

Answering your questions

Calling critical values to dialysis

Q What is your position on calling chronic critical values? A BUN of 120 mg/dL on a dialysis may not be considered “critical.” Currently, our lab calls *all* critical values, multiple times, for the same patients, the same result. Nurses opine that the result is not critical as the patient is “known” to have an elevated test result. Consequently, with read-back policy, nurses call the result to the physician who may feel the call is unnecessary based on patient’s history (e.g., end-stage renal disease, or ESRD)

A This has been the subject of questions, two articles, and letters in *CAP Today*.^{1,2,3,4,5} Several readers expressed similar views, that there should be a uniform critical-value policy which should be followed in all cases. Reasons for supporting this view are: a uniform lab policy is more likely to be followed; and it is less confusing for the lab.

Stephen Sarewitz, MD, chair of the CAP Checklists Committee, replied to one of the letters: “CLIA ‘88 states: ‘The laboratory must immediately alert the individual or entity requesting the test and, if applicable, the individual responsible for using the test results when any test result indicates an imminently life-threatening condition, or panic or alert values.’”

“Whether a particular lab result indicates an imminently life-threatening condition depends, under certain limited circumstances, on the clinical situation. For example, a low hematocrit value may not be in a hemodialysis patient, yet it could be in a patient from the general population. This distinction has nothing to do with anyone’s convenience; it is drawn cooperatively by the lab and clinicians, as a way to identify which lab values are truly critical.

“The above practice is different from the situation in which a clinician just does not want to be bothered by a tele-

phone call for a critical value.”² I agree with Dr. Sarewitz’ comment.

In summary, 1) critical values should be set jointly between clinicians and the lab; 2) exceptions to calling based on clinical conditions may be defined, but this should be done as part of the joint process, and it should be part of a well defined policy; 3) physician-specific critical values should not be permitted; and exception for the convenience of a physician or nurses should not be permitted.

—Daniel M. Baer, MD

References

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Sed-rate control

Q We use commercial sedimentation-rate controls. Frequently, we run out and are told to use a random patient instead. I disagree; this substitution does not prove a thing. The result is just a number in a book with no range as a guideline. I was told that CLIA and the CAP recognize this. Can you assist?

A Manual erythrocyte sedimentation rates, or ESRs, are classified as waived tests under CLIA ‘88; there are no federal regulatory specifications for quality control of this test. Some semi-automated and automated methods for ESR, however, have been classified as moderately complex under CLIA ‘88, which, therefore, require two-level QC in 24 hours.

There are no specifically required QC materials for ESRs in the CAP Laboratory Accreditation Program Hematology Checklist. In the Laboratory General Checklist, however, there is a question: “If the laboratory performs test procedures for which calibration and control materials are not available, have procedures been established to verify the reliability of patient test results?”¹ This requires that the lab has written procedures to document the method that the lab used for QC. From a CAP-accreditation perspective, the essential elements are that all QC programs are technically and scientifically valid and that appropriate actions are taken in response to QC data. A CLSI guideline recommends the verification of the working routine method against the reference method at a frequency determined by the lab standard operating procedure.²

Many labs currently use commercial materials for ESR QC, which provide adequate two-level controls. If commercial QC materials are not available temporarily, the lab may use previously tested patient samples (which need to be tested during validated QC period

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by commercial QC materials) as current QC materials. Since the previously tested results were validated by the QC procedure, the lab can compare repeated (current) ESR test results with previously reported results. If patient-sample results are repeatable, there is no problem with the procedure. Of course, the lab needs to choose samples that still are fresh (four to 24 hours after collection, depending on the lab storage method and equipment requirement).

For the labs that do not use commercial QC materials, lab directors need to define how ESRs will be controlled and what the reference range is. This can be accomplished in a variety of ways. For example, participate in extramural proficiency testing and collect lab QC data from routine patient samples by calculating the daily cumulative mean and monitoring its reproducibility over time.³ I agree that a couple of random patient samples is not appropriate QC material.

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Urine sediment dilution

Q In our lab, the hematology/urinalysis supervisor has been telling technologists to dilute any thick sediment of urine with saline and multiply the result by the factor. I have not followed this because I am afraid, among other things, of missing significant casts. What I do instead is make a thin prep on a regular slide, cover slip, and read. I have not read any textbook prompting technologists to dilute urine sediment with saline. I also have not encountered any hospital lab doing this. What would be the ef-

fect of using saline as a diluent? If dilution is really necessary, what diluent should be used? Please let me know if this practice (dilution) is okay.

A This technique of diluting blood and urine samples with saline solution is not an unusual practice in most hematology and urine-cytology laboratories. If there is a thick buffy coat or a large urine-sediment button, these procedures may be necessary to allow for better distribution and interpretation of the sample. Balanced saline solutions (commercially available) will not destroy sediment structures such as urinary casts.

It appears as though you are substituting the dilution technique and instead are using a one-drop method which is not standard practice and, therefore, should be discontinued.¹ It is perfectly acceptable to either dilute using a 10:1 urine concentration with equal parts of saline and then multiply by two, or change the urine-sediment concentration to 10:2 and then divide by two. Both allow for the proper standardization, with the latter allowing for less manipulation and procedural steps to procure more efficient time management.¹

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Calciums do not agree

Q We have been experiencing a problem with calcium being run in our laboratory with a PTH having been ordered for the same patient; the parathyroid hormone (PTH) is a send-out test for us. The calcium done as part of the PTH is always a lot higher. Any thoughts?

A It is not surprising that calcium values from a reference laboratory might not match those performed in your lab. To investigate the cause, you might start by looking at proficiency-testing summaries from the CAP or other providers. There, you can determine whether your analyzer is running

near the mean of the peer group for the method used in your lab. Assuming it is, then possibly the method used by the reference laboratory runs significantly higher than your method. You can also determine this by looking at the differences in means among peer groups. If you see a significant difference in peer-group means for samples run on your in-house method and the reference-lab method, then that would explain the inconsistencies you have described. Even if the proficiency-test means are not significantly different between methods, there may still be differences observed in patient samples that are not seen with proficiency-testing material. The bottom line is that differences are seen among various calcium assays on chemistry platforms.

The next question is which (if either) of the two methods is “right.” Flame atomic absorption spectrometry, or FAAS, is most often used as a reference method for calcium, though isotope-dilution mass spectrometry (IDMS) may also be valuable for this purpose. You should be able to find reference laboratories that perform one or both of these methods for serum calcium. If the discrepancies are frequent or if you are concerned about the accuracy of your internal calcium method, then sending a series of samples to a reference laboratory for calcium determination by FAAS or IDMS may be valuable. If your internal method matches one of the reference methods well, then you may solve the problem by finding a reference lab that either measures PTH without calcium or uses a different calcium assay. If your internal method does not match well a reference method, then you could consider switching to another assay. □

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