INFORMATICS DIVISION | AACC Better health through laboratory medicine.

REBOOT

WINTER 2014

LIS/MI Rebooted as the Informatics Division

Over the course of the past eight months the LISMI Division has been rebooted. We have a new name, a new executive committee, new opportunities for communication, a new strategic direction, new initiatives, and new (updated) bylaws.

Introducing the Informatics Division!

At its meeting in November in Washington DC, the AACC Board of Directors approved the renaming of the "Laboratory Information System and Medical Informatics" Division to the "Informatics Division". As division members, you should have received an e-mail alerting you to vote for the name change. If you did not, please confirm that the contact information in your AACC profile is accurate. (More about communication below!)

The basis for the name change was to better describe the diversity and range of the interests of the division membership. As outlined in the ballot, we want to deal with laboratory informatics and medical informatics, but we also want our division to expand its scope to bioinformatics. The new executive committee, elected at the end of June (ironically using a paper ballot) met during the AACC annual meeting in Chicago last summer and unanimously agreed that the name change would better reflect the division's new horizons.

Informatics Division Goals

At a recent division executive meeting, we developed a new set of goals. They are:

- Help members use their laboratory information systems in more innovative ways to enhance patient care
- Help members use a variety of data sciences to enhance quality management
- Help members prepare for advances in informatics that will have a major impact on the delivery of healthcare

Our division is central to many of the activities of other divisions, especially management; clinical translational sciences; proteomics & metabolomics; and personalized medicine. But essentially any question that involves using the LIS, EHR, or a digital dataset of any size involves informatics. So, we envision many collaborative opportunities with other AACC divisions, as well as many other organizations, in the future.

Initiatives for 2015

With these new goals in mind, we have planned several initiatives for 2015. The first of these is this newsletter, titled (appropriately) **"Reboot"**. We promise to provide it to you at least twice a year.

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The first of these is **Bytes**, a series of short presentations on selected topics in informatics. The first two in 2015 will be "Moving Averages" (presented by Dr. Mark Cervinski) and "Information Management" (presented by Dr. Matthew Henderson). Bytes will be recorded and available on the division website. If you have a topic you'd like to hear about (or present) please let me know.

Another initiative for 2015 is to have a **poster walk** at the AACC Annual Meeting in Atlanta. A selection of hot topics and interesting abstracts will be selected and we will schedule a tour during which the authors will present their poster and answer questions. This initiative was very successful for some other divisions at last year's meeting and provides a great opportunity for presenters to share their work with a focused audience.

The Informatics Division is also planning a Monday **lunch event** on Monday July 26, as well as a joint event with the Lipoproteins and Vascular Diseases Division. Details to follow.

Finally, we are planning to revise the popular Basic Principles of LIS **Certificate Program**, originally spearheaded by Joanna Baker, by expanding its scope to include other aspects of laboratory informatics. We hope that some of you will volunteer to help us with this important task.

Communication

AACC recently launched a redesigned website which includes a new community portal called AACC Artery. Although there is an open forum, there are plans for all of the individual AACC communities to also have their own. SYCL and the Northern California local section were the two beta testers. We are lobbying to be the first division! In the meantime, we still need your input and feedback. Please contact any of the division officers (listed nearby) if you have questions, concerns, ideas for "Bytes", or want to help us with any of the new initiatives.

Best wishes,
Chris McCudden
Chair, Informatics Division

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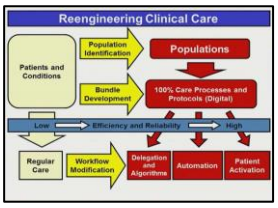
AACC 2014 Annual Meeting Informatics Recap

Plenary Lecture

Probably the highest profile session related to informatics was the plenary lecture given by **Viktor Mayer-Schonberger**, the author (with Kenneth Cukier) of the 2013 book *Big Data*. It was an entertaining tour through "datification" – the transformation of our everyday existence into billions of data points. He paid homage to Commodore Matthew Maury, who rigorously recorded minute details of seafaring in the 19th century and showed how this approach is being used today to make predictions about everything. The only clinical example he mentioned (other than the story of Google's flu prediction model) was using a big data approach to the diagnosis of neonatal infection. When he warned that humans must maintain control in order to preserve trust and avoid misuse he cited Orwell's novel *1984* and (an uncredited) image of Tom Cruise in the film *Minority Report*, based on the novel by Phillip Dick, in which probabilistic predictions of crimes are made before they happen. It was surprising that he didn't mention *Gattaca*!

Symposia

Several symposia addressed informatics topics, mostly from 35,000 feet and with a definite focus on healthcare reform. The most interesting was **Big Data: Applying Analytics to the Practice of Laboratory Medicine**, developed with INFORMS, featured an overview of how IT has been integrated across platforms at Geisinger by Jay Jones and examples of utilization reduction using data mining by Bradley Brimhall from the University of Mississippi.

