Department of Health and Human Services
National Institutes of Health
National Institute of Nursing Research
Minutes of the National Advisory Council for Nursing Research

May 23, 2023

The 110th meeting of the National Advisory Council for Nursing Research (NACNR) was convened on Tuesday, May 23, 2023, at 10:00 a.m. The open session was held in person and by National Institutes of Health (NIH) videocast, and all observers, including members of the public, attended virtually. The open session adjourned at 1:53 p.m. The closed session of the meeting, which included consideration of grant applications, was convened on Tuesday, May 23, 2023, at 2:15 p.m. and continued until adjournment at 2:27 p.m. Dr. Shannon N. Zenk, Chair, NACNR, presided over both meeting sessions.

OPEN SESSION

I. CALL TO ORDER, OPENING REMARKS, AND COUNCIL PROCEDURES

Dr. Shannon N. Zenk, Director, National Institute of Nursing Research (NINR)

Dr. Zenk called the 110th meeting of the NACNR to order and welcomed all Council members, visitors, and staff. She noted that the open session of the meeting was being videocast live and will be archived on the NIH videocast website. Dr. Zenk acknowledged the contributions of departing Council members Dr. John Lowe (final meeting today) and Dr. Grayson N. Holmbeck (final Council meeting in January 2023).

Dr. Zenk shared that Dr. Marguerite Engler passed away in March. Dr. Engler served as Acting Scientific Director and Chief of the Cardiovascular Symptoms Unit in the Division of Intramural Research (DIR) at NINR before moving to the Uniformed Services University of the Health Sciences.

Dr. Elizabeth Tarlov, Director, NINR Division of Extramural Science Programs (DESP), and Executive Secretary of NACNR, conducted a roll call of NACNR members and noted for the record that a quorum had been met. She noted that Mr. Dawes and Drs. Atkins and Stone were unable to attend the meeting.

Minutes of the Previous NACNR Meeting

Minutes of the January 31, 2023, NACNR meeting were distributed to Council members through the Electronic Council Book. A motion to accept these minutes was made, seconded, and unanimously approved. The approved minutes of each NACNR meeting become part of the institute's official record and are posted on the NINR website (www.ninr.nih.gov).

Dates of Future Council Meetings

Dates for future Council meetings were included in the NIH Electronic Council Book. The next Council meeting will be held in person on September 12, 2023.

Conflict of Interest and Confidentiality Statement

Dr. Tarlov noted that the conflict of interest and confidentiality statements were included in the Council materials; reminded Council members that as special government employees, they may not engage in lobbying activities; and noted that she would provide specific instructions about conflict of interest and confidentiality at the beginning of the Closed Session in the afternoon.

II. REPORT OF THE NINR DIRECTOR

Dr. Shannon N. Zenk, Director, NINR

The Director's report focused on activities and news from NIH and NINR since the January 23 Council meeting. Highlights of Dr. Zenk's report included:

Budget Update—In March, President Biden submitted his Fiscal Year (FY) 2024 budget to Congress, highlighting his priorities for NIH. The proposed budget retains $10 million enacted for health disparities research that NINR received in FY 2023. Congress will make the final funding level decision.

2023 NINR Director's Lecture Series—The February 2023 NINR Director's Lecture focused on the Systems and Models of Care strategic plan lens, with presentations from Dr. Lusine Poghosyan, Columbia University, and Dr. Ellen-Marie Whelan, Centers for Medicare & Medicaid Services (CMS). The next and final lecture in the series will be presented by Dr. Sarah Stoddard, University of Michigan, and Dr. Paul Kuehnert, Public Health Accreditation Board, with a focus on the population and community health lens.

Health Equity Distinguished Lecture—On June 29, NINR, the National Institute on Minority Health and Health Disparities (NIMHD), and the NIH Office of Behavioral and Social Sciences Research (OBSSR) are co-hosting a presentation from NINR Council member, Professor Daniel Dawes, who will share his expertise as a scholar, educator, and researcher on health equity, health reform, health system transformation, and social and political determinants of health.

NINR Division of Extramural Science Programs—This year, DESP staff represented NINR at annual meetings of four regional nursing societies to provide insights on NINR's strategic plan, funding opportunities, training, and grantsmanship.

In February, NINR issued several disparities-related requests for applications (RFAs): Advancing Integrated Models (AIM) of Care to Improve Pregnancy Outcomes among Women Who Experience

Persistent Disparities (RFA-NR-23-002, reissue), Evaluating the Impact of Pandemic Era Related Food and Housing Policies and Programs on Health Outcomes in Health Disparity Populations (RFA-NR-23-003, reissue), and Clinical-Community Linkages to Address Social Needs and Social Conditions to Advance Health Equity among Populations Experiencing Health Disparities: the Bridge-to-Care Initiative (RFA-NR-23-004). Bridge-to-Care invites intervention studies that leverage clinical-community partnerships to address unmet social needs or community adverse social conditions, with a focus on health disparity populations. A Notice of Special Interest (NOSI, NOT-NR-23-009) on administrative supplements to T32 grants aims to train new cohorts of nurse scientists to address firearm injury prevention and related health disparities.

