

Inter-Society Coordinating Committee for Practitioner Education in Genomics (ISCC) Meeting

January 14, 2016

Bethesda, MD

Review of Mission/Vision/Strategic Plan of ISCC - Ann Karty

Ann Karty, Associate Professor in the Department of Family Medicine at the University of Kansas representative for the American Academy of Family Physicians and external co-chair for ISCC, opened the meeting. She reviewed ISCC's progress in the past year. Originally, the committee had only four working groups; the number of working groups has now expanded to seven. The focus of this meeting would be to consider implementation projects and other opportunities. Ann Karty asked that committee members identify three to five SMART (Specific, Measurable, Achievable, Realistic, Timed) goals and set initial strategies to support each goal **[Action]**.

Current Status of ISCC Work Products and Plans – Bob Wildin

Bob Wildin, Branch Chief of the Genomic Healthcare Branch at NHGRI and NIH co-chair for ISCC, summarized the current status of ISCC along with updated work products and plans. The updated ISCC website can be found at <http://www.genome.gov/iscc>. The committee is now composed of 155 members representing 81 societies, government organizations, universities, and private entities. The three new working groups include Innovative Approaches to Education, Insurer Staff Education, and Speaking Genetics.

Bob Wildin talked about the sustainability of ISCC. The problem is that NHGRI can only offer limited staff and meeting support to ISCC, so scaling up and sustained progress may depend on other funding commitments. In 2015, NHGRI approached the Foundation for NIH (FNIH), for general funding to support ISCC. FNIH ultimately declined this request, but showed interest in ISCC's efforts. The foundation strongly encouraged ISCC to pursue project-oriented funding requests in the future.

The online [Genetics and Genomics Competency Center \(G2C2\)](#) has a new introduction video on its home page that explains the website and its features. Additional changes to the site are also underway, and will be available in the next year. New proposed features include a revision of the search and navigation experience, new resources and competencies, and an expanded editorial board. Bob Wildin emphasized the need for ISCC to continue moving forward and for members to implement their ideas with rigor.

Review Mission/Vision/Strategic Plan of ISCC – Ann Karty

Ann Karty reviewed the mission, vision, and strategic plan of ISCC. In 2015, ISCC members agreed that the committee's vision and mission should be reviewed quarterly during the group's monthly calls. Quarterly reviews have resulted in a new charter document.

The vision of ISCC is "To improve genomic literacy of physicians and other healthcare providers and enhance the effective practice of clinical genomic medicine, through joint identification of educational needs and sharing best practices in educational approaches." Its mission is "To facilitate interactions among professional societies and related organizations to enhance and promote the understanding of practitioners in applying genomic medicine to cost effective decision making and clinical care. The ISCC's role is to stimulate the activities of these members, by offering leadership, partnership, and expertise

when desired by individual societies.” In addition to the revised charter, ISCC will create a more formal strategic plan with objectives, goals, and business plans to help carry out the group’s long-term vision.

A Practical Approach to Precision Medicine – Jeanette McCarthy

Jeanette McCarthy, Editor-in-Chief of [Genome magazine](#) and adjunct professor at Duke University School of Medicine and University of California – San Francisco (UCSF), presented the barriers to precision medicine’s implementation and offered educational solutions to counter these challenges. There is poor uptake of genomic technology by providers, and this is due to several characteristics including lack of awareness, skepticism, lack of confidence, and cost/lack of coverage. The first three characteristics can be directly addressed via educational means.

In the spring of 2014, UCSF offered Coursera class titled, “Genomic and Precision Medicine” for the first time. Jeanette McCarthy was one of the instructors for this class. Coursera is an online learning portal that offers massive open online classes (MOOCs) that anyone around the world can access. “Genomic and Precision Medicine” was a seven-week course designed for healthcare providers. For completing the course, providers received 14.00 AMA PRA Category 1 Continuing Medical Education credits. The course syllabus and information can be found here: <https://www.coursera.org/course/genomicmedicine>. Videos, which are free to use for educational purposes, can be accessed here: <https://gmi.ucsf.edu/cme-outreach/#coursera>.

