Meet the CAST!
by Phyllis Daum

The group formerly known as BRR (Billing, Research & Reference testing) is now showcasing its skills through a renovated design and name change. The eight-member Clinical Administrative Support Team started out as separate individuals without back-up or coordination. Phyllis Daum and Paul Henderson organized them into a single group around 2001 and since then, they have taken teamwork to new heights. With each person having a different area of expertise, their multiple perspectives come together to solve problems and support their clients. It can truly be said of them that the total is greater than the sum of the parts.

Although CAST is no longer involved in Research Testing Service they still work with AAA research requests, and several other functions have been added to their repertoire. These include keeping up the UW’s Laboratory Medicine staff-only website and the on-line test guide, entering all reference lab test results into the Lab Medicine computer system, resolving billing questions, and tracking patient identification information. They also handle all licensing and accrediting measures, regulatory reports and classification requests with CLIA and CAP, and review all test CPT coding and billing mechanisms.

Their clientele includes laboratory staff, hospital administrators, nursing staff, and medical and clinical directors from UWMC, HMC, and affiliates as well as from medical establishments throughout the country. The primary way to get your questions answered is via their email address at labfix@u.washington.edu or now that they are located at the Pat Steele Building, (suite 5100) by campus mail, Box 359743. No matter which of the team members takes the first look at an issue, it’s almost guaranteed that others will chime in, contributing from their own proficiencies to create a well-informed and knowledgeable response to your specific situation.

Meet the CAST!

Back row (L to R): Phyllis Daum, Derek Larson, Peter Rudloff, Jackie Ritmire, Wing Yan (Tammy) Tam
Front row (L to R): Jeanie Bulzomi, Kay-Ellen Tomlinson, Renee Lang
This interview with Gary Conkle, an engineer who is Group Manager for Process Improvement, Beckman-Coulter, Inc. describes current concepts in quality improvement. Mr. Conkle has been working in the area of process improvement for more than twenty years. He lectures frequently to clinical laboratory leaders regarding total quality management, Lean, Six Sigma, and related topics. The interview provides a conceptual framework for thinking about quality, as well as some very practical advice. The interview is timely in light of the efforts in the Department of Laboratory Medicine to implement engineering-based approaches to quality improvement.

The interview was conducted by Dr. Michael Astion, Professor, Department of Laboratory Medicine. It first appeared a few years ago in Laboratory Errors and Patient Safety (LEPS). Employees who are interested in viewing past issues of LEPS can do so at www.labmed.washington.edu on the “Staff Only” website. Dr. Astion’s current interviews and articles on patient safety are now appearing quarterly in Clinical Laboratory News from AACC.

Q: You have been in the field of process improvement for a long time and have seen many laboratories succeed and fail. Based on this copious experience, what are your fundamental teachings regarding quality improvement?
Mr. Conkle: I teach four essential concepts:
1. Understand the needs of the customer.
2. Focus on the underlying system and its processes, not just on the outcome of the system.
3. Teamwork is required for significant breakthroughs
4. Improvement is continuous and never ending.

Q: Why is it important to understand the customer?
Mr. Conkle: Complex tools and advanced statistics are useless if you are failing to address the customer’s needs. For example, you do not want to use resources to improve a particular test, if the physicians are planning to discontinue use of that test. Understanding the customer means identifying who the customer is, the outcome of their process, and how they use the product you provide them.

Q: Who is the customer for a laboratory test?
Mr. Conkle: Usually, the customer is a physician or nurse. The outcome of their process is a diagnosis and treatment, and the product provided by the lab is a test result with a guide to interpretation. For individual projects, it is worthwhile gathering very specific information about the customer. For example, if a project involves improvement to a specific test, laboratory staff needs to identify the specific doctor(s) who use the test, how the test is used and the specific test requirements regarding turnaround time, precision, and accuracy. The purpose of the quality improvement project is to help those particular doctors deliver their product better.

Q: Regarding your second concept, can you give an example of why it is harmful to focus too much on the outcome of a system, while de-emphasizing the underlying process?
Mr. Conkle: There is a famous episode of I Love Lucy where Lucy is given the job of wrapping chocolate candies as they pass on a conveyor belt. If unwrapped candies reach the end of the belt, Lucy will be fired. To improve the speed of the output, management speeds up the existing process, without any changes to the process. In the hilarious conclusion to the scene, Lucy eats many of the candies to avoid letting unwrapped candies go by. The moral of the story is that by speeding up the existing process, rather than altering the process, management created stress in the organization, and decreased quality.