Dr. Zenk highlighted recent NINR-funded research findings of note. In Grayson et al., 2023, the authors summarized literature addressing social determinants of health (SDOH) and symptom clusters in chronic conditions such as cancer. The authors recommend paying attention to how SDOH data are collected and analyzed to support future research that reveals mechanisms of symptom disparities and how to alleviate them. In Clarke et al., 2023, the authors report on potential increased risk of type 2 diabetes mellitus (T2DM) among aging vision-impaired individuals. Factors that increase risk in this population include living in neighborhoods with more intersections and high-speed roads. Factors that reduced T2DM risk for older adults include neighborhoods with more parks and, among both younger and older adults, included living in neighborhoods with broadband internet access, optical stores, supermarkets, and gyms.

Division of Intramural Research—Intramural investigator Dr. Leorey Saligan recently established a collaboration with University of California, Los Angeles scientists on their Health of Philippine Emigrant (HoPE) study to explore social, nutritional, environmental, and other factors affecting changes in physical activity patterns of Filipinos immigrating to the United States. Dr. Saligan is also a co-author of a recently accepted paper on the feasibility of using DNA methylation age as a biomarker for symptoms and resilience among cancer survivors who have multiple chronic conditions.

Two NINR postbacs, Pooja Varma and Willa Riekhof, presented their work at the Muscular Dystrophy Association Clinical and Scientific conference in March. The NIH Intramural Research Program celebrated Postbaccalaureate Poster Day in April, with nearly 1,000 individuals presenting posters highlighting their independent project work. Dr. Zenk noted that two postbacs are leaving NINR to begin medical school: Christopher Nguyen and Willa Riekhof.

NINR co-hosted a virtual presentation with the NIH Clinical Center's Grand Rounds. Dr. Hudson Santos, Associate Dean for Research at the University of Miami School of Nursing and Health Studies, spoke on biological embedding and its importance to health equity. Dr. Hudson is a nurse researcher with interest in Latinx maternal-child health and child development, social genomics, SDOH, and health equity.

Partnerships and Collaborations—NINR is on the executive committee for the NIH-wide Climate Change and Health (CCH) Initiative, which aims to address the impact of climate change on vulnerable communities through community-engaged research, capacity building, and outreach activities, with a focus on health equity. Recently, the initiative announced funding to establish four sites as part of the Alliance for Community Engagement-Climate and Health (ACE-CH); these two-year awards began in March. A research coordinating committee will support development of an NIH CCH community of practice by managing and supporting CCH research, capacity-building efforts, and expansion of the community of practice. The P20 Exploratory Grants for CCH Research Center Development encourages development of innovative, transdisciplinary research to understand complex effects of climate change on health and develop actionable strategies that protect health and build resiliency of individuals, communities, nationals, and the world. The CCH NOSI (NOT-ES-22-006) encourages applications that address the impact of climate change on health and well-being over the life course. On April 17, Dr. Zenk and Directors of the National Heart, Lung, and Blood Institute (NHLBI), National Institute on Minority Health and Health Disparities (NIMHD), and National Institute of Environmental Health Sciences (NIEHS) briefed the Senate and House Labor and Health and Human Services appropriations staff on the NIH CCH Initiative, including FY 2022 accomplishments and plans for FY 2023 and FY 2024. Dr. Zenk noted that the President's budget includes $65 million for the CCH Initiative.

Dr. Zenk proposed the establishment of a NACNR working group to develop recommendations on future directions for NINR in CCH research. The working group would provide a progress update during the September 2023 NACNR meeting and present recommendations by January 2024. Unless there are objections from Council, the working group will be assembled over the next several weeks, including identification of Council co-chairs.

The Helping to End Addiction Long-term® (HEAL) Initiative is supporting the PURPOSE Network, a digital platform that will provide a centralized community for research trainees and researchers across basic, translational, and clinical research; deliver weekly network digest emails; enable multidisciplinary collaborations when developing grant applications; and aggregate information around pain research, funding opportunities and HEAL Initiative scientists. Earlier in May, the PURPOSE Network hosted a conference for early-stage pain researchers. HEAL also has launched HEAL Headliners, a monthly webinar series spotlighting HEAL-funded research.

NINR continues keeping Congress informed about the collaborative, NIH-wide IMPROVE Initiative, which focuses on reducing preventable causes of maternal deaths and improving health for women before, during, and after delivery. The initiative emphasizes health disparities and disproportionately affected populations. On March 29, Dr. Zenk and directors of the National Institute of Child Health and Human

Development (NICHD) and NIH Office of Research on Women's Health (ORWH) provided an update to the House and Senate Appropriations Labor HHS staff. The presentation included data on leading causes of morbidity and mortality in all populations and comparisons with racial and ethnic groups, as well as the $30 million allocated for IMPROVE in the President's 2024 budget request.

In April, NIH announced winners of the Rapid Acceleration of Diagnostics Technology (RADx Tech) for the Maternal Health Challenge, an $8 million prize competition designed to accelerate development of technologies to improve maternal health outcomes for those living in U.S. maternity care deserts. Winning projects include wearable monitors for cardiovascular health, a postpartum depression monitoring system, and a smartphone app for detection of postpartum anemia. In 2022, NIH launched the Connecting the Community for Maternal Health Challenge, a $3 million prize competition to encourage nonprofit, community-based or advocacy organizations to enhance skills and infrastructure in pursuit of research projects in maternal health, including maternal morbidity and mortality. First-round winners included projects focused on maternal health literacy and nutrition, perinatal resiliency, and the impact of equitable doula care on maternal and child health outcomes.