Coursera is a platform to provider education with a large reach. Students enrolled from all over the world. The online platform was very interactive and facilitated peer-to-peer collaboration. The only problem was that the course had a huge drop-off rate; over 13,000 individuals enrolled in the class, but under 2,000 actually finished the entire course. This is typical with Coursera classes.

Jeanette McCarthy described a very practical approach to provider education. Teaching providers to use genomic technologies is analogous to teaching someone to drive a car. One does not need to be a car mechanic to learn to drive, and similarly, providers don’t need a PhD in genetics to practice precision medicine. New drivers receive driver’s education (including time behind the wheel), a driver’s license, and an owner’s manual to learn how to use their vehicles. They also have places to take their car to have someone else more experienced do ‘routine maintenance’. Applying this analogy to precision medicine, providers need both didactic and hands-on education to learn how to use genomic technology. It might also be helpful to offer some type of license or certification for providers who have proven that they have the training to practice precision medicine. Resources like guides and clinical decision supports (CDS) could act like owner’s manuals. Finally, for deeper expertise, providers may refer to genetic counselors and other specialists for assistance – this is akin to routine maintenance. Finally, Jeanette McCarthy closed by suggesting that the group clarify which behaviors it would like to change. Does the group want providers to order more tests or fewer? Perhaps the group would like to maximize the potential of existing genomic information from patients.

Genomics and Patient Safety: Practical Applications for Pharmacogenomics - Samuel Johnson

Samuel Johnson, Director of Health Policy and Interprofessional Affairs at the American College of Clinical Pharmacy, discussed participation in the August 2014 Institute Of Medicine (IOM) Genomics Roundtable titled “[Improving Genetics Education in Graduate and Continuing Health Professional Education: Workshop Summary](#).” Five themes discussed at the Roundtable included challenges in reaching providers, just-in-time education, innovative education models, building evidence to reduce

mistakes, and how to be interprofessional. Several takeaways included the relevance and availability of just-in-time learning as well as the notion that Continuing Medical Education (CME) should be more interprofessional and leverage existing initiatives such as PROCEED and MedEdPortal. These just-in-time approaches could be supported by such technologies as UpToDate, which makes collated educational information accessible through electronic medical records. The challenge to this, however, is the prolonged lag time for translating research findings into practice.

The concept of interprofessional education (IPE) was explained to be "... when students from two or more professions learn about, from, and with each other to enable effective collaboration and improve health outcomes. Once students understand how to work interprofessionally, they are ready to enter the workplace as a member of the collaborative practice team. This is a key step in moving health systems from fragmentation to a position of strength [[Interprofessional Education Collaborative](#)]." A chieftakeaway from the Workshop was that IPE is valuable because healthcare systems are so complex that different perspectives are needed to achieve the best outcomes.

While these takeaways were noted from the IOM Genomics Roundtable, medical practice realities highlighted from an American Journal of Family Medicine article noted that most physicians can only deliver 55% of recommended care, with 42% of physicians reporting there is simply not enough time with their patients, and providers spend 13% of their day on care coordination. Ultimately, the time demands on a primary care physician's day averages 18.7 hours. These observations suggest that medical practice needs to evolve, and to expand integration and collaboration efforts with other health professionals, including clinical pharmacists.

One practical illustration of the interprofessional approach was highlighted. Kaiser Permanente's National Program spans seven regions, serving eight states and Washington, D.C. The program provides clinical genetic and testing services to guide personalized-evidence based care decisions and care delivery through a team based approach. The three strategic pillars to realizing the program's vision include: evidence based quality care, collaboration and affordability, and IT and enabling infrastructure. The program is assembled as it is because a team based approach is needed in genetic testing and selection in Oncology (the program focused initially on Oncologists).

