

The challenge of accreditation for forensic laboratories within the good/fast/cheap performance management paradigm

Abstract

In the wake of the 2009 NAS Report, more and more forensic laboratories have undergone accreditation to ISO/IEC 17025 standards, or similar. While this process helps signify and memorialize the aspects of a quality system, it also dictates that quality, as a process, must be followed. Therefore the archetypical paradigm that is referenced within project management as the “Good/Fast/Cheap: Pick Two” triangle becomes locked into push-pull dynamic between the operational speed and costs when quality becomes inflexible. Solutions for resolving this apparent paradox must emerge from within laboratory management through implementation of transparent customer service processes.

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Jason Kolowski

Forensic Insight Consulting, USA

Correspondence: Jason Kolowski, Forensic Insight Consulting, 24927 Sawyer Mills Court Aldie, VA 20105, USA, Tel 917-655-4250, Email jckforn6@gmail.com

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Abbreviations: ISO, International Organization of Standardization; NAS, National Academy of Sciences

Opinion

In the six years since the release of the NAS report *Strengthening Forensic Science in the United States: A Path Forward*, forensic laboratories across the U.S. have taken on the challenge of accreditation. Most of these agencies are under the scope of the ISO/IEC 17025 accreditation standards, or similar. The accreditation of these laboratories signifies that the basis of a quality system is in place and operational. Further, accreditation is designed to demonstrate to the clientele of that agency that the work coming from the laboratory is good. This indicator of quality provides the client with a sense of assurance that the work will be done right. As a result of this notion, project management may become perturbed when managing an accredited forensic laboratory.¹ Within the fundamentals of project management is a three-way paradigm, or a trilemma, between the basic concepts of quality, speed, and cost.² This boils down to what has been traditionally known as the Iron Triangle- “Good/Fast/Cheap: Pick Two”. This implies that functional systems are always lacking one of these elements. Something that is good and fast is therefore not cheap; something that is fast and cheap is not good and so forth Figure 1.



Figure 1 The Iron Triangle.

When an accredited laboratory examines this paradigm, it is clear that the “good” factor becomes locked in place. There is no option for forensic casework under accreditation other than quality (good), therefore laboratories must choose between the remaining two factors: speed (fast) and cost (cheap). Conventional wisdom would then dictate the following: If the laboratory work is cheap, as it is in the eyes of most clients of public laboratories, then the work is not fast. The opposite of this, reflected by a majority of private accredited forensic laboratories is that if the work is fast, it is not cheap. But why is this? In the public sector, laboratories are funded by taxpayer dollars, and run under strict not-for-profit margins. The work in these labs is typically dictated by collective bargaining agreements, such that 8-hour days are set, and job specifications are contractually defined. Within the laboratory environment, samples are batched and run on large capacity instruments if and when available, Standard Operation Procedures are designed to process a maximum number of samples, and little to no incentives exist to increase this level of production. Perhaps only specific samples are worked based on submitted information, eliminating specific casework up-front, but without clear directions, such a setting may also leave samples to be tested in 2nd or 3rd rounds of analysis, thereby creating backlogs of samples for potential future testing. At the bottom line, these labs must maximize their resource costs (people, supplies, instruments, consumables) to meet the demand of as many cases, and therefore clients, as possible. In this setting, the work is “cheap” as the customer rarely, if ever, pays an up-front cost, and the work is not fast. On average, laboratories under this model are running 60 to 90day turn-around times on DNA and instrumental-based casework, and 30 to 60day turn-around times on comparative analyses such as latent prints and firearms casework. Within the private sector, laboratories are funded through the profits generated by working cases. Open-market employees whose employment terms are not dictated by collective bargaining and are therefore eligible for bonuses, options, or other production incentives perform work. Therefore, the focus becomes maintaining a competitive market price while producing results on submitted casework as fast as possible. The volume of casework therefore has a direct result on the profitability of the laboratory. In such a laboratory, staff may work overtime if and when necessary

to meet production deadlines, which drains more resources (supplies, instruments, consumables) in a shorter amount of time. The costs are typically set contractually based on a per-case or per-sample scheme, thereby requiring the submitting clientele to have a clear and focused understanding of exactly what samples or specimens they want tested. To meet the time-frame needs, machines and instruments may not be able to run at peak efficiency, which leads to less sample batching, and more replicate runs, which again increase costs, but generate samples and results quickly. In this setting, the work is completed rapidly (fast), within an order of days to weeks on the turn-around time, but it is not cheap.³ It is important to point out that even though the paradigm contrasts public and private laboratories, there are aspects in which both systems can move towards the other factor. Public laboratories can produce casework quickly, but in order to also maintain quality, the costs will increase. Perhaps additional taxpayer dollars or emergency funding must be allocated to provide overtime to meet a court deadline. Perhaps samples are not batched, leading to more overall runs and higher costs of the laboratory process but the results are generated faster. Likewise, private laboratories can decrease their profits by offering lower-cost testing that may be completed under longer timeframes. The question to then be answered is this: Can an accredited public or private laboratory find the sweet spot between “fast” and “cheap” while still maintaining quality?

Conclusion

The answer to this paradox rests with the management of the laboratory. The harmonization between “fast” and “cheap” is possible, but several factors must be considered and addressed simultaneously. First and foremost, the laboratory needs a strong customer service presence, and the ability to both give and take feedback to and from the customer. Within this customer service, the laboratory must have a transparency of its processes, maintain a communication of its capacity for casework, and be willing to partake in a structured dialogue with the customers to effectively convey all of this information. The laboratory management must have sufficient ability to direct how their resources are used, and must provide these resources for the effective allocation of high-quality customer service. Secondly, and most importantly, the management and the laboratory must constantly reinforce that the accreditation-based quality processes exist as absolute necessities.

From the customer’s point-of-view, when the work is done, the report should go out, or someone should be sending an e-mail or picking up the phone. In light of this view, customers will not understand why a series of technical or administrative reviews are necessary once the results are generated. Because of this potential pitfall based upon the customer’s viewpoint, the laboratory must strive to not only build the customer service model described above, but recognize the potential issues within their own system as well. The simple truth is that accreditation itself has the propensity to slow down casework; this can be particularly poignant if the accreditation is new and previous reporting processes did not have the same quality oversight or review procedures. It is also important for laboratories to streamline these quality processes in the most efficient manner possible, such that a Standard Operating Procedure for a laboratory doesn’t create needless work within a systems operation. In that regard, it is the responsibility of the management of the laboratory to have the necessary oversight, leadership, and ability to modify the quality system to stay within the boundaries of the accreditation standards while attempting to provide responsive and cost-effective testing to the laboratory clientele. In such a model system, the Good/Fast/Cheap paradigm may no longer be a hindrance, but a standard under which all forensic laboratories can succeed.

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Conflicts of interest

The author declares that there are no conflicts of interest.

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