In February, NINR, the ORWH, and other NIH institutes released a Request for Information (RFI) to gather public input on priority scientific directions in research on violence against women. Responses are under review. A report on planned activities will be provided during a future Council meeting.

On June 15, NIH will host a webinar showcasing two NIH R15 programs—Academic Research Enhancement Award for Undergraduate Focused Institutions (AREA) and Research Enhancement Award Program for Health Professional and Graduate Schools (REAP)—designed to expose students to research, strengthen institutions that have not received major NIH support, and provide insight into the application process. NINR participates in both programs.

NINR News and Announcements—Dr. Zenk welcomed new NINR staff, including IT professionals Terrance Lindsay and Cena Lovo-Rosa, Dr. Tanna Nelson, a staff scientist in the Brennan lab, and six summer interns.

NINR is seeking applications from outstanding clinician scientists for the Clinical Director position. This individual provides visionary leadership in the DIR, oversees all clinical research in the division, and serves as clinical policy advisor to the NINR Director. Acting Clinical Director, Dr. Kevin Camphausen, is leading the search committee. Additional career opportunities at NINR include DESP Program Officers to plan, evaluate, and oversee activities for a portfolio of research projects. Recruiting will begin shortly for DESP Branch Chiefs to provide scientific leadership, assess scientific opportunities and gaps, and propose areas of programmatic emphasis in support of the NINR mission. Information about these opportunities can

be found at NINR.NIH.gov/jobs.

NIH News—In April, a Center for Scientific Review (CSR) Advisory Council working group issued an RFI to obtain recommendations for improving National Research Service Award (NRSA) fellowship reviews. The working group concluded that highly promising scientists are being excluded by a selection process that favors elite institutions and well-known sponsors and emphasizes traditional markers of early academic success.

NINR co-sponsored two new National Academies of Sciences, Engineering, and Medicine (NASEM) reports. *Advancing Antiracism, Diversity, Equity, and Inclusion in STEMM Organizations: Beyond Broadening Participation* includes recommendations for approaches to address systemic barriers to participation in STEMM for underrepresented racial and ethnic groups; these recommendations have broad application across many fields and types of organizations. *Using Population Descriptors in Genetics and Genomics Research: A New Framework for an Evolving Field* presents results of a consensus study of existing methods, benefits, and challenges in using race, ethnicity, ancestry, and other population descriptors in genomics research. The report definitively confirmed that scientists should not use race as a proxy for human genetic variability, unexplained variants should not be attributed to racial/ethnic differences, and direct measures of contextual factors should be included in genetics and genomics studies.

Acting NIH Director Dr. Lawrence Tabak and Dr. Carrie Wolinetz authored a *JAMA* Viewpoint article on transforming clinical research at NIH that includes recommendations from an NIH-wide clinical trial stewardship task force that identified obstacles, opportunities, and a need for improved policies. Future work will focus on centering opportunities around people and equity; promoting research participants as partners across all studies; optimizing clinical trial networks; preparing for public health emergencies based on lessons from the pandemic; focusing on data and design; making data widely and freely available while protecting patient privacy and investing in faster dissemination of results; ensuring quality, accountability, and oversight through decision-making tools; and streamlining infrastructure and increasing efficiency.

President Biden has nominated Dr. Monica Bertagnolli, current Director of the National Cancer Institute (NCI), to serve as NIH Director, a Senate-confirmed position. Dr. Bertagnolli will meet with individual members of Congress; barring concerns raised during these meetings, the Senate Health, Education, Labor, and Pension Committee will hold a confirmation hearing, followed by Senate deliberation and a vote. Dr. Lawrence Tabak continues serving as Acting Director of NIH.

Discussion

A Council member offered strong support for the CCH task force and enthusiasm for the center grant RFA.

III. NINR DIVERSITY, EQUITY, INCLUSION, AND ACCESSIBILITY (DEIA) UPDATE

Dr. Mia Rochelle Lowden, Chief Scientific Diversity Officer, NINR

Dr. Lowden highlighted examples of recent NINR DEIA activities in relation to recommendations from two Council working groups presented during the September 2022 NACNR meeting. The Inclusion Working Group made three recommendations to strengthen inclusion in NINR-supported science, and the Diversity Working Group identified nine themes for enhancing diversity in the nursing research workforce. These reports prompted NINR to consider the DEIA portfolio and identify existing investments and gaps.

Inclusion. Strategies to strengthen inclusion in NINR-supported studies report included three recommendations: (1) promote engagement with populations underrepresented in biomedical research; (2) incentivize inclusion through responsiveness to funding initiatives and scientific review; and (3) close research gaps on the most pressing health problems experienced by populations underrepresented in NINR-funded studies through training and education on translation, dissemination, and implementation.
Dr. Lowden presented examples of related NINR activities for each of the three strategies.