An interregional genetic testing resource (IGTR) plan was developed focusing on oncology physicians' day to day needs. The resource shows genetic tests relevant to oncology and includes links to cost information but it does not advise as to which test should be used. A biorespository, the Kaiser Permanente Research bank, is available to house at least 500,000 samples to facilitate clinical translation. A roadmap of resources in each region is being built to identify champions for pharmacogenomics and provide content expertise to help guide the implementation and research of the National Program.

Precision Medicine concepts were presented and included applied pharmacogenomics to aid healthcare providers and it was noted that recent comments by President Obama augment current translational efforts. The interim data highlight a few stumbling blocks for regional testing with the approach still being reactive single gene testing. Several examples were provided that are useful and can be embedded within to assist health care providers. Additionally, the CPIC Informatics Workgroup has implemented an algorithm designed to be vendor agnostic and facilitate just-in-time clinical pharmacogenomics recommendations. The University of Florida and St. Jude's Pediatric Research Hospital have also designed pharmacogenomics tools that are linked to problem-list entries for specific diagnoses. Finally, G2C2 also serves as a resource for health care providers. During the ensuing

discussion session, it was mentioned that outcomes data has not been collected and with that, validation methods will also be needed.

Update on Maintenance of Certification and Accredited Continuing Medical Education - Steve Singer

Steve Singer, Vice President for Education and Outreach for the Accreditation Council for Continuing Medical Education (ACCME), began the presentation by reminding the members of the ISCC whose organizations are accredited within ACCME system that there are staff within their institutions whose professional responsibility is to plan and implement accredited CME. Steve Singer highlighted the opportunity for collaboration between the ISCC member representatives at the meeting—who are experts in genomics, genetics and (often) in education—and the education experts whose focus is on using continuing education to address practice-based problems for their organizations and audiences. The ISCC was tasked to look back and find those people as a great way engaging educators to facilitate ISCC-related education efforts **[Action]**.

Steve Singer provided a brief overview of the scope of the national CME system (E.g. >140,000 activities, 24 million educational interactions with physicians and other health professionals) in order to illustrate the abundance and diversity of educational opportunities that are delivered each year by the CME enterprise (via data the ACCME 2014 Annual [report](#)).

In September 2015, ACCME and the American Board of Internal Medicine (ABIM) announced a collaboration to expand the opportunities for accredited CME activities to be recognized for meeting ABIM's Maintenance of Certification requirements (MOC) for internal medicine diplomates. Steve Singer explained that each specialty board has its own approaches to accredited CME, based on the shared 4-part MOC construct introduced by the American Board of Medical Specialties. Different boards currently have different processes for recognizing and approving accredited CME. The new collaboration between ACCME and ABIM makes it possible for any organization accredited within the ACCME system to register CME activities for MOC, provided that they meet the ABIM's Medical Knowledge Recognition Program [requirements](#) (shared via ABIM and ACCME websites). There is no cost for registering accredited CME activities for MOC, and the process of registering activities (and submitting physician participant data) is conducted through ACCME's Program and Activity Reporting System, the web-based platform that all CME providers currently use to submit data about their CME activities. Since its launch in September, over 1,300 CME activities have been registered for ABIM MOC and more than 10,000 diplomate records of participation have been submitted. ACCME and ABIM's goal is to liberate MOC and CME with a simple process that can recognize the value of CME that is currently being conducted throughout the CME system. There is an opportunity for the ISCC members and their stakeholders to turn local CME activities into MOC activities that support education in genomics. It was emphasized during the question and answer session that ABIM is the first specialty board to offer this simplified process for MOC/CME, but ACCME is actively engaged with other specialty boards to explore opportunities for similar collaborations.

