronchoscopy:

1 – 2 mL of specimen obtained by physician through the biopsy channel of the bronchoscope.

Transfer specimen into a luki tube. Transport to the Microbiology Laboratory immediately.

Nasopharyngeal swabs:

1. Obtain 2 swabs using NP flexible wire swabs.
2. Gently insert swab through nose into posterior nasopharynx.
3. Gently rotate swab slowly for 5 seconds to absorb secretions.
4. Collect a second swab in the same manner.
5. Maintain sterility and forward promptly at ambient temperature.
6. If specimen cannot be transported to the lab immediately, place swabs in transport media and refrigerate.

Nasopharyngeal Washings:

1. Tilt patient's head back at a 70° angle.
2. Insert rubber bulb syringe containing 1 – 2 mL of sterile saline until it occludes the nostril.
3. Collect specimen (Minimum: 1 mL) with one complete squeeze and release bulb.
4. Repeat in other nostril.
5. Place aspirate in container and forward promptly.
6. If specimen cannot be transported to the lab immediately, place swabs in transport media and refrigerate.

Nasal Aspiratation:

1. Prepare suction set up on low to medium suction.
2. Wash hands and put on protective barriers (e.g., gloves, gown, mask).
3. Place child supine and obtain assistant to hold child during procedure.
4. Attach luki tube to suction tubing and #6 French suction catheter.|
5. Insert catheter into nostril and pharynx without applying suction.
6. Apply suction as catheter is withdrawn. If necessary, suction 0.5 – 1 mL of normal saline through catheter in order to clear the catheter and increase the amount of specimen in the luki tube.
7. If specimen cannot be transported to the lab immediately, place swabs in transport media and refrigerate.

Special Processing: Extract swabs into viral transport media (VTM) by swirling and pressing the swab against the inside of the vial, then discard swab; add 3.0 - 5.0 mL urine to urine VTM; place washings/aspirates into VTM; place tissue into VTM. Refrigerate.

Transport/Storage:	**Onsite collections:** Transport to the laboratory immediately. **Offsite collections:** **Swab specimens:** Place in VTM and refrigerate. **Blood: Do Not** refrigerate. Store and ship at room temperature. Do not refrigerate. **Do Not** centrifuge. Specimens must be promptly transported to the laboratory, with the next available courier, not to exceed 24 hours from the time of collection. However, delayed transport causes a delay of test results.
Sample Rejection:	Specimen not submitted in appropriate transport container; improperly labeled specimen; insufficient volume; external contamination. If an unacceptable specimen is received, the physician or nursing station will be notified and another specimen will be requested before the specimen is discarded.

Interpretive

Reference Range:	No *Cytomegalovirus* detected by rapid fluorescent antibody.
Critical Values:	Positive results in systemic infections will be called to the physician or nursing unit.
Limitations:	● Urine and blood can be toxic to cell cultures and can result in inconclusive results. ● CMV antigenemia or molecular techniques are more sensitive tests for the detection of CMV in blood.
Methodology:	Shell vial culture with immunofluorescence
Additional Information:	● CMV infections are very common in normal individuals and are usually asymptomatic. However, CMV infections are frequently severe and life threatening in immunocompromised patients, including organ recipients and AIDS patients. CMV is the major viral pathogen following renal transplantation. Blood cultures positive for CMV predict progression. Knowledge of CMV infection is of utmost importance so that ganciclovir can be started as soon as possible. ● CMV is the most frequent cause of congenital viral infections in humans and occurs in about 1% of all newborns. Approximately 90% have no clinical symptoms at birth. Ten percent to 20 % of these infants will develop complications before school age. Congenital infection may occur as a result of either primary or recurrent maternal infection.
References:	Cook, JH, and M Pezzlo (2010) Specimen receipt and accessioning. Section 1. Aerobic bacteriology, 1.2.1-4. In HD Isenberg (ed) Clinical Microbiology Procedures Handbook. American Society for Microbiology, Washington DC Miller, J Michael (1999) A Guide To Specimen Management in Clinical Microbiology, American Society for Microbiology, Washington DC

Miller, J Michael, and HT Holmes (1999) Specimen Collection, Transport, and Storage In PR Murray et al, (ed), Manual of Clinical Microbiology, 7th edition, American Society for Microbiology, Washington DC, pg 33-104

Griffiths, PD, and VC Emery (2002). Cytomegalovirus In DD Richman et al., (ed.), Clinical Virology, 2nd edition, American Society for Microbiology, Washington DC, pg 447-449

Updates: 11/20/14: Offsite information added.