1. Community engagement is already required or prioritized in NINR-led and NINR-participating funding opportunities. For example, the recently released Bridge-to-Care Initiative (RFA-NR-23-004) focuses on original intervention research to elucidate health impacts of social need or social condition interventions by linking clinical care with community services and resources. The initiative requires healthcare-community partnerships. Other funding opportunities emphasize the importance of engagement with language such as "Community engagement is critical to this initiative" and ask, "Do key personnel have appropriate expertise in community-engaged research?" NINR is a founding co-chair of the NIH-wide Community Partnerships to Advance Science for Society (ComPASS) program, which focuses on structural interventions to reduce health disparities and advance health equity. In addition, ComPASS will directly fund community organizations to lead this research.
2. Four recent NINR-led funding opportunities require inclusion of health disparities populations that are often underrepresented in biomedical research (e.g., RFA-NR-22-002, Evaluating the Impact of COVID-19 Pandemic-related Food and Housing Policies and Programs on Health Outcomes in Health Disparity Populations). Another NINR-led funding opportunity focuses on health disparities populations.
3. Through participation on the NIH Clinical Trials Stewardship Task Force, NINR and Dr. Zenk, in particular, have reviewed implementation progress and assessed effectiveness of NIH polices focused on enhancing diversity and inclusion in clinical research, and identifying areas

of opportunity for improvement.

Diversity. Strategies for enhancing diversity in the NINR-supported nursing science workforce were distilled into nine themes: (1) increase awareness of the NINR research lenses (i.e., health equity, SDOH, population and community health, prevention and health promotion, systems and models of care); (2) increase awareness of nursing science; (3) expand the underrepresented nursing science applicant pool; (4) enhance the structure of research grants; (5) leverage diversity initiatives; (6) ensure sufficient diversity in training programs; (7) enhance mentorship for underrepresented scientists; (8) mitigate bias in the grant peer review process; and (9) optimize experiences with NINR program directors.

Dr. Lowden presented examples of NINR activities related to each theme.

1. NINR's commitment to funding research aligned with the institute's research lenses include companion R01 and R21 funding opportunities that emphasize research to optimize health and advance health equity; communications efforts (50+ presentations to academic institutions, scientific meetings, associations); 30 meetings with external groups for potential collaborations; 4 directors lectures and 2 more to come; 12,000 copies of factsheets downloaded from the website; over 80,000 views of the strategic plan; and social media videos available on YouTube to promote key themes.
2. NINR promotes nursing science as a career through participation in NIH-wide diversity initiatives, diversity F31 awards (PA-21-052), research supplements to promote diversity in health-related research (PA-20-272), administrative supplements to promote diversity in research and development of small businesses (PA-21-345). Between FY 2018 and FY 2022, NINR funded 36 awards through these three programs.
3. NINR has expanded the pool of underrepresented nursing science applicants through its support of three key award programs: the NIH Science Education Partnership Award (SEPA), Maximizing Opportunities for Scientific and Academic Independent Careers (MOSAIC) Postdoctoral Career Transitional Award to Promote Diversity, and Faculty Institutional Recruitment for Sustainable Transformation (FIRST).
4. NINR support for under-resourced institutions and underrepresented investigators is demonstrated by the institute's participation in three funding opportunities: STrengthening Research Opportunities for NIH Grants (STRONG, PAR-23-144), Research Enhancement Award Program (REAP, PAR-22-060) for Health Professional Schools and Graduate Schools, and Research Opportunities for New and "At-Risk" Investigators to Promote Workforce Diversity (PAR-22-181). Awards will begin as early as this summer.

5. NINR champions new diversity initiatives aligned with the research lenses through its support of the NIH Institutional Excellence in Diversity, Equity, Inclusion, and Accessibility Prize Competition that recognizes transformative cultures, systems, projects, and processes developed by academic institutions to promote inclusive excellence and create environments that foster and value a DEIA culture. NINR will prioritize development of benchmarks and tracking metrics for assessing diversity initiatives.
6. NINR ensures sufficient diversity in training programs through its participation in the parent announcement for T32 Institutional Research Training Grants. NINR currently supports more than a dozen T32 awards. Next steps in pursuing this theme will include assessing the diversity of current T32 trainees.
7. To incentivize effective mentorship, NINR has signed on to the notice for Administrative Supplements to Recognize Excellence in DEIA Mentorship (NOT-OD-23-002) and Research with Activities Related to Diversity (ReWARD, PAR-23-122) R01 program.
8. NINR is taking steps to mitigate bias in the grant peer review process through the NIH-wide Transformative Research to Address Health Disparities and Advance Health Equity initiative (RFA-RM-21-021). Applications from minority-serving institutions (MSIs) were reviewed in a special emphasis panel. To date, 11 grants have been awarded, including 5 to MSIs.
9. Numerous strengths of existing NINR programs and resources provide the basis for optimizing interactions between diverse investigators with NINR program directors. NINR will seek to develop resources suggested for this team; for example, a guide for what investigators can expect when they interface with program directors.

Dr. Lowden assured Council that NINR will reference the comprehensive working group recommendations extensively to inform future DEIA efforts and help prioritize activities as resources, staff, and budget allow.

Discussion

Dr. Lowe expressed gratitude for these efforts to reach populations who have suffered inequities and health disparities; to him, this is sacred work. Noting that the number of Native Americans supported by NIH is small, he looks forward to collaborating with NINR to enhance opportunities that will support nurse scientists who want to remain in their communities.

