**Specific gravity on body fluids**

Q Our lab has received requests for specific gravity testing on body fluids (CSF, peritoneal). The research I have conducted on the refractometer available in urinalysis specifically states that this unit is standardized for use only with urine specimens. Are you aware of a simple method for doing specific gravity on body fluids? I am unable to find a reference.

A From my investigation, the answer to your question is dependent on the refractometer you are using. Most clinical refractometers provide readings to determine urine-specific gravity, concentrations in serum or plasma, and total solids in other aqueous solutions. The refractive index scale makes it possible to measure the concentration of non-urine solutions. The product insert for our AO (Leica) TS Meter includes a section titled, “Estimation of concentration of other body fluids and of pure solutions.”

Most clinical refractometers provide readings to determine urine-specific gravity, concentrations in serum or plasma, and total solids in other aqueous solutions.

Therefore, I recommend obtaining an instrument manual and reviewing it to see if this issue is addressed. If it does not address a non-urine sample, purchase a refractometer that is validated for non-urine samples, or perform an in-house assessment to meet the regulatory requirements.

We use Interpretation of Diagnostic Tests by Jacques Wallace (Little, Brown and Co.:Boston, 1978, p. 93) for our serous fluids’ reference range.

Reference

**STAT TSH in the ER**

Q We have a physician who quite frequently orders a TSH on patients in the emergency room (ER). The instrument on which we run the TSH takes approximately two hours to complete the test. The TSH test obviously is not set up to be run STAT. What reasons would the physician have for ordering a STAT TSH for an ER patient?

A Atrial fibrillation is a life-threatening medical emergency that is frequently seen in the ER. Ten to 15% of patients with atrial fibrillation have hyperthyroidism. Therefore, in the course of working up a patient with atrial fibrillation, the doctor is likely to order thyroid function tests including TSH.

Does the TSH need to be done STAT? I do not think so. Immediate treatment of atrial fibrillation is directed at slowing the heart rate rather than at the underlying cause. If the cause of the fibrillation is hyperthyroidism, reduction of thyroid hormone levels takes a long time. Iodine-131 treatment of the thyroid gland is the most common therapy. The investigation of the cause of the fibrillation can be done at a more leisurely pace after the immediate emergency has been handled.

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**Report format for susceptibility testing**

Q When reporting aerobic bacterial susceptibility results to a broad range of clients, what format (susceptible, intermediate, resistant, or the MIC result along with its interpretation) would be preferable? Please base the answer on the merits of the value and utility of the result rather than on costs, client-types, and so forth.

A Rapid reporting of culture and susceptibility data is the first of several important steps in the successful management of infected patients. Antimicrobial susceptibility results are very valuable to clinicians, and these data must be displayed in a fashion that advances unequivocal understanding of the results so that correct therapeutic decisions can be made. Most antimicrobial susceptibility results can be reported qualitatively [sensitive (S), intermediate (I) or resistant (R)] and/or quantitatively [minimum inhibitory concentration (MIC)].

If performing an MIC is standard practice for a laboratory to determine susceptibility of an organism to an antimicrobial agent, the laboratory may either report the MIC, the interpretive category (S-I-R), or both. Because the MIC alone will not provide most physicians with a meaningful interpretation of data, either the category results with or without the MIC are usually reported.1 Moreover, the most clinician-friendly option for reporting of antimicrobial susceptibility results is considered to be the qualitative S-I-R result.2 According to the CLSI (formerly called NCCLS), if MIC values are determined and reported di-
rectly to clinicians for patient-care purposes, it is essential for an understanding of the data by all clinicians that an interpretive category result be provided routinely.

In most instances, reporting of only the S-I-R category results is considered sufficient.

A study at the microbiology laboratory of the National Institutes of Health looked at reporting interpretive categories to aid the physician in selecting the best antimicrobial agent to use for his patients. They had previously only reported quantitative MIC results without qualitative interpretations. They determined that the use of clinically relevant clear interpretive criteria worked well in their hospital setting. Their physicians were able to understand and utilize the information effectively and found almost no need for an exact MIC to be reported.

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References

Semi-clotted blood for reticulocyte counts

Q Can one use a semi-clotted blood specimen from an EDTA tube and obtain a valid reticulocyte count? We would be measuring the count as a proportion rather than in absolute terms, and one assumes that both the mature erythrocytes and reticulocytes would divide consistently between the liquid portion and clotted portions of the specimen.

A Although the logic in your question seems valid, I am not aware of any experimental data validating this. On inspections of a laboratory, the examiner might possibly indicate a deficiency if you allowed the use of such specimens for this test. There is, however, a way out of this dilemma, which has been used when such questions arise.

On inspections of a laboratory, the examiner might possibly indicate a deficiency if you allowed the use of such specimens for this test.

One should do a comparison of about 20 or so matched specimens measuring the reticulocyte counts in proportional terms. Choose specimens with elevated reticulocyte counts. The improved precision of automated reticulocyte analyzers would also provide improved validity of the data.

Also retain the hematocrit data to confirm that a significant amount of clotting had occurred in the specimens that you studied. Presuming that there will be no significant differences, you should keep that data available if your method is ever questioned. You might also consider publishing a short note to let others know that using semi-clotted specimens for proportional reticulocyte counting is valid.

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Further reading

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