Questions about Quality Control? Ask our Expert Panel

Questions and Answers

Quality Control

1. **How about adjusting to a peer group mean if you start seeing more QC failures?**
   Dr Grenache: Depends on what kind of QC rules are triggering the alert. If they are rules sensitive to systematic error (bias) like 2-2s or 4-1s then it's possible your mean was set incorrectly. Look at historical data to guide decision making. As we discussed, there should be strong justification for changing a mean.

2. **How do you set QC targets if there are no peer data or very few peer labs running the same reagent lot#?**
   Dr Grenache: From your own evaluation of the QC material. Ideally tested 20 times over many days.

3. **Can you please give us the reference for the Power function rule paper that you mentioned?**
   Dr Baumann: Should I Repeat My 1:2s QC Rejection? Curtis A. Parvin, Lakshmi Kuchipudi and John C. Yundt-Pacheco Clinical Chemistry 58:5 p925–929 (2012)

4. **When you compare your QC with a peer group. All the group has to have the same Mean?**
   Dr Grenache: Your peer group is the labs using the same method and lot of QC material as your lab. The peer mean is the average result from that peer group.

5. D**o I have to perform a calibration verification before adjusting the mean?**
   Dr Straseski: Anything that would verify analytical performance is adequate would be useful information prior to adjusting the mean. It removes that variable and gives more confidence in the need for a mean adjustment.

6. **How do you use patient samples to test lot-to-lot acceptability of new QC lots? Should you do this for all analytes, or are there some that don't really need this?**
   Dr Straseski: Determine your acceptability criteria and run patient samples on old and new lots. We graph the results and determine the slope and intercept. We also calculate SDI and have acceptance criteria based on their agreement with each other. For some methods we also create large sample pools that are used over a long period of time, so we know what results to expect and track the new lot results over time.

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7. **Do you recommend making a patient pool sample and freezing aliquots to use for troubleshooting QC shifts/trends?**
   Dr Straseski: If the analyte is stable this can be a helpful practice.

8. **What criteria do you use for setting your revision limits?**
   Dr Baumann: We use allowable total error for the analyte as a starting point for most tests. For some tests, there are medically-determined or guideline-driven quality specifications.

9. **Have you tried limiting the calculation to only samples within the reference interval and looking for a shift in the mean?**
   Dr Cervinski: I have not, but that would be a more traditional average of normal technique. The challenge there is that a large shift of your mean would be less likely to be detected. If you plot all of your patient data in a frequency distribution histogram you'll likely see that a large proportion of your population doesn't fall within the reference interval for many assays.

10. **What is C24?**
    Dr Baumann: his is the Clinical and Laboratory Standards Institute (CLSI) C24 4th edition document: Statistical Quality Control for Quantitative Measurement Procedures: Principles and Definitions.

11. **My manager wants to adjust the mean after every calibration -- I recommended not as that biases our test system. He disagreed. What is a better way to explain the problem with this?**
    Dr Straseski: There should be clear criteria or situations that need to be met prior to changing a mean.

12. **How do you manage matrix effect?**
    Dr Cervinski: Depending on the analyte we also run pooled patient samples as an additional QC material. This is particularly true for some of our plate based ELISA assays for markers of autoimmunity. The kit QC provided by the manufacturer is pre-diluted, and consequently not handled in the same manner as patient samples.
    We also in a defacto sense, assess for matrix effects when we perform our lot-to-lot verfication as we run both QC material and previously tested patient samples. At times we've detected a shift in the QC values that does not affect patient results.

13. **What if a reference comes from a well-established organization (e.g. NIBSC), and does not yield the expected concentration when measured against a measurement method of choice?**
    Dr Straseski: Suggest investigating the method or contacting the organization to get more detailed information about how the value was determined. If the methods aren't

comparable or there are other variables, that should be taken into consideration. Getting as much information from the organization as possible will be helpful. There may be troubleshooting required for the method.

14. **How do you handle a 1.2s repeat? Calibrate?**
    Dr Baumann: Yes, we would calibrate or perform other troubleshooting to bring the assay into control.

15. **When performing the same test on multiple analyzers, do you set different ranges for each analyzer or a common range for all analyzers?**
    Dr Cervinski: I am a firm advocate for setting the same mean and SD for multiple analyzers, particularly within the same laboratory. The reasoning for this is that if you have two analyzers, (one running higher, and the other lower) setting individual means will allow the analyzers to move further away (high analyzer goes higher, low analyzer goes lower) and you can be reporting out two very different values depending on which analyzer receives and tests a sample.

16. **Since QC is ran after daily maintenance, if there is QC issue would you still need to ran patients as no patients have been ran as well**
    Dr Cervinski: Yes, particularly as you do not know if the QC error is reflecting a systematic error condition that occured as a result of daily maintenance, or if it developed the day prior.

17. **Are there any rules or standards for how many samples to re-run when doing remediation after QC failure taking into consideration the high volume of samples already ran?**
    Dr Baumann: As I mentioned in the Q&A, our laboratory re-run patient samples in batches of 10 going back in time. If any of the results in the batch need to be revised, we continue re-checking another batch of 10. We continue re-testing until we have a batch of 10 samples where no revisions were required.

18. **How do you decide if you should use unassayed vs assayed QC material?**
    Dr Straseski: This is likely highly dependent on the assay. There are still limitations when using assayed materials, so ensure you are relying on your own ranges and use manufacturer ranges only as a guide.

19. **Dr Nikola Baumann answering question about the Westgard rules told about Dr Parvin paper, could you please to give a link to this paper?**
    Should I Repeat My 1:2s QC Rejection? Curtis A. Parvin, Lakshmi Kuchipudi and John C. Yundt-Pacheco Clinical Chemistry 58:5 p925–929 (2012)

20. **This question pertains to Dr Baumann's qc rules. Just wondering when you are running your repeat after you have your warning rule, are you using fresh qc or are you advising your staff to use the same qc as your initial run?**
    Dr Baumann: We advise the staff to use the same QC as the initial run. However, if there is suspicion that there is a QC material issue, we do allow the staff to use fresh QC to rule that out.

21. **What is a good CV if you have little to no peer group?**
    Dr Straseski: Very assay dependent and should be based on the performance of your particular assay. Running control materials over a period of time will provide this information.

22. **For QC value for new set up for new lots, you suggested n=10 for short-term mean, how many days do you suggest? In a day or over several days to get n=10 data?**
    Dr Straseski: Depending on assay type--will often have all 10 run in same batch. If you can spread it out over multiple days/operators/batches/plates/etc. that is preferable, to account for variability and give the best assessment of assay performance.

The following questions were asked during the presentation. Please see the webinar recording for the responses.

23. How often should you update your QC means?

24. What do you think about using 3rd party controls / manufacturer independent controls?

25. What's the best practice before adjusting the QC mean because of the New Reagent Lot besides lot-to-lot validation.

26. There was guidance produced from EP/DI that introduces the thought that we can take the 1/3 of the Acceptable Performance Limit as defined by CLIA for 1 SD. Could you comment on this practice?

27. If your SD's are smaller than a third of the APL for that assay, could you accept your 1.2's without repeating and still feel better about patient impact?

28. Any recommendation on establishing SD with consideration of TEa?

29. Are you able to speak about 6 sigma approach to QC in this discussion?