Severe Acute Respiratory Syndrome (SARS) is a contagious illness caused by a novel coronavirus. The Centers for Disease Control (CDC) has issued guidelines for specimen collection and handling from patients suspected of having SARS. These patients are defined as having (1) Fever > 38°C., (2) Respiratory symptoms, and (3) Traveled to defined endemic areas within 10 days of onset of symptoms or contact with a person who became symptomatic within 10 days of travel to an endemic area. At this time, the areas include China, Hong Kong, Taiwan, Vietnam, Singapore, and Toronto. If you are functioning within CMH, complete the “SARS Screening Tool” and follow the directions. Contact Infection Control (816-821-9023) for assistance in obtaining the correct specimens. Infection Control will contact the Laboratory. If you are outside of CMH and want some lab testing for provision of patient care to be done by CMH, please contact the Laboratory. As far as Laboratory testing is concerned, there are two issues: (1) What is necessary to diagnose SARS (this will not be done at CMH but we need to collect the proper specimens) and (2) What other testing can be done at CMH to help provide care for the patient. The CDC guidelines and laboratory preparedness have been changing over time, so this is a moving target. Following is a brief explanation of the major considerations.

Testing to diagnose SARS will be sent to CDC through the state laboratories. There is a special procedure and special paperwork for this. Specimens include (1) a respiratory specimen, (2) a serum specimen in a serum separator tube (gold top tube with gel in the bottom), and (3) a whole blood specimen in an EDTA tube (purple top tube).

Routine laboratory specimens will be handled in a very different way to protect the laboratory technologists. All testing performed on potential SARS patients will be done at the CMH main campus laboratory. Peripheral laboratories, including Children’s Mercy South, do not have the proper protective equipment for laboratory technologists. Testing available at CMH and specimen requirements are listed below.

<table>
<thead>
<tr>
<th>Test</th>
<th>Specimen</th>
</tr>
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<tbody>
<tr>
<td>CBC with automated diff</td>
<td>EDTA purple top tube with a minimum of 2 cc</td>
</tr>
<tr>
<td>Electrolytes, Glucose, BUN</td>
<td>Heparin green top tube without gel</td>
</tr>
<tr>
<td>Blood gases</td>
<td>Heparin green top tube without gel</td>
</tr>
<tr>
<td>Manual UA, no Micro</td>
<td>Urine cup</td>
</tr>
<tr>
<td>Rapid Strep</td>
<td>Throat swab</td>
</tr>
<tr>
<td>Bacterial Cultures</td>
<td>As required for desired culture</td>
</tr>
</tbody>
</table>

The CMH Laboratory cannot do viral cultures of any type. The CDC web site is being updated regularly and serves as an excellent source of information.
News From Cytogenetics
by Joan H. M. Knoll, PhD and Linda D. Cooley, MD

Molecular Cytogenetic Testing to Distinguish Clinically Significant Chromosome 15q11q13 Abnormalities from Non-significant Variants

Chromosome 15q11q13 is a small but important region of the entire chromosome 15. The 15q11q13 region contains genes that are imprinted, i.e., expressed differently if maternal or paternal in origin. This region may undergo deletions that result in either Prader-Willi syndrome (PWS) (deletion on the paternally derived chromosome) or Angelman syndrome (AS) (deletion is on the maternally derived chromosome). These deletions are generally submicroscopic and require FISH with AS/PWS locus specific probes for detection (e.g., D15S11, SNRPN, GABRB3 or D15S10).

Chromosome 15q11q13 may undergo other changes, i.e., true interstitial duplications of the AS/PWS region that result in abnormal clinical findings including dysmorphology, developmental delays, and autistic-like features (Repetto G, et al, AJMG 79:82-89, 1998) and variations (inherited or de novo), which are not clinically significant and do not include the AS/PWS region (Browne CE, et al, AJHG 61:1342-52, 1997). Duplications of the AS/PWS region can not be distinguished from variant chromosomes by routine chromosome analysis and require other cytogenetic methods for characterization.

To distinguish between true duplications and variants, FISH is used with 2 DNA probes specific for the AS/PWS region. Parental blood samples are requested to determine if the aberrant chromosome 15 is inherited or de novo. By FISH, a duplicated chromosome has two hybridization signals, whereas a variant chromosome has one hybridization signal, i.e., normal. The duplicated chromosome has added genetically active chromatin whereas the variant chromosome has added repetitive, non-coding (inactive) DNA sequences (for review see Nicholls RD, Knepper JL, Ann Rev Genomics Hum Genet 2:153-75, 2001). Chromosome 15q11-q13 region length differences are clinically significant when they extend into the AS/PWS critical region.

FISH testing is performed on all samples with chromosome 15s that appear duplicated or deleted by routine cytogenetic analysis to distinguish those that are clinically significant from those that are not. Parental peripheral blood is collected in sodium heparin to perform inheritance studies.

Chromosome 15q11q13 Abnormalities Summary

Deletions
- May be detectable by routine GTG-banded chromosome analysis, confirmed by FISH
- Clinically significant, result in either AS or PWS

Duplications
- Identified by routine GTG-banded chromosome analysis and confirmed by FISH with probes from the AS/PWS region
- Clinically significant with findings that include autistic-like features, dysmorphology, and developmental delay

Variants
- Identified by routine GTG-banded chromosome analysis and not duplicated in the AS/PWS region by FISH
- Not clinically significant

Definitions:
Genetic imprinting – process whereby genes are marked or modified differently depending upon whether they have passed through the paternal germ-line or the maternal germ-line. The expression of imprinted genes is determined by the parent that contributed them.

Angelman (AS) and Prader-Willi (PWS) syndromes – clinically distinct syndromes that localize to chromosome 15q11.2q13. AS is characterized by lack of speech, ataxia, hypopigmentation, inappropriate laughter, and developmental delays. PWS is characterized by short stature, small hands and feet, hyperphagia, hypopigmentation, and developmental delays. Maternal genetic information is absent in AS and paternal genetic information is absent in PWS. The population frequency is ~1/20,000 to 1/30,000.