Primary Provider “Just in Time” Education That Supports Screening Healthy Volunteers with Genomics – Michael Murray

Michael Murray, Director of Clinical Genomics, Genomic Medicine Institute, Geisinger Health System, began the presentation with a problem encountered in genomics medicine, the increase in breast and ovarian cancer due to BRCA 1 and 2 variants. There are methods for identifying individuals at risk for the cancers but those at risk are not aware of it. The educational solution is to teach providers to identify

the risk and order the appropriate testing. While the USPSTF has proposed an analysis of risk, and Angelina Jolie's story has built awareness, the question was asked if it is an educational failure that women are not aware of the risk. Michael Murray's answer was no, it is not an educational failure because part of the problem is most women do not have a history of breast cancer in their family, so this trigger for testing is not in place when doing family history.

The approach to genomic testing is changing. In the past, testing was targeted and provider education was based on who and how to test, and what to do with the results. The future of genomic testing is more population based and provider education focused on what to do with a positive result. Geisinger Health System has programs that enables "just in time" education that supports genomic screening of healthy individuals. The GenomeFIRST Program uses information from DNA sequencing as a trigger for clinical evaluation and management and phenotype, led by clinical clues, for clinical evaluation and management. Geisinger has the MyCode Biobank that recruits patient participants from across the healthcare system to join the program. Samples from 50,000 patient participants have undergone whole genome sequencing for discovery research.

The GenomeFIRST program returns secondary findings to participants with pathogenic or likely pathogenic findings using the "Geisinger 76", which includes ACMG's 56 genes plus an additional 20 genes. Expectations include 1 in 50 patients will receive a result and half of the results will be linked to three conditions. Infrastructure and decision support will be developed to support patients and providers. Approximately 95,000 participants are enrolled in the MyCode Biobank with a goal of 250,000 enrollees. It is anticipated that 9 genes will be associated with the three conditions that will drive half of the return of results. Supporting tools for providers in returning results includes just in time Continuing Medical Education, condition specific standardized phenotyping and the opportunity to consult with clinical genomics and other specialists. The immediate target audience is over 1000 practitioners motivated by the desire to manage their patients. The principles of provider education are to start with the result, to avoid trying to create genetics experts, offer repetitive opportunities to learn content, motivate by offering CME credit and make it available to an external audience.

The GenomeFIRST offers 30 CME education modules on an internal website. Pre and post-test evaluation is also offered. Providers that receive medically actionable clinical results will receive a hyperlink to a condition specific module. Examples were provided of condition specific modules and how to explain DNA is not a diagnosis. The goal is to give the provider the tools to ask the right questions and take right steps. The Geisinger GenomeFIRST program has identified five diagnostic patient groups that will receive secondary results.

During the discussion session, Michael Murray mentioned that patients that sign up for the MyCode Biobank do not always tell their providers, so when the providers receive the results in the electronic health record and did not anticipate this information, it can create issues for the provider. To inform providers before they notify their patients, the provider receives the electronic healthcare information a week before seeing their patient. They also inform the provider of how to receive CME credit and communicate via email as a show of support. Michael Murray noted that they measure content retention and patient management of those who have taken the CME credit vs. those who have not. It was suggested that other groups to be evaluated should be those providers who have taken the CME but had no patients with results and lifelong learners who want all the courses offered. Finally, Michael Murray mentioned that funding issues limit how much they can engage the patient and physician together to address issues.

The Patient's Voice – David Dubin

David Dubin, founder of the non-profit [AliveandKickn](#), is a survivor of colon cancer and started the non-profit with a mission of improving the lives of those affected by Lynch Syndrome. Lynch Syndrome is a hereditary disorder that increases the risk of many types of cancer including colon cancer. Advocating for Lynch Syndrome research has been difficult for organizations resulting in virtually no traction. Funding has proven difficult to secure but it does not detract from David Dubin's goal of raising the profile of Lynch Syndrome and increasing funding. To help with this effort, AliveandKickn is launching a platform for engaging the public responsibly. The platform will include a portal for research engagement where participants can share their information medically and socially. During the discussion session, David Dubin remarked that what is missing from the patient perspective is repetition, awareness and having faces and voices associated with an issue. Keeping this in mind, his approach is to be memorable and incite someone to think further about the issue. He also commented that population based screening for Lynch Syndrome should be considered.