Q: That was a great episode. Can you give a direct example from the laboratory?
Mr. Conkle: A similar example in the lab is focusing too much on test turnaround time as an outcome, without allowing changes in the underlying processes that contribute to turnaround time. In this example, when management calls for improvements in turnaround time, the natural tendency of lab staff will be to try to improve turnaround time by rushing through the existing process. This will cause more errors and increase turnaround time. By concentrating too much on the outcome - turnaround time- and ignoring the underlying process, management creates stress and decreases quality. You still want to measure turnaround time, just avoid the common mistake of focusing on it so much that you forget the process.

Q: You teach that process maps are often useful for improving a process. Can you teach us how to use one using an example like the one just discussed?
Mr. Conkle: This is an older example, but still relevant for teaching the use of a process map. We once investigated a complaint by physicians who were unhappy regarding 3-day turnaround times on routine tests from an ambulatory clinic on a hospital campus. Lab management claimed they were turning the tests around in a few hours. The process map (see figure 1) showed why both physicians and management were correct, and suggested some easy solutions for improving the turnaround time. In this example, the main problem was the timing of the process. By having a campus mail pickup after the lab reports were printed, and delivering the reports to the clinic before clinicians reviewed them, the turnaround time from the customer’s perspective (which was from specimen collection to physician review of results), was reduced from three days to about one day. A deeper analysis of the process map could produce even greater turnaround time improvements, but just this simple overview produced dramatic improvement without requiring additional resources.

Q: How does this example illustrate the importance of systems thinking?
Mr. Conkle: This case is a good example of why I prefer the term continuous systems improvement.
Quality Ideas: Continuous systems improvement (cont.)

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
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<tbody>
<tr>
<td>Day 1, 9AM: Blood drawn on John Doe (JD)</td>
<td>Day 1, 9AM: Blood drawn on John Doe (JD)</td>
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<tr>
<td>Day 1, 11AM: JD’s specimen picked up by lab courier</td>
<td>Day 1, 11AM: JD’s specimen picked up by lab courier</td>
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<tr>
<td>Day 1, Noon: JD’s specimen received in lab</td>
<td>Day 1, Noon: JD’s specimen received in lab</td>
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<tr>
<td>Day 1, 3PM: Lab finishes analysis of JD’s specimen</td>
<td>Day 1, 3PM: Lab finishes analysis of JD’s specimen</td>
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<td>Day 1, 5PM: Campus mailman picks up printed lab reports and brings them to mailroom. JD’s lab report has not been printed yet.</td>
<td>Day 1, 5PM: Lab performs batch printing of the last 24 hours of lab reports. JD’s results are in this batch.</td>
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<td>Day 1, 6PM: Lab performs batch printing of the last 24 hours of lab reports. JD’s results are in this batch.</td>
<td>Day 1, 6PM: Campus mailman picks up printed lab reports, including JD’s, and brings them to mailroom.</td>
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<tr>
<td>Day 2, 8AM: Lab reports reviewed by physicians in clinic. JD’s printed report is in the lab.</td>
<td>Day 2, 7AM: Lab reports, including JD’s, delivered from mailroom to clinic.</td>
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<td>Day 2, 10AM: Lab reports delivered from mailroom to ambulatory clinic. JD’s report is in the lab.</td>
<td>Day 2, 8AM: Lab reports, including JD’s, reviewed by physicians in clinic. TAT from collection of JD’s specimen to results review = 1 day.</td>
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<td>Day 2, 5PM: Campus mailman picks up printed lab reports, including JD’s, and brings them to mailroom.</td>
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<td>Day 3, 8AM: Lab reports reviewed by physicians in ambulatory clinic. JD’s report is in the mailroom.</td>
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<td>Day 3, 10AM: Lab reports, including JD’s, delivered from mailroom to clinic</td>
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<tr>
<td>Day 4, 8AM: Lab reports, including JD’s, reviewed by physician in clinic. TAT from collection of JD’s specimen to results review = 3 days</td>
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**Figure 1**

(CSI) rather than continuous process improvement (CPI). In the example, the system encompasses processes in the clinic, in the lab, and in the mailroom. The overall improvement would have been limited had the analysis been confined to only one of these locations. If the lab looked at a process map for the parts of system occurring inside the lab, they would have decreased turnaround time by one day by printing the batched reports before the reports were picked up by campus mail. However, simple, significant, improvements would have been overlooked. Similarly, the clinic, looking only at its process, could have improved turnaround time one day by reviewing lab reports after the mail delivery, but would also have missed improvements. When the groups worked together to analyze the whole system, a larger number of improvement opportunities were revealed.

### Q: Do you need a six sigma black belt or have any other special training to use a process map?

**Mr. Conkle:** Most laboratory supervisors are capable of drawing a process map and solving the problem just presented, without a significant amount of training. This can be done using a spreadsheet or a variety of flow charting software.

### Q: What is the role of the quality specialist who has received special training, for example the six sigma black belt?