Dr. Lowe inquired about actions that go beyond continuing existing collaborations with other NIH organizations. Dr. Lowden responded that staff have been carefully considering feasibility and prioritization, but the process is still in its early stages; she looks forward to providing future updates to Council. A Council member commented that, in the past, NIH offered training grants that were open only

to MSIs, but that non-MSIs seem to dominate T32 awards. Dr. Lowden agreed to investigate the T32 history to see if there is a way that MSIs can compete differently.

Council members commented on the balance between actionable themes and those with less concrete solutions; for example, long-term changes such as mitigating bias and enhancing research grant structure. Continuing to revisit the challenges without obvious solutions will be important. Given that some of the supplements and other opportunities are short term, Council members encouraged NINR to ensure that processes include considerations about sustainability and processes for evaluating success. Dr. Lowden responded that the one-year administrative supplements can be reissued and emphasized the importance of making more institutions aware of these opportunities. Dr. Lowden responded that CSR is recruiting more early-career reviewers with a focus on diverse participation to increase opportunities for people to have these experiences. Research grant processes are addressed in the NIH-wide DEIA strategic plan and RFI, such as streamlining grant applications to make them easier to complete.

Council members discussed the definition of *community engagement* and involving "real" community partners versus typical clinical partners (i.e., large hospitals who relabel themselves as community-engaged). Dr. Lowden explained that ideally, researchers will establish partnerships and relationships before applying. Communities will be engaged as partners throughout the research process; for example, identifying research questions, assisting with recruitment and retention of diverse participants, and dissemination of research findings. Dr. Lowe suggested adopting language from RFAs that require and provide guidance on community-based participatory research.

In response to a question about the opportunities for "at-risk" investigators, Dr. Lowden explained that "at-risk" refers to investigators whose funding is insufficient to continue their program of research.

IV. THE DIGITAL NIH STRATEGY AND A GLIMPSE AT CHATGPT

Dr. Patricia Brennan, Director, National Library of Medicine (NLM), NIH; Co-Chair, Enterprise IT Council; Adjunct Investigator, Advanced Visualization Branch (AVB), NINR

Dr. Brennan outlined the history of the NLM, which has been serving science and society since 1836. Since 2000, the NLM has taken the lead at the intersection of knowledge and data, ensuring that trusted health information is accessible through platforms such as PubMed, Medline, PubChem, and clinicaltrials.gov as free digital resources supporting the search and retrieval of biomedical and life sciences literature with an aim toward improving health. These resources are used millions of times each day.

As the role of technology in science is changing and expectations of technology are shifting, NIH requires new funding and governance models. The Digital NIH adaptive governance model aligns IC-specific technology investments with trans-NIH investments and the NIH mission, leading toward a new, more

enterprise-savvy framework for governing technology investments and data storage at the IC and enterprise levels in an accountable way. This approach reflects holistic, integrated planning based on contributions from more than 400 NIH staff members and 19 leading sector organizations. Digital NIH aims to define high-priority capabilities and manage NIH technology investments across functional areas common to all ICs.

Extramural research programs are larger in scale, scope, and complexity than ever before. The pace and scope of NIH progress toward improved health are enabled by decades of first-class, NIH-funded intramural basic and clinical research. The future of NIH administration and management will be supported through common platforms that can be tailored to specific IC needs. Cross-cutting capabilities set standards for system interoperability and build core technical solutions for all of NIH to enhance capacity for leveraging new types of technology.

Implementing Digital NIH is a multi-year process that will explore solutions in an iterative way. The 5-year plan includes identifying capabilities, building a roadmap, pilot testing, consideration of lessons learned, refinements, and integration into operations. From March to September, critical milestones will lay the foundation for Digital NIH success.

Moving forward, NIH ICs must treat technology as a mission-critical resource rather than an afterthought; apply holistic, collaborative planning to prioritize innovative shared solutions; and uphold each IC's unique technology needs. This requires a culture change. Examples at NINR might include evaluating existing technology solutions before pursuing new acquisition or development; serving as a Center of Excellence where NINR has technology or tools that can benefit other ICs; working with implementation planning teams to identify and stand up capabilities over the next 5 years; and enabling powerful research through support of common architecture, standards, data interoperability, artificial intelligence (AI), machine learning, and process automation.

The 2023 Strategic Plan for Data Science focuses on data storage and security, data science methods and tools, and data discovery and novel applications. Strategic plan goals include capabilities to sustain the NIH Data Management and Sharing Policies; programs to enhance human-derived data for research; new opportunities in software, computational methods, and AI; support for federated biomedical research data infrastructure; and strengthening of a broader community of data science. Cross-cutting themes include supporting capabilities that develop and adopt common services, tools, workflows, and standards; increasing data discovery and the use of clinical and health care data while preserving participant rights; leveraging resources, standards, and capabilities from industry and others; integrating ethics, policy, health equity, and transparency in the development of data science methods and tools; and engaging researchers and communities in data science training across biomedical and behavioral disciplines.