Case Studies – Reed Pyeritz and Wendy Rubinstein

Co-Chairs Reed Pyeritz and Wendy Rubinstein represented the ISCC Case Studies Working Group. This working group was tasked with developing educational materials based on scenarios that health care professionals are likely to encounter in practice. Highlights of the group's progress since the last ISCC meeting included the working group finalized the survey, found a hosting organization, and vetted the distribution plan. ISCC members agreed that the survey distribution should focus on leaders and education specialists of non-genetic organizations and should be redistributed within their specialties. Wendy Rubinstein noted that Association for American Pathology (AMP) emailed the survey to all ISCC members on January 12, 2016. The survey will be distributed by ISCC members in Australia. The working group is continuing to engage with the ISCC and is seeking case studies for the working group to develop. The working group recognizes there are perceived educational gaps for both this working group and more generally, the ISCC. If the case study enterprise is going to be sustained, writers must be identified who have domain knowledge and a cogent plan for disseminating materials needs to be developed. This working group is asking for the ISCC to complete the survey, for the survey to be emailed ASAP to those in professional organizations who can answer on behalf of membership, and volunteers for survey analysis **[ACTIONS]**.

Educational Products – Kristin Weitzel and Donna Messersmith

Co-Chairs Donna Messersmith and Kristin Weitzel reported for the Educational Products Working Group. The tasks for this working group were to expand G2C2 resources and enhance its usability, collect educational products from the ISCC, identify federal funding initiatives related to genomics education and clinical practice, use use-cases and other groups to identify areas of emphasis for educational products, and identify new advances that may require education. Since the last meeting the group has presented a poster at ASHG titled "[Development of a competency based genomic education resource for physicians](#)" and they continue to expand G2C2 resources and add new members to the editorial board. Overall, there are 70 pharmacist reviewed and updated resources and 77 physician reviewed and updated resources on G2C2. Since the last ISCC meeting, the Educational Products work group has participated in the review and update of 24 resources and 17 new resources were added to the physician collection.

G2C2 enhancements are in progress as search options, results and filtering displays are enhanced. Also, an update to the home page will highlight all of the unique features of G2C2. An introductory video for G2C2 adds to its usability. One of the challenges for this working group has been spreading the word about the G2C2 resource to the community. ASHG did provide a wonderful opportunity to connect with others. The group is seeking more resources and welcomes suggestions for connecting with the ISCC network and other groups **[ACTION]**. Next steps: The group will explore creating summary pages for each ISCC participating association. These G2C2 webpages will highlight the association's educational resources, both those accessible through G2C2 and mapped to competencies, as well as those not in G2C2 but available on the association's website.

Innovative Approaches to Education – Rich Haspel and Teri Manolio

Rich Haspel provided an update of the Innovative Approaches Working Group he co-chairs with Teri Manolio. The group was tasked with developing novel ways to teach genomics. The initial approach involved creating a universal module that utilizes the team-based learning and flipped classroom models adopted by the Training Residents in Genomics (TRIG) Working Group (www.pathologylearning.org/trig). The Universal Module targets healthcare professionals with limited genetics knowledge who encounter genetic issues in their work. Using a survey-based approach to gather input, 4 universal modules were developed and several members of the Innovative Approaches WG have started adapting to their specialties. With recently acquired grant funding from NHGRI (as a supplement to a R25 NCI grant), modules will be specifically developed for cardiology, ophthalmology and neurology. To help disseminate module-based teaching a handbook and toolkit will also be developed. There are also several upcoming workshops using the TRIG team-based learning approach and the grant may be able to provide travel funding for ISCC members who may want to see the process first-hand. Contact Rich Haspel for more information.