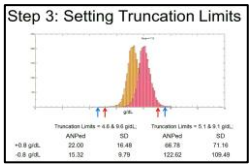


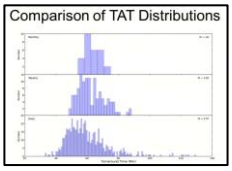
Short Courses

There were three short courses of interest to Informatics Division members at the 2014 Annual Meeting.

In **Application of Biological Variation to Clinical Laboratory Practice**, Alan Wu reviewed the principles of biological variation and his colleague Roy Gerona described how they have modified their QC program at San Francisco General Hospital using the total allowable error, reducing unnecessary troubleshooting significantly.

In **Application of Patient Based Quality Control Algorithms**, Curtis Parvin from Bio-Rad reviewed the history of using patient results as a QC tool and described various approaches to the use of **moving averages** (including exponential weighting). Our own Mark Cervinski followed this discussion with a primer on how to implement moving average rules and how to assess their performance.





Finally, **Utilizing IT to Achieve the Clinical and Financial Goals of the Hospital Laboratory** offered a potpourri of third-party software applications. James Harrison, from the University of Virginia, discussed open-source products such as Python and Canopy and demonstrated how to extract files from the LIS and transform the data into customized reports in order to investigate everyday problems. The example he used was an analysis of an uptick in turnaround-time. Jorge Sepulveda, from Columbia-Presbyterian described the use of routine third-party applications (such as Excel) to fill in the gaps that he sees in most LISs. These include advanced reporting (with hyperlinks instead of dense paragraphs that no one will read) as well as what he calls "para-analytical" databases, such as inventory and personnel competency records. Timothy Skelton, from Lahey Clinic, wound up the course with several tips regarding the use of middleware. All three of these short courses are highly recommended.

- Jim Faix

All of the sessions mentioned in this recap may be purchased on the AACC website.

database
recent publications of interest

Did you know that articles related to "laboratory systems & informatics" published in *Clinical Chemistry* appear automatically on our division website? Here are the three that have appeared there so far this year (with commentary).

Trust the Naked Eye

In the July issue, Jim Boyd and Tom Annesley riff on an essay published earlier in the year in *Nature* by Regina Nuzzo. She describes the history of the p-value and explains why it may be wrong to use it to interpret all medical research. She encourages alternative approaches, especially assessment of the probability that a given hypothesis is true *a priori* (see the "citation classic" described below). In a separate article (oddly not automatically uploaded to our website), they provide an instructive exercise proving that the p-value can be misleading. If you have ever looked at a box-and-whiskers plot and wondered how in the world the two groups could be "statistically" different, you must check this out! Here's hoping that *Clinical Chemistry* continues to provide more exercises like this in the future.

- **Boyd JC, Annesley TM. To p or not to p: That is the question. *Clin Chem* 2014; 60:909-910**
- **Annesley TM, Boyd JC. The p value: Probable does not mean practical. *Clin Chem* 2014; 60:1021-1023**

Big Data Hubris

In the August issue, Molly Webster and Vikram Sheel Kumar discuss the failure of Google Flu Trends, launched in 2008, to accurately predict the prevalence of the flu outbreak in the US. Mining the searches for flu-related words – and knowing where the searchers were located geographically, their algorithm was presented as a new way to do epidemiological surveillance. Unfortunately, it predicted much higher rates of flu than CDC each year of use so far. (Interestingly, it compared more favorably with established models of surveillance in other countries.) The problem occurred because Google had failed to update their model as the nature of the searches changed over time. As tech companies launch more of these products, their lack of transparency (in terms of the computer modeling used) may hinder their acceptance. This story was also discussed by Viktor Mayer-Schonberger in his plenary lecture at the AACC Annual Meeting in July.

- **Webster M, Kumar VS. Big Data Diagnostics. *Clin Chem* 2014; 60:1130-1132**

Too Good to be True?

In the September issue, John Ioannidis from Stanford comments on his "citation classic" from 2005: "Why most published research studies are false". In that essay, originally published in *PLoS Medicine*, he described the major problems with most published biomedical research: bias; small sample size; small reported effects; lack of standardization regarding design; and a failure to be skeptical of the success of the experiment *a priori*. (After all, the null hypothesis is that the study will show no difference between the two groups.) Looking back, he optimistically notes that many people now agree. However, progress has been slow. He expands on this theme in a more recently published essay in *PLoS Medicine* (11:e1001747) which is worth seeking out.

- **Ioannidis JPA. Modeling and Research on Research. *Clin Chem* 2014; 60:1238-1239**

Have you read any reports, articles or essays recently which you think may be of interest to the membership of the Informatics Division? Send suggestions for this column to Jim Faix (jim.faix@stanford.edu).