Circulation: Cardiovascular Quality and Outcomes

CARDIOVASCULAR PERSPECTIVE

Focusing on the Future of Cardiovascular Outcomes Research

Highlights From the American Heart Association/American Stroke Association Quality of Care and Outcomes Research 2018 Scientific Sessions

Michael P. Thompson, PhD
Alexander C. Fanaroff, MD, MHS
Joshua D. Parker, MD
Saraschandra Vallabhajosyula, MBBS
Madeline R. Sterling, MD, MPH

The American Heart Association/American Stroke Association Quality of Care and Outcomes Research (QCOR) 2018 Scientific Sessions was recently held in Arlington, VA, from April 6 to 7. The 2-day conference featured >50 oral presentations and 170 poster presentations across an array of topics, including the use of big data science in clinical practice, the shifting policy landscape in cardiovascular care, and the expanding role of social media in science.

One key theme throughout the conference was the future of cardiovascular outcomes research, which was highlighted by the 2018 QCOR Outstanding Achievement Award recipient and keynote speaker Eric D. Peterson, MD, MPH. Dr Peterson reflected on the progress of cardiovascular outcomes research as a field and the QCOR community in general. What was once a small group of *geeks* running simple regression models on manually chart-reviewed data has grown into a much larger group of *wonks* applying machine learning techniques to hundreds of thousands of electronic medical records, he reflected. He also forecasted the future of cardiovascular outcomes research, which included the potential of big data science to improve outcomes, the importance of fostering partnerships with patients who actively participate in research, and the development and use of living clinical registries. Above all, he stressed the importance of mentorship and investing in the future generation of cardiovascular outcomes researchers.

Within the context of this theme, we offer several directions of cardiovascular outcomes research that were presented at QCOR 2018 Scientific Sessions. In addition, we present updates on the current and future state of Get With The Guidelines (GWTG) registries and highlight the career development opportunities that QCOR 2018 provided to young investigators.

FUTURE DIRECTIONS IN CARDIOVASCULAR OUTCOMES RESEARCH

Translating Big Data to Clinical Practice

The opening plenary session of QCOR 2018 highlighted opportunities that big data science offers, including machine learning, artificial intelligence, and natural language processing. In addition, the challenges to implementing these technologies to change clinical care and the health system were presented. Harlan Krumholz, MD, SM, started the plenary by noting that the digital transformation of medical records, computational and analytic advances, and mobile device revolution have transformed medicine into an information science. Dr Krumholz suggested that this shift provides unprecedented opportunities for health care to become a field that learns from every clinical encounter.

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In contrast, John Rumsfeld, MD, PhD, spoke about the gap between big data science in theory versus practice. He suggested that more concrete and mundane steps are still needed to translate scientific advances such that they provide meaningful clinical returns. To illustrate this point, he discussed a recent NBC News story headlined "Artificial Intelligence Predicts Heart Attacks Better Than Doctors", which touted the comparative advantage of big data science over physicians.[1] By presenting study results from which the news story was based, he demonstrated that artificial intelligence fared only slightly better than the pooled cohort equation, and no better than simple logistic regression.[2] This disparity between perception and performance underscores the need for rapid cycle and rigorous evaluation of big data science.

Finally, Sally Okun, RN, from PatientsLikeMe, which is a repository of patient-reported, cross-condition data, discussed the chasm between the source of data (people) and the end-use of this data. In her presentation, Okun spoke about the importance of a social license, which is a term originally used to describe the responsibilities of the mining industry toward community members living near mines. In the context of big data science, the social license would offer the people who have generously given their data an active role in how it is used. Ultimately, this framework would lead to more trust between scientists and the lay public.

Providing Value-Based Cardiovascular Care

The second plenary session featured discussion on how to succeed in providing value-based cardiovascular care. Mark McClellan, MD, PhD, of the Duke-Margolis Center for Health Policy, discussed the progress in payment reform from traditional fee-for-service to fully population-based payment. He noted that while we are still tethered to a fee-for-service model, there is a commitment from both payers and policymakers to advance toward more value-based care models, including bundled payments, care management fees, and shared-savings models.