The working group's next steps include tweaking current specialty specific modules, adding member society participants, and creating and disseminating the handbook and toolkit. The ask of the ISCC was that member organizations consider developing the universal modules for their specialty and arrange a teaching session at an annual meeting. The universal modules are meant to be "plug and play" to simplify adapting to different specialties. Dr. Kiran Musunuru adapted the modules for a recent successful workshop at the American Heart Association annual meeting and the universal module format made the process less burdensome. There was a question related to upkeep to make sure the modules stay current. Rich Haspel remarked that before every workshop, he double checks the data base links to be sure they still direct trainees to the right information.

Insurer Staff Education – Suzanne Belinson and Bob Wildin

Suzanne Bellinson provided an update on insurer staff education resources. A series of education [webinars](#) have been created since the last meeting, through a collaboration of NHGRI and Blue Cross Blue Shield Association (BCBSA). The education webinars are targeted towards insurers and the goal is to assist them with understanding genetic testing strategies, interpretations, outcomes and patient care, and use that understanding in making sound decisions regarding the healthcare activities of their insured.

Best practices for developing these types of resources were discussed and it was noted that it is useful to utilize networks for populating speakers for topics. Moreover, the group was sure to focus on the fit of the presentation for the audience.

The webinars are available and being disseminated on genome.gov. The group is interested in dissemination strategy suggestions. The next steps for this group are to determine webinars to be disseminated to payors and review for any missing elements such as what webinars need to be provided. During the discussion session, Suzanne Bellinson noted that one of the practices is to draw in medical directors and their team members to view the webinars so they can see the webinar value. At this point, webinar attendance has remained high throughout the series. Most of the questions the webinar receives are about topics on investigational plane but there is value to the group to hear where the balance is between what is research and what is ready for primetime, which is of high value to insurers.

Speaking Genetics – Suzanne Belinson and Carla Easter

The Speaking Genetics Working group is tasked with building a meta-language that takes complex concepts in genetic medicine and distills them into a fluid accessible and comprehensible vocabulary and system of expression that works across the communication landscape of genomic medicine. Progress has been made by the group in accessing data, as the Genetic and Rare Diseases (GARD) Information Center has provided contact data being analyzed by the company Madarka, Inc. GARD has shared approximately 50,000 real life – real time queries that they do not know what to do with, but represent how people are speaking genomics and genetics. The methodology supporting this project is data driven and quantitative, in line with their determined best practices and user centric. Some of the barriers they have encountered include access to data, it takes a lot of work to develop a large project with many small pieces. Going forward, the data analysis will continue and the group is considering the possibility of expanding and including additional data. Also, the working group may review information and content from the NHGRI – Smithsonian’s National Museum of Natural History exhibition titled [*Genome: Unlocking Life’s Code*](#). This data may provide a sense of how the public views genetic and genomic information in an informal learning environment.

The City of Hope Intensive Course and Clinical Cancer Genomics Community of Practice: Multimodal Professional Development for Community Clinicians – Jeffrey Weitzel and Kathleen Blazer

Jeffrey Weitzel, Director of the Division of Clinical Cancer Genetics and Department of Population Sciences, began the presentation mentioning that genetic cancer risk assessment (GCRA) is a specialty practice that uses genetic and genomic information to identify individuals and families with inherited cancer risk and to prescribe high-risk screening, preventive care and targeted therapies. Jeffrey Weitzel reflected on how cancer genetics was learned in the past, basically the hard way, where physicians learned enough genetics through self-directed studies, hands on experience, often as adult physicians, reviewed the literature or had formal fellowship training. The City of Hope Division of Clinical Cancer Genetics established in 1996 is engaged in how physicians are trained. They have identified cancer genetics educational programs and goals, fund educational initiatives and provide a program through funding for cancer genetics career development. In addition, cancer genomics community and research training is provided to increase access to GCRA services and promote community based research participation. To further the educational goals, lectures, case working conferences and seminars are offered. Importantly, intensive courses on cancer genetics and research training are offered and outcomes are evaluated. Course participants come from all over the U.S. and internationally.