Dr. Brennan provided background on generative AI, which has the capability of creating something completely new. Large language models (LLMs) can recognize, summarize, translate, predict, and generate text. Unlike other AI, generative AI uses conversational language, making it easier for people to communicate with machines; generates novel content in response to prompts; and is useful for a variety of applications and use cases.

In the scientific landscape, generative AI has the capability to analyze large, complex datasets more efficiently; identify patterns and trends that may not be visible to human eyes; generate new ideas and hypotheses, potentially leading to new discoveries; assist in designing experiments and optimizing experimental parameters; and facilitate development of new drugs and materials. In scientific applications, generative AI has limitations in the following areas: accuracy and reliability due to dependence on the quality of training data used; reproducibility, especially for complex, poorly understood algorithms; authorship and attribution; ethical considerations such as data privacy, bias, and accountability; intellectual property; cost and accessibility; and interpretability, particularly for results that are difficult to validate by other methods.

Dr. Brennan outlined scientific journals authorship criteria and recommendations related to the use of ChatGPT, specifically stating that ChatGPT could not be listed as an author. Requirements include human author accountability for all aspects of the work.

Dr. Brennan concluded by sharing a video of the Advanced Visualization Branch's Virtual Grocery Store that is used to study how virtual reality environments are designed to improve health outcomes by allowing participants to practice problem-solving doing everyday activities.

Discussion

Dr. Lee opened the discussion by expressing interest in the strategic plan goal related to sustained data management and sharing policy. Dr. Brennan responded that the data science plan is focused on labeling data to make it accessible and reusable and include consent management and provenance information necessary to determine whether the data can be used. She noted that it would be preferable for ICs to identify repositories with shared scientific values for their controlled-access data rather than establishing their own repositories.

Dr. Lee asked about current thinking related to the use of ChatGPT in preparation of grant applications. Dr. Brennan responded that accountability would reside with the submitting PI. There has been ongoing discussion about asking for a self-declaration about the amount and type of assistance the applicant received in generating an idea. Another Council member noted that journal editors are comfortable when authors cite statistical analysis performed by SPSS and other tools, but this does not abrogate responsibility

of the person directing the analysis. Dr. Brennan responded that SPSS computational algorithms are well documented and form a part of the chain of trust, so reviewers have adequate information. LLMs are less trackable and could produce different results each time they are run. She described that the National Institute of Standards and Technology (NIST) recently published AI Risk Management Framework that describes the development of an AI solution through the process of idea generation, data source, training process, training validation, training evaluation, and transfer to new knowledge. The challenge now is documenting the chain of trust.

In response to another question from the Council, Dr. Brennan expressed her thoughts on promoting and deepening community-engaged research. Dr. Brennan noted that this is a special area of interest for her. She emphasized the importance of aligning a measure and a concept that reflects a real-world phenomenon and ensuring that the community, the investigator, and the individual participant believe what it means.

V. SCHARE: SCIENCE COLLABORATIVE FOR HEALTH DISPARITIES AND ARTIFICIAL INTELLIGENCE BIAS REDUCTION

Dr. Deborah Duran, Senior Director to the Director for Data Science, Data Analytics, and Data Systems, National Institute on Minority Health and Health Disparities (NIMHD), NIH

Dr. Duran presented an overview of the ScHARe cloud-based tool developed in collaboration with NINR and the Office of Data Science Strategy. ScHARe aims to fill three critical gaps: increase participation of women and underrepresented populations with health disparities in data science; leverage population science, SDOH, and behavioral Big Data and cloud computing tools to foster a shift in health disparity and health and health care delivery outcomes research; and advance AI bias mitigation and ethical inquiry to be innovating strategies and secure diverse perspectives.

ScHARe phase I has been completed. Components include datasets (primarily population science, including SDOH); a data repository to comply with NIH policy requirements; secure workspaces for individual or collaborative research; computational capabilities and secure, collaborative workspaces; and tools for collaboratively evaluating and mitigating biases associated with datasets and algorithms used to inform health care and policy decisions. Within the ScHARe data ecosystem, researchers can access, link, analyze, and export a wealth of datasets within and across platforms relevant to research about health disparities, health care outcomes, and bias mitigation. These include Google Cloud Public datasets, ScHARe Hosted Public Datasets (e.g., Behavioral Risk Factor Surveillance System), and funded program/project datasets using core common data elements (CDEs). Datasets are categorized by content based on the Centers for Disease Control and Prevention SDOH categories: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and

community context, as well as health behaviors, diseases, and conditions. Eventually, the ScHARe data ecosystem will offer access to more than 300 datasets of population science, SDOH, and behaviors.

Phase II (in process for completion by end of September) will include core CDEs to enable aggregation of datasets from projects mapped to federated datasets; compliance with data sharing policy; the novel CDE-focused repository designed to foster interoperability; and mapping capability across datasets and platforms. ScHARe is the only NIH repository that currently offers this level of integration and will serve as a model for creating better aggregated datasets.

ScHARe aims to promote collaborative identification of bias mitigation strategies across the continuum. Biases may arise from an unconsidered social or cultural context; design limitations; data missingness and quality problems; algorithm development and model training; or implementation. A lack of diverse perspectives in the field is another contributing factor. If not rectified, biases may result in decisions that lead to discrimination, health care inequities, or health disparities.