Josh Seidman, PhD, of Avalere Health, suggested that cardiovascular care must be proactive, rather than reactive, to succeed under value-based care models. In his view, achieving this goal requires a robust data infrastructure, institutional commitment to change, adequate time to develop solutions, and effective deployment of resources. Steven Farmer, MD, provided updates on current Medicare value-based care models, including Merit-Based Incentive Payment and Bundled Payments for Care Improvement Advanced. He noted that while the goal of these policies is to increase quality and reduce costs, improving one without sacrificing the other is also a meaningful improvement.

The session then shifted focus on how to provide value-based care in clinical practice. Thomas Maddox, MD, MSc, discussed healthcare system innovation as a way to achieve value-based care. The Health Systems Innovation Laboratory at Washington University, of which he is the inaugural director, embodies this movement by focusing on utilizing the full spectrum of data, moving care toward the patient, involving the community, and engaging patients to improve cardiovascular care. He also believes that personalized cardiovascular care should be a key feature of future healthcare systems. Echoing the message of patient-centered care, Alan Balch, PhD, from the Patient Advocate Foundation, urged the audience to not forget the patient when considering value-based care. Dr Balch suggested that we can organize health care better if we put the patient at the center of value. He posits that, while value is a function of costs and quality, success in value-based care depends on attention to patient experiences and efficient utilization of health services.

Role of Social Media in Science

In response to its growing role in society, QCOR 2018 featured a session on the role of Social Media (SoMe) in cardiovascular outcomes research. Adrian Hernandez, MD (@texhern), provided an overview of how the public and patients use the internet and SoMe platforms to query clinical questions. Given that two-thirds of patients already use SoMe, he emphasized the importance of public trust and the credibility of the medical information that is circulated, especially in an area where fake news can spread more quickly than real news.[3,4] These points were also stressed by Mintu Turakhia, MD, MAS (@leftbundle), who conveyed that bots have the ability to amplify false health information quickly and widely.[5] In addition to fake news, Dr Turakhia also discussed how SoMe has the potential to negatively impact clinical research. For instance, scientists are concerned that study participants will discuss their experiences and treatment on SoMe platforms, which could compromise the blinding process in clinical trials.

Marilyn Mann, JD (@MarilynMann), gave an overview of one particular SoMe platform, Twitter, and its benefits for healthcare providers, researchers, and patients. She highlighted the platform's interactive nature and its increasing popularity at scientific conferences and with medical journals. In addition, she spoke about the power of SoMe among patients, as Twitter and Facebook can offer virtual emotional and informational support for patients with the same disease or experiences with health care. One emerging concept is the use of data from SoMe for medical research and for clinical trial recruitment. This concept was also highlighted by Tracy Wang, MD, MHS, MSc (@TWangMD), who emphasized a study that found an association between language

on Twitter and coronary heart disease mortality.[6] In addition to providing new sources of information and enhancing clinical care, Dr Wang suggested SoMe can be used to advocate for research in the public sphere.

CURRENT AND FUTURE STATE OF GWTG

For the first time at QCOR, GWTG had its own programming track, which served to inform conference attendees of the program's accomplishments to date, as well as future areas of investigation. Major gains have been seen from several of the GTWG registries. For example, the GWTG-Stroke initiative was initiated in 2003 as an inhospital program intended to improve stroke care by promoting adherence to the latest scientific treatment guidelines. Paul Heidenreich, MD, MS, shared that 80% of hospitals have implemented door-to-needle time initiatives, which has led to significant reductions in median door-to-needle times, improved inpatient mortality, and reduced long-term disability. The GWTG heart failure registry has also seen several gains across many performance measures and some quality metrics over the last 10 years. Examples include the use of evidence-based heart failure therapies and follow-up appointment rates after hospital discharge.