The City of Hope subscribes to the community of practice, which is supported by GCRA alumni training, the Clinical Cancer Genetics Community Research Network, cancer screening and prevention program

network affiliates, internet resources such as web conferences, discussion boards, social media, annual face-to-face conferences and an evolving model for academic health center-mediated communities of practice. CMEs are offered in such cases as a web-based forum for interdisciplinary review of GCRA cases which is supported by a toolkit, discussion board and archived sessions. Jeffrey Weitzel concluded by highlighting the importance of assessment training and counseling for clinical implementation for effective treatment and prevention. Web-based case conferences are effective and generate new learning and existing knowledge reinforcement of GCRA knowledge and skills. Research registry participation is of high importance and advances in genomic analysis need to be capitalized on to enhance global healthcare access.

Collaborating on Online Genomics Education for Providers (JAX/AMA/Scripps) – Kate Reed and Katie Johansen Taber

Kate Reed and Katie Johansen Taber reported on a collaborative education program being developed for providers (physicians, nurses, physician assistants, pharmacists, etc.) not formally trained in genetics in broad array of specialties. The program components are based on best practices in adult education, and how the program can be effective in fostering provider behavior change and practice improvement. Key components of this program are: online, self-directed, is competency and skill based, uses cases, takes 30 minutes or less, interactive and collaborative. Modules of a variety of topics will be offered and undergo a rigorous development process prior to dissemination and will be evaluated. Modules are currently in development and the first module will be released in May 2016, followed by monthly releases as they are developed. The group is seeking collaborations to help with module planning and review **[ACTION]**.

Some program challenges include module dissemination and marketing, priority topics for modules, the breadth and depth of topics delved into, and funding for additional modules. The group would like to engage specialty groups who are beginning to ask for more information. Collaborative opportunities exist such as the participation of subject matter experts and audience data analysis, help with module dissemination and developing attractive marketing strategies. The group is also interested in partnering with other institutions.

REPORT BACK FROM INTERACTIVE DISCUSSION

Role for International Organizations – Teri Manolio

Teri Manolio reported back on the role for international organizations (IntOrgs) discussion group. Linking this IntOrgs process with the NAM-NHGRI collaboration “Global Genomic Medicine Collaborative” (G2MC) and the Clinical Working Group of the Global Alliance for Genomics and Health (GA4GH) was emphasized. International participants included representatives new to ISCC from Health Education England, G2MC (Australia and Uni. Alabama), and from GenomePlus Australia, as well as existing Member representing College of Family Physicians of Canada. Health Education England’s Genomics efforts were reviewed, including its innovative Master’s program, online modules for consent (available) and DNA isolation. Opportunities exist to share its resource by linking or through G2C2. This organization has a mandate to share and collaborate internationally and has funds to initiate pedagogical research, raising the opportunity to agree on common approaches and metrics. A truly international committee was decided to be the best structure, starting with Anglophones. The group agreed on involvement in development and review of educational products, needs-assessments implementation and evaluation efforts, and request for time during ISCC events for reporting the state of genetics education in each jurisdiction. The group will consider establishing a working group to

develop common evaluation approaches, establish mutual links on the G2C2 website, effect cultural translation including translation across different healthcare systems, support linguistic translation when non-English resources are taken-on, and surveying specific jurisdictions to assess need.

Genomics Education Funding Ideas - Donna Messersmith

Donna Messersmith reported that the breakout group discussed ideas on how to pursue an increase in funding. Goals need to be defined and evaluation is critical to the process. Evaluation can feed into what is of value for funding by identifying best practices for practitioner genomics education. One of the challenges identified is how to create resources that are not specialty specific. Defining specific goals for the educational resource development needs is an important first step. Then when goals are defined, matching needs to funding opportunities is next. Possible funding sources include: a) NHGRI: provides K-02 mechanism. Goal of K-02 is to infuse genomics to change the environment of an institution. It is not discipline specific. Intended for a senior investigator to change the culture of an institution; b) Advocacy groups like Komen; possibly PCORI which requires an advocacy component; c) HHMI/philanthropies; d) industry, example: Illumina provides travel support in some cases; Macy Foundation, possibly fellowships, evaluations of methodology. Follow-up discussions included engaging a subset of the group to prepare a summary of education development ideas to clarify needs for funding.