ScHARe aims to foster participation of populations with health disparities in data science. The ScHARe monthly instructional think-a-thons (TATs) teach what data science is and how to use the Terra platform, the same platform used by the All of Us Research Program and the National Human Genome Research Institute (NHGRI) Genomic Data Science Analysis, Visualization, and Informatics Lab-space (AnVIL). TATs aim to increase usage of the resource and build skill levels, with an emphasis on women and populations experiencing health disparities. Women comprise 20% of data scientists, and minorities (other than Asians) comprise less than 11% of representation in data science (Hispanic or Latino individuals, 6.9%; Black or African American, 4.2%; American Indian and Alaska Natives, 0.5%). A special event TAT targets educators at low-resource MSIs so that they can pass along these skills to their students. The next TAT will target tribal nations, colleges, and universities. In addition to TATs, ScHARe is building collaborative research teams to practice and use Big Data across the spectrum of career levels and disciplines.

Discussion

Dr. Ayala led the discussion and asked about the Terra platform. Dr. Duran explained that NCI funded Terra, which is housed at the Broad Institute and is accessible to anyone. NIH Cloud platforms use Terra to support integration.

A Council member who focuses on intervention research expressed concern about data losing its connection to local context. Dr. Duran provided an example of how data integration can be used to build a comprehensive picture of a neighborhood and inform development of a tailored intervention. For example, data on SDOHs in a specific ZIP Code can be combined with other data for that ZIP Code available in

federated datasets. This opens a vast amount of knowledge that supports meaningful interventions that otherwise may not have been considered.

VI. IDEA: NIH INSTITUTIONAL DEVELOPMENT AWARD PROGRAM

Dr. Ming Lei, Director, Division for Research Capacity Building, National Institute of General Medical Sciences (NIGMS), NIH

Dr. Lei presented an overview of the NIH IDeA Program that was authorized by Congress in 1993 to strengthen biomedical research in 23 U.S. states and Puerto Rico that received NIH research funding at low levels. IDeA aims to build research capacity where the needs are greatest. In 2012, the IDeA Program was moved to NIGMS. The program has received steady congressional support, keeping pace with overall NIH budget growth; in FY 2023, Congress allocated close to $426 million to IDeA. The program supports research capacity building through infrastructure enhancement, research workforce development, and competitive research across all NIH mission areas, including basic, behavioral, clinical, and translational. Funding is primarily provided through institutional centers and regional network grants.

IDeA supports five major funding initiatives: the Centers of Biomedical Research Excellence (COBRE) program; IDeA Networks of Biomedical Research Excellence (INBRE); IDeA Co-Funding; IDeA Regional Entrepreneurship Development (I-RED); and the IDeA Clinical and Translational Research (IDeA-CTR) program.

COBRE supports establishment and development of innovative biomedical research centers through awards for three sequential 5-year phases; the program aims to support development of research infrastructure and achieve critical mass of independent investigators in the research area of each award at the grantee institution. For example, at the University of New England, a COBRE supported two research cores and 10 tenure track faculty investigators who served as research project leaders. Five of the supported investigators have been promoted to full professors; investigators have received two R01s, one R21, five R15s, and four foundation grants, and published 93 research articles. COBRE-supported activities led to institutional elevation to an R2 classification from the Carnegie Classification of Institutes of Higher Learning.

INBRE supports a statewide biomedical research development network in each IDeA-eligible state that partners research-intensive institutions with primarily undergraduate institutions. Funds support faculty research and provide undergraduate students the opportunity to engage in innovative biomedical research.

IDeA Co-Funding helps other NIH Institutes fund approximately 40 R01/R15 awards each year for applications that fall beyond the institutes' payline.

I-RED supports small business concerns in IDeA states in the development of educational products that promote entrepreneurship in IDeA states' academic institutions. Educational efforts utilizing these products are expected to build biomedical researchers' and students' entrepreneurial skills needed to translate scientific discoveries and innovative technologies into commercial products and increase competitiveness. The budget for this program comes from NIGMS Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) funding rather than the congressional allocation for IDeA.

IDeA-CTR awards support development and expansion of infrastructure in clinical and translational research; develop the clinical and translational workforce to enhance the network institutions' ability to design and implement clinical and translational research programs; and coordinate clinical research activities across IDeA institutions and organizations. In West Virginia, for example, West Virginia University and all the institutions in the state with significant clinical research programs are linked as a network, which also includes 130 community clinics. Together, these network partners comprise an effective system that provides the health research the state needs. During the pandemic, IDeA-CTRs played a strong role in the NIH RADx-Underserved Populations (RADx-UP) initiative that was designed to enhance COVID-19 testing among underserved, vulnerable populations across the nation; develop a consortium of community-engaged research projects for rapid implementation of testing interventions and vaccination; and strengthen available data on disparities in infection rates, disease progression and outcomes; and identify strategies to reduce disparities in COVID-19 diagnostics. In 2020, 12 RADx-Up awards went to NIGMS-funded IDeA-CTR, COBRE, and Native American Research Centers for Health (NARCH) grantees for Vaccine Hesitancy/Uptake and Testing. In 2021–2022, 17 additional awards were made to IDeA states, including NIGMS-funded grantees.

