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## Editorial

# Toward diversity, equity, and inclusion in informatics, health care, and society

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In June 2020, the American Medical Informatics Association (AMIA) Board of Directors unanimously approved the creation of the AMIA Diversity, Equity and Inclusion (DEI) Task Force to advise AMIA on specific, actionable steps to further address matters of racial diversity, equity and inclusion.<sup>1</sup> As Editor-in-Chief of the *Journal of the American Medical Informatics Association*, I'm honored to serve on the Task Force along with other AMIA members, all committed to addressing DEI from their perspectives as informaticians and, for most, also from their lived experience as Black, Indigenous, or other persons of color. In parallel, the *Journal of the American Medical Informatics Association* editorial team has been considering how we can best advance DEI in our policies and practices and also address recently proposed recommendations for publishing on racial health disparities in a manner that appropriately considers the role of structural racism in disparities.<sup>2</sup> I look forward to sharing the outcomes of our deliberations in the future. In this editorial, I highlight 5 articles in this issue that address at least 1 aspect of DEI in biomedical and health informatics or health care.

Having a diverse pipeline of individuals into the field is essential for achieving DEI in biomedical and health informatics. Addressing one path into the field, Wiley et al<sup>3</sup> analyzed graduation trends from 2002 to 2017 in biomedical informatics-related PhD programs using the National Science Foundation Survey of Earned Doctorates. The purposes were to (1) determine how underrepresented minority (URM) representation has changed over time, (2) examine academic job placements by race, and (3) identify characteristics associated with URMs being successfully placed in academic jobs. Among the 2426 individuals who earned doctoral degrees in biomedical informatics-related disciplines during the study period, URMs comprised only about 12% of graduates (Hispanic, 5.7%; Black, 3.2%; and others including multiracial and indigenous American populations,

2.8%). The total number of annual graduates grew from 54 to 342. From 2002 to 2017, the proportion of White doctoral graduates trended downward, from 61.8% to 45.3%, while Asian doctoral graduates increased, from 23.6% to 39.5%. However, the proportion of URMs did not increase over time. More than 82% of graduates accepted academic positions at the time of graduation; the rate for Hispanics was significantly higher than for non-Hispanic Whites, Asians, Blacks, and other URMs. Significant predictors of URM placement in academic jobs included the following: at least 1 dependent, U.S. citizenship, primary field of health or computer science as compared with bioinformatics, and graduating from a public university. There is no doubt that much work remains to be done to recruit, retain, and graduate URMs in our biomedical and health informatics training programs. As suggested by the authors, mixed-methods approaches are needed to fully understand the barriers to DEI in training programs including graduation rates and positions after graduation.

Chen et al<sup>4</sup> conducted a review focused on integration of social determinants of health (SDOH) domains into electronic health records (EHRs) and the impact of area-level and individual-level Social Determinants of Health (SDOH) on risk prediction. Among the 71 studies in the review, 79% integrated SDOH information from external area-level data sources into EHRs and the remainder extracted individual-level SDOH information from unstructured EHR clinical notes. Studies that incorporated individual-level SDOH data demonstrated improved predictive performance on outcomes (eg, service referrals, medication adherence, risk of 30-day readmission). In contrast, almost all studies using area-level SDOH data reported minimal contribution to performance improvement in the predictive models. The findings suggest that integrating individual-level SDOH can assist in risk assessment and predicting healthcare utilization and health outcomes,

thus motivating efforts for standardization and integration of individual-level SDOH into EHRs.

Block et al<sup>5</sup> report on the recommendations from the Health Disparities Collaborative Research Group, which was commissioned by the Patient-Centered Outcomes Research Institute, to improve the usability of healthcare datasets for health equity research. The experts generated 9 recommendations in 3 areas: (1) inclusion of patient voice, (2) accurate and relevant variables including SDOH, and (3) linkage with important additional data sources including SDOH. Patient voice recommendations included prioritization of health information collected directly from patients (eg, patient-reported outcomes, measures of patient experience) and development of text fields and repositories of written and oral patient narratives describing experiences navigating and receiving health care. Five standardization and integration recommendations focus on sociodemographic variables, individual-level social risk factors, behavior risk and protective factors, food insecurity and housing stability, and development of data fields for barriers unique or significant to rural populations. In terms of data linkage, geocoded community-level data were designated a high priority; other data included those related to emergency room and hospital visits and well as other sectors (eg, criminal justice system and services such as foster care and adult protective services). The authors conclude that “implementation of these recommendations in national sets has the potential to accelerate health disparities research and promote efforts to reduce health inequities.”

In a Perspective focused on rural health disparities, Hirko et al<sup>6</sup> report on telehealth efforts in a large rural healthcare system during the COVID-19 (coronavirus disease 2019) pandemic and provide recommendations for researchers and policymakers. While their telehealth strategies during the pandemic were considered successful, they identified broadband access as a major challenge that limits the reach and effectiveness of telehealth initiatives for rural populations and identified overcoming this challenge as a priority policy recommendation. A second policy recommendation was health system lobbying for continued third-party reimbursement for telehealth services for rural populations. In terms of research, the authors recommended further investigation of clinical care outcomes, barriers to telehealth implementation, and unintended consequences of telehealth initiatives during the pandemic to ensure that telehealth initiatives do not amplify existing health disparities experienced by those living in rural communities.

The articles by Chen et al,<sup>4</sup> Block et al,<sup>5</sup> and Hirko et al<sup>6</sup> are consistent with the contention of Pantell et al<sup>7</sup> that capturing and acting on SDOH in clinical settings has never been more important. In their Perspective, they further argue that a new subfield of informatics, which they term *social informatics*, is emerging to address this challenge. Social informatics is characterized by study of the use of information technologies to capture and apply social data in conjunction with health data to improve clinical care and advance individual and population health. Furthermore, social informatics aims to inform research, enhance patient care, address ethical challenges associated with the integration of social and health data, and facilitate rapidly growing activities at the intersection of social and medical care. Information exchange among organizations that capture social and

health data is a key enabler of the vision of social informatics. The authors provide examples of social informatics activities that are responsive to the 5 As (awareness, adjustment, alignment, assistance, advocacy) of the 2019 National Academies of Sciences, Engineering, and Medicine’s Report on Improving Social and Health Care Integration.<sup>8</sup> They also propose key recommendations for establishing and nurturing social informatics:

- Creating expert groups within AMIA and other professional organizations
- Articulating a social informatics research and policy agenda within the Office of the National Coordinator for Health Information Technology
- Supporting research on social informatics topics
- Expanding National Library of Medicine training programs to incorporate training on social informatics topics including ethical issues related to integration of health and social data

The COVID-19 pandemic has increased the visibility of informatics strategies and tools. As biomedical and health informaticians, we must continue this momentum to advance DEI in our field, health care, and society. The highlighted articles have provided us with guidance to do so.

## CONFLICT OF INTEREST

None declared.

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