Collaborating on Genomics Education Projects - Ann Karty

Ann Karty discussed collaborating on genomics education projects. This group noted that even if you build it, they may not necessarily come. The conversation needs to be held about how to get “them” there. What needs to be thought about is the continuum of Undergraduate Medical Education (UME), Graduate Medical Education (GME), Continuing Medical Education (CME). From an academic perspective, it may make sense to integrate knowledge components and the “least changeable principles” of genomics into UME while considering options to provide “rapidly changing genomics technology” which could involve point of care (POC) formats. Integration of information in clinical practice should concentrate on self-identified practitioner need and patient population need of the clinical practice. Highlighting potential collaborations between medical specialty organizations and specialty boards, ACCME/ACGME, and electronic healthcare records (EHR) vendors may enhance uptake. With the rapidly evolving genomics environment and direct to consumer marketing, consideration about how students “teach” faculty and how patients “teach” practitioners should be considered while highlighting what the actual intended outcomes are (including concepts of better care, less cost, prevention options, etc.)

Wild Card – Bob Wildin

This group discussed the need to find out more information about organizations with annual meetings engage them. What kind of education do they need? Feedback is needed from Blue Cross Blue Shield medical directors and what they have found to be useful or not. Bob Wildin mentioned he will touch base with Suzanne Bellinson about BCBSA. Also the group noted that Medicare is less than an issue than Medicaid is, so this should be first topic of discussion.

AROUND THE TABLE

Key points:

- The ISCC needs to focus and align competencies it has created.
- AMP is developing online activities being and innovative approaches to education.

- G2C2 has great value and we must find a way to evaluate different education approaches.
- The AMP has developed a survey and there will be follow-up for those organizations that have received it.
- Changes in MOC requirements represent opportunity.
- How do we increase the visibility and size of the ISCC? The website is good but an interactive forum amongst like-minded people is extremely helpful.
- Evaluation metrics for education is important and IGNITE has worked to do for implementation efforts, it's a model to think about and look to see how we can demonstrate the value of efforts of the ISCC.
- Motivation is a key area needing more success stories. Models are increasingly being designed for scale. What we need is to come together around ideas for funding.
- As educate professionals need to think about the public. How can we complement physician education, PAs, and pharmacists who work for the patients? The results of linguistic project may be valuable as an overview of the information and how people are dealing with it from a patient viewpoint but also a public perspective.
- Sometimes getting people are engaged through the patient story and same may be true of the payors.
- Are there other models of education? Providers are individuals that have different learning styles and needs. Are there other models out there to think about for the plug and play model? Are there resources that should have these components?

Key Considerations for the ISCC:

- What role do international players have in the ISCC mission? This fits with the cultural translation and linguistic pieces. The ISCC may consider creating a workgroup, once the “ask” for the group is determined.
- The [NIH-wide strategic plan for 2016-2020](#) has been released. There are four objectives enhancing scientific stewardship, is this where the ISCC lives?

Action Items

1. ISCC members asked to identify three to five SMART (Specific, Measurable, Achievable, Realistic, Timed) goals and set initial strategies to support each goal.
2. The ISCC was tasked to look back and find educators in their institution to engage.

3. ISCC members are asked to help recruit professionals with genomics expertise who can arrange Universal Module training sessions at meetings.
4. ISCC members adapt the Universal Module to their expertise and host a workshop or course at an annual meeting.
5. ISCC to complete the survey being distributed by Association for Molecular Pathology.
6. ISCC members email ASAP the survey to those in professional organizations who can answer on behalf of membership.
7. ISCC members to volunteer for survey analysis with the Case Studies Working Group.