**Mr. Conkle:** There is certainly a role for specialists like the six sigma black belt. These specialists can tackle the very toughest projects, and can also be used as advisors for other projects. In general, though, laboratory leadership can accomplish significant quality improvement without outside help.

### Q: We do not need to hire consultants or become statisticians to solve most of our quality problems?

**Mr. Conkle:** There is a growing, and unfortunate tendency to overemphasize tools and statistics and underemphasize understanding the customer. A focus on tools without an in-depth, companion effort of understanding the customer does more harm than good. If laboratory leadership concentrates on the customer’s needs and learns a few effective tools, like the process map, they can produce significant, sustainable quality improvements.

### Q: Can you elaborate on the third fundamental teaching, which is teamwork?

**Mr. Conkle:** For large projects, it is essential to put together a multidisciplinary team consisting of management, the staff that do the work, and customers. As illustrated by our previous example, the team should be able to cover the entire system under study. Management is essential since they allocate existing resources including space, people, and equipment. Customers and management also have the big picture view. For example, you do not want to start improving a process that management is about to make obsolete. Management and customers do not necessarily have to be involved in every team meeting. They just need to be involved at a level where they can keep the team informed, and be aware of its needs and goals.

### Q: We saw you get some conference attendees pretty excited with your description of “scraping burnt toast”. Why is this an important concept?

**Mr. Conkle:** A significant percentage of an organization’s efforts go toward scraping burnt toast, so that the toast is edible. I define scraping burnt toast as any activity to fix something that was not done correctly the first time. We do not want to get better at scraping burnt toast. We want to learn how to not burn the toast in the first place. All the effort that goes in to scraping the toast would be unnecessary if the toast was produced properly. In the long run, quality is improved, and resource utilization is optimized by taking the resources used to scrape burnt toast, and putting them toward producing higher quality toast the first time.

### Q: Where is the “scraping of burnt toast” in the turnaround time example we have been using?

**Mr. Conkle:** In that example, a bad system caused long turnaround times,
which leads to all the following examples of scraping burnt toast:
- Physicians phoning the laboratory in search of results.
- Physicians reordering some tests thinking that the delay is due to specimen loss.
- Patients phoning the clinic for the results before results are available.

The physician phone calls, lab staff looking up results, clinic staff answering the phones, and all the work associated with duplicate test orders are scraping burnt toast. Unfortunately, in many organizations, a huge quality improvement effort will go into how to better handle the phone calls and the extra testing volume. This is an example of trying to figure out how to improve the toast scraping. However, the work is unnecessary and largely disappears once the turnaround time on routine results is decreased from 3 days to less than one day.

Q: It seems obvious that the removal of the unnecessary work will free up significant resources.

Mr. Conkle: Yes, and those resources should be allocated to continuing to improve the process, since process improvement is never ending. For example, if you take a closer look at that process map in our example, there are other opportunities for getting the turnaround time from one day to a few hours, if that is what would help the physician.

Q: Any other closing points about scraping burnt toast?

Mr. Conkle: Besides saving time and resources, the removal of unnecessary work has a secondary effect of decreasing the distractions that can cause errors. All those phone calls are distracting.

References

Faculty Profile: Dr. Noah Hoffman

PROFILES is pleased to present a brief question-and-answer session with Acting Assistant Professor Noah Hoffman.

Interview conducted by Renee Layden.

Profiles: What do you do in Laboratory Medicine?

Dr. Hoffman: I spend most of my time working with the computer staff as Assistant Director of the Informatics and Specimen Processing Division. I’ve been grateful for a lot of help from Cathy Griffin and Dr. David Chou (as well as the rest of the computer staff) in getting me started in this role – there’s a lot to learn. The remainder of my time, I spend on research projects. I am affiliated with Dr. Brad Cookson’s Molecular Microbiology section and the needs of that area of the lab motivate some aspects of my research. I spend much of my research time at the Fred Hutchinson Cancer Research Center working with Dr. Robert Gentleman’s group in the Program in Computational Biology.

Profiles: How did you to decide to do this with your life?

Dr. Hoffman: During my graduate work (I studied HIV evolution at UNC Chapel Hill) I found myself drawn gradually from bench research to bioinformatics, and throughout medical school and my residency here I became similarly drawn to medical informatics. Now I’ve been lucky enough to find myself in a place where I can work on informatics projects that range from the applied to the theoretical, with the overarching goal of improving the delivery of health care in one way or another.

Profiles: What are you currently working on?

Dr. Hoffman: Nowadays, my service work mostly involves helping with projects related to automation and a major lab system upgrade, but there are a lot of other new and old information technology-related projects thrown into the mix. Other smaller scale but satisfying recent projects have included the creation, with much hard work from the Chemistry staff, of an online procedure manual and paperless workflow for quality control. I’m also especially excited to be involved in helping to plan for the long-term IT needs of the department.

