Conference Highlights

In reviewing the agenda for this year’s conference, one would imagine another event organized to discuss what we have been talking about for few years in precision medicine: big data in a real world. I always considered it odd that initiatives on applicability of big data were led, designed, and presented by academic institutions. Often viewing them as silos for resume builders, clinicians can be left searching for replicability and applicability of such initiatives.

However, I was pleased to hear the following during this conference that made me reflect on our practice:

Convergence of technologies for profiling diseases at molecular level
Think sensors, mobile devices, digital wearables, social media platforms. All have been and will continue to be used to monitor health (health data points) in real-time and outside of HC institutions. You can say that healthcare is coming home via HIT (health internet of things). It only makes sense that companies such as Microsoft and Intel are becoming frequent flyers at such conferences. Consumer driven healthcare indeed.

Converting data-intensive medicine to secure, transferable and data-informed medicine
Think how disruptive current data collection, aggregation, interpretation and implementation is to our clinical practice. Or for our patients, who have to collect and share data across HC facilities, states or countries. Changes are already taking place. New organizational models for HC services are emerging through use of artificial intelligence, machine learning, deep learning, blockchain, and augmented reality. We are past making remarks how futuristic this sounds.
**Cost of HC- how does PM factor in +/- to overall cost.**
Examples shared on how to “properly” utilize tools of PM, especially with pre-disease and disease prevention. What can help with cost reduction and better utilization? Things that are scalable, actionable, accurate and reproducible. Patient stratification, standardization of workflow, building efficient PM infrastructure including all elements of its multi-omic community. Much discussion was generated on utilization of PGx to reduce cost via patient centered and optimal medication therapy selection. Lots of questions on increased adherence due to PGx testing. New PGx companies are popping up. We are still in muddy waters with lab/test standardizations, proven clinical utility and regulations. In addition strength of evidence for PGx testing is low. We need more research.

Example of new disease level PM mode: A new model for melanoma by PM Connective with solutions offered for clinical practice, diagnostics, pharmaceuticals, reimbursement, regulatory, guidelines and education.

**Clinical trials- next generation clinical trials.**
Great example of how it can be done offered by Laura Esserman, MD. MBA Director of Breast Cancer Center, UCSF. Would have loved to hear examples/models beyond oncology.

**Color.**
Current Precision Medicine is still predominantly white, from panelists to patients. Much discussion beyond panels – efforts to expand biobanks, ongoing and upcoming population health efforts by government and private HC institutions.

**PGx at the Conference.**
Stakeholders want to understand pharmacogenomics better. It generated many discussions. At last year’s conference, PGx was represented only once via Roundtable discussion led by Chris and I: http://intranet.mayo.edu/charlie/inside-mayo-clinic-research/2016/09/02/three-key-takeaways-from-pharmacogenomics-summit/

This year however, there were several events on PGx:

**Workshop.**
Integration of Pharmacogenomics in Patient-Centered Healthcare – Adrijana Kekic, PharmD, BCACP, CTLC. – Program Director Outpatient Pharmacy Education, Mayo Clinic

Very diverse group of participants from clinicians, researchers, payers, lawyers and academics. It was very well attended workshop (standing room !) with lively discussions.

**Roundtables.**
Drug and Gene: Pharmacogenomics for the Modern Healthcare Team – discussion leaders Adrijana Kekic, PharmD. Christopher Grilli, PharmD. Mayo Clinic Pharmacogenomics in Clinical Practice: Conduits and Barriers to Implementation and Utilization – discussion leader Ross Higgins. MBA, MLS (ASCP), OneOme
Panel.
Primum Non Nocere – A Clarion Call for Ubiquitous PGx Testing in the Clinic
Moderator: Deepak Asudani, MBBS, MPH, Associate Clinical Professor of Medicine – UCSD
Panelists: Jeanette McCarthy, Ph.D., Founder – Precision Medicine Advisors, Chris Grilli, PharmD, MBA, Manager of Outpatient Pharmacy – Mayo Clinic, Ross Higgins, MBA, MLS, Director of Laboratory Operations, OneOme, Douglas J. Conrad, MD, Professor of Medicine, Director for Adult Cystic Fibrosis Program, UCSD

It did not surprise me that Chris’ comments and perspective drew some cheering from audience.

In Conclusion:
Yes it is still about big data. However, are we waiting on Godot?

As Atul Butte, MD, PhD argued we already have plenty of good old vanilla data. The problem is that we don’t use it. We can mine it from EHR, imaging, genotyping, cancer genetics, clinical research insurance claims, online data, etc. Despite all that data we are still excluding “invisible ones” those who are not “sick” or are not touching our health care system.

Are we really to look at countries such as Estonia? They have had medical records for more than 15 years and have been using AI algorithms based on their biobanks to manage diseases, like diabetes. Their predictive capability is described as “spooky”.

I hope that was meant as a positive thing.

One lesson from this big data saga is the need for accuracy in precision medicine. Precision dosing software platforms are starting to emerge. DoseMeRx are teaming up with Cerner’s HER platform, Millennium, to deliver the benefits of real-time dosing software.

It extracts information from EHR (age, weight, labs, PGx data, etc), calculates the most effective dose with no extra steps required. This allows provider to quickly and accurately dose a patient based on their individual factors.

Medicine is going digital- FDA is catching up.
In order to protect genetic privacy a relatively new trend is on horizon: encryption of DNA. And here we enter the world of AI boosted, blockchain based healthcare. More discussion on this at the next Precision Medicine Leaders Summit 2018. Talks are ongoing to host it in Phoenix, AZ. Considering Prof.Poste’s (ASU) role as Co-chairman of PM Journal, I can foresee it happen.

More information on agenda and speakers are available at: http://www.precisionmedicineleaderssummit.com/agenda/

Adrijana Kekic is a Program Director of Education, Outpatient Pharmacy at Mayo Clinic in Phoenix, Arizona. She is active in clinical care, research and lecturing and has been involved in development of pharmacogenomics services and education. She is a licensed pharmacist in Arizona.

Dr. Kekic earned the Doctor of Pharmacy degree from Midwestern University College of Pharmacy in Glendale, Arizona. She is board certified ambulatory care pharmacist through Board Pharmacy Specialties (BPS) and a member of BPS Ambulatory Care Committee. She holds a certification in Pharmacogenomics from University of Florida College of Pharmacy and is pursuing a Genomic Medicine certification from Stanford University.

Adrijana has served as an adjunct faculty at Midwestern University College of Pharmacy and an instructor, preceptor and residency preceptor at Mayo School of Medical Science. She is involved with several pharmacogenomics research projects and studies in palliative care, transplant care, anesthesia and cardiology. She sits on Pharmacogenomics Task Force at Mayo Clinic.

With two decades of clinical experience and expertise in medication therapy management, Adrijana continues to advance pharmacy practice and pharmacy leadership. She is a founder of a networking platform dedicated to high impact professional women in healthcare. She lives in Arizona with her husband and son, where they enjoy hiking. Besides pharmacogenomics, her interest include languages, history, visual arts, martial arts and healthy living.