In addition to registry-specific updates, Adrian Hernandez, MD, spoke about the expansion and reach of the GWTG programs. Currently, 78% of the US population is within reach of a GWTG hospital, 48% of all US hospitals use one or more of the quality improvement programs, and efforts to expand the program's global reach are now underway. However, according to Brian Kelly, MD, of IQVIA Global, manual data entry is becoming a significant obstacle in GWTG registries. Dr Kelly suggests that incorporation of new technologies will play a large role in alleviating this issue, primarily through electronic health record integration and machine learning. Other proposals include utilizing data capture devices such as smartphones and smartwatches to allow patients to directly upload data, such as surveys and consent forms, to a cloud-based system, where it can be easily accessed by hospitals and providers. Perhaps the biggest news regarding GWTG is that over the next 18 to 24 months all 5 registries will be moving to a single platform, allowing researchers to track a single patient across all registries.

QCOR CAREER DEVELOPMENT PROGRAMMING

The QCOR 2018 conference continued its tradition of offering career development for young investigators. Over the 2-day conference, sessions included presentations by the Young Investigator Award Finalists, a round-table-style Career Development Luncheon, and an Early Career Breakfast. The Young Investigator Award Finalist session comprised 5 presentations highlighting advances in cardiovascular outcomes research. Sachin Shah, MD, MPH, was recognized with the best presentation for his work entitled, "Variation in Published Stroke Rates Results in Wide Variation in the Net Clinical Benefit of Anticoagulation for Atrial Fibrillation".[7] Using a combination of registry and trial data, Dr Shah and his colleagues demonstrated wide variation in published stroke rates in patients without anticoagulation in atrial fibrillation, suggesting that guidelines delineate these clinical conundrums in greater detail.

The Career Development Luncheon featured round-table-style discussions between early career investigators and several mid- and senior-level investigators. Adam Bress, PharmD, MS, moderated the session, and by doing so, shared his journey as a researcher, highlighting personal and professional keys to success. He discussed the importance of having institutional support while trying to start a research career, as well as the importance of mentorship in career development. The Early Career Breakfast Roundtable discussed the "Nuts and Bolts of the Peer Review Process" with *Circulation: CQO* editor Brahmajee Nallamothu, MD, MPH, and Dawn Bravata, MD. Together, they provided details on the peer review process for the journal, using Dr Bravata's recent work as an example.[8] Drs Nallamothu and Bravata also shared wisdom for early career trainees seeking to publish in *Circulation: CQO* and similar outcomes research journals. Finally, trainees and junior level faculty were encouraged to get involved in QCOR, through committee work, the journal, or on social media.

CONCLUSIONS

The QCOR Scientific Sessions continue to be the premier event for investigators seeking to learn, share, and discuss innovations in cardiovascular outcomes research. This year's conference shed light on the future cardiovascular outcomes research, including an overview of big data science and its implications for research and clinical medicine, the transition to value-based care, and the role of social media. Moreover, QCOR continues to provide career development opportunities for the next generation of cardiovascular outcomes researchers. We applaud and thank the QCOR 2018 Program Committee for planning another outstanding conference, the abstract reviewers who ensured the high quality of conference presentations, and the presenters and attendees for contributing their time and insights. We look forward to an equally fulfilling conference at the QCOR 2019 Scientific Sessions next year.

ARTICLE INFORMATION

Correspondence

Michael P. Thompson, PhD, Department of Cardiac Surgery, University of Michigan Medical School, 5331K Frankel Cardiovascular Center, 1500 E Medical Center Dr, SPC 5864, Ann Arbor, MI 48109. E-mail mthomps@med.umich.edu

Affiliations

Department of Cardiac Surgery, University of Michigan Medical School, Ann Arbor, MI (M.P.T.). Division of Cardiology and Duke Clinical Research Institute, Duke University, Durham, North Carolina (A.C.F.). Department of Internal Medicine, University of Texas Southwestern, Dallas, TX (J.D.P.). Department of Cardiovascular Medicine, Mayo Clinic, Rochester, MN (S.V.). Division of General Internal Medicine, Weill Cornell Medical College, New York, NY (M.R.S.).

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