My research is primarily focused on developing methods and tools to assist in the classification of organisms using genetic sequences. This work has immediate practical applications here in the lab. There are also many basic microbiologic questions to be asked involving the composition of microbiologic populations in health and disease. Right now, emerging high-throughput sequencing technologies can generate massive amounts of sequence data, but we’re just starting to create the software tools to allow us to manage and interpret this information. I’m also working on approaches to classifying organisms represented in these kinds of large-scale experiments.

Profiles: What would you most like to accomplish in your work, ideally and realistically?

Dr. Hoffman: Idealistically, I would ultimately like to contribute to measurable improvements in the delivery of health care. Hopefully, I can do this both through my clinical service and my research. Realistically, I’d like to do this without breaking anything.
In 1994, overcrowding at the main UW Medical Center necessitated the moving of the primary care clinics, some specialty clinics and the new Ambulatory Surgery Center to a new site located at 4245 Roosevelt Way. To provide laboratory services for these clinics, the Department of Laboratory Medicine created a “remote laboratory” on the first floor of the UWMC-Roosevelt 2 building. The original lab staff came from Lab Medicine divisions of Chemistry, Hematology, Specimen Processing and Phlebotomy.

The staff of two phlebotomists, four CLTs and four CTs provides blood draw services, specimen processing, routine and stat hematology, chemistry and urinalysis testing. They do a number of rapid strep tests, infectious mono tests and rapid influenza tests. It is important for the providers to have these results while the patients are in the clinic so they may make treatment decisions before the patients leave.

Point-of-Care Testing is a growing area for the Roosevelt laboratory. These tests are performed in the blood draw room and results are given to the patient before they see their doctor. Rapid INRs are performed for the Anticoagulation Clinic and Rapid HbA1Cs are provided for monitoring patients of the Diabetes Care Center. An average of 140 adult and pediatric patients visits the Roosevelt Laboratory each day for blood collection on a first-come, first-served basis. The hours of operation are 0730 – 1730 Monday through Friday. The majority of specimens are processed and sent via courier to Laboratory Medicine for testing.

The individual clinics that make up Roosevelt 2 (“R2”) use a variety of methods for placing lab orders. A primary challenge of the R2 Lab staff is to ensure that orders are placed and processed correctly, the work flows smoothly and error-free, and high quality service is given to the patients and providers. In the next few years, it is planned for UW Medicine Outpatient Clinics to move to the EPIC electronic order entry process. Once the new arrangement is in place, doctors will be able to request laboratory tests electronically through an interface between EPIC Electronic Medical Records and the Sunquest Lab Information System. The conversion of all UWMC Outpatient Clinics to this paperless system is an ambitious undertaking. The R2 Lab staff is looking forward to a standardized test ordering process throughout UW Medicine.

In the 14 years the R2 Lab has existed, the volume of work has grown substantially as clinics are added to the Roosevelt 1 and Roosevelt 2 buildings and patient populations grow. We commend the staff for the excellent service they provide and their contribution to UW Medicine.
We are pleased to announce:
Dr. Ajit Limaye has been elected to fellowship in the American College of Physicians! This is a great honor and we are all very pleased for him.

The 2008-2009 Strandjord Clayson Award winners:
Description: This award was established in 2000 to honor the founders of the Department of Laboratory of Medicine at the University of Washington. It is intended to recognize outstanding research performed by departmental graduate students, residents, or postdoctoral fellows. It has been given annually since 2000. Each year approximately three winners are selected from a pool of about twenty candidates. Candidates in the postdoctoral category must have an M.D., Ph.D., or comparable earned doctoral degree. Candidates are selected by a committee of three faculty members of the Department of Laboratory Medicine at the University of Washington based on review of the excellence of their published work and/or oral research presentations. The award is given annually in a departmental ceremony. Recipients receive an award certificate as well as an educational travel grant worth approximately $1000-$2000.

This year’s Strandjord-Clayson Awards went to:
- Amanda T. Harrington, Ph.D., Graduate, and Clinical Microbiology Fellowship Program, for her work entitled: “Old Dogs, New Tricks: Bordetella avium as an Opportunistic Pathogen and Global DNA Screening PCR for Neurocysticercosis”. (Faculty Mentor: Dr. Brad Cookson)
- Nancy Marie Dunbar, M.D., Laboratory Medicine Resident, for her work entitled: “Thrombin Generation in Trauma Patients” (Faculty Mentor: Dr. Wayne Chandler)
- Hui Li, Ph.D., Senior Fellow, Virology Division for her work entitled: “Investigation of Hepatitis C Virus Superinfection and Evolution in the Alaska Natives and American Indians Cohort” (Faculty Mentor: Dr. David Gretch)