The National COVID Cohort Collaborative (N3C) is a partnership of IDeA-CTRs and institutional recipients of Clinical and Translational Science Awards (CTSA). N3C collected electronic health record (EHR) data from collaborating health care providers nationwide, harmonized the data, and made it available to researchers to accelerate advances in COVID-19 research and clinical care. (IDeA COVID-19 EHR data are rich in diversity, especially rurality.) The CTR Consortium is participating in Long COVID research. The IDeA Research Resource Center (I-CRRC) serves IDeA CTRs and other IDeA institutions.

Dr. Lei described a novel trans-NIH collaboration in which NIGMS, the NIH ORWH, and 16 NIH institutes—including NINR— supplemented IDeA awards to strengthen women's health research in IDeA states.

Discussion

Dr. Provencio-Vasquez opened discussion by asking how IDeA states were identified and the impact of diversity. Dr. Lei clarified that the congressionally mandated program selected states that lacked capacity to build their research infrastructure, and the list of states remains the same. Although racial and ethnic diversity was not a driving consideration when the program originated, it has ended up being a force in increasing diversity in biomedical research. IDeA states are mostly rural, with many in the South, and the majority of Native American tribes are in IDeA states.

Council members asked about the type of infrastructure IDeA funds are used to build and what the IDeA Program is doing to ensure better representation among scientists. Dr. Lei responded that infrastructure is under the broad biomedical research umbrella, including technical, services, and data science cores. In terms of broadening the diversity of researchers, the program funding announcements are modified to better fit strategic goals at renewal every 3 years. For example, the requirement for COBRE PIs to have an NIH-funded R01 has been changed to require "active funding."

Dr. Provencio-Vasquez commented that the IDeA program aligns well with NINR strategic priorities. Dr. Lei agreed, noting that NIGMS is eager to share lessons learned from managing the program over the years and through ongoing collaborations with NINR and other institutes. He expressed a desire to see even more involvement from the nursing research community, which is a critical part of the health research enterprise. Dr. Zenk added that she and others at NINR have learned a great deal about capacity building from NIGMS. Moving forward, the institute will continue the conversation about how to collaborate and develop initiatives for it to lead.

VII. COUNCIL OPEN DISCUSSION

None.

Adjournment

Dr. Zenk thanked the meeting attendees and adjourned the open session of the meeting at 1:53 p.m.

VIII. CLOSED SESSION

This portion of the meeting was closed to the public in accordance with the determination that this session concerned matters exempt from mandatory disclosure under Sections 552b(c)(4) and 552b(c)(6), Title 5, U.S. Code and Section 10(d) of the Federal Advisory Committee Act, as amended (5, USC Appendix 2). Dr. Tarlov reminded members of the requirement to leave the room prior to discussion and voting on any

application with which they are in conflict and instructed them to speak up if they are in conflict if staff have not already identified them as being in conflict, and staff will move them to a waiting room (virtual or physical). Members were asked to sign and submit a conflict-of-interest statement at the conclusion of the meeting.

Review of Applications

Council members considered 68 research and training grant applications on which NINR was the primary Institute; these applications requested a total of $28,585,062 (direct costs year 01). The Council also considered 455 applications on which another Institute/Center was primary and NINR was secondary. These applications requested a total of $456,720,033 (direct costs year 01). The Council concurred with the Institutional Review Group recommendations on these 523 applications.

ADJOURNMENT

The 110th meeting of the NACNR was adjourned at 2:27 p.m. on Tuesday, May 23, 2023.

CERTIFICATION

I hereby certify that the foregoing minutes are accurate and complete.

Shannon N. Zenk -S Digitally signed by Shannon N. Zenk -S Date: 2023.09.07 22:53:15 -04'00'

Shannon N. Zenk, PhD, MPH, RN

Chair

National Advisory Council for Nursing Research

Elizabeth C. Tarlov -S Digitally signed by Elizabeth C. Tarlov -S Date: 2023.09.08 05:15:23 -05'00'

Elizabeth Tarlov, PhD, RN

Executive Secretary

National Advisory Council for Nursing Research

COUNCIL MEMBERS PRESENT

Dr. Shannon N. Zenk, Council Chair

Dr. Elizabeth Tarlov, Executive Secretary

Dr. Guadalupe X. Ayala

Dr. Betty Bekemeier

Dr. Anne M. Fitzpatrick

Dr. Mallory O. Johnson

Dr. Christopher Lee

Dr. John Lowe

Dr. Cindy L. Munro

Dr. Elias Provencio-Vasquez

Dr. Sheila Cox Sullivan, *Ex Officio*

NIH STAFF PRESENT at OPEN SESSION

Olga Acosta
Maureen Akubu-Odero
Anita Ambs
Kris Bough
Libbey Bowen
Patricia Brennan
Shalanda Bynum
Joanna Case
Linda Dhawan
Deborah Duran
William Duval
John Grason
Rebecca Hawes
David Higgins
Cheryl Howard
Karen Huss
Danielle Impraim
Karen Kehl
Ming Lei
Andrew Liang
Mia Rochelle Lowden
Liz Perruccio
Samantha Sanchez
Michael Steele
David Tilley
Sean Tolliver
Sabrina Wong
Sarah Yoon
Kathy Sedgwick
Vernesia Moore

The open session was held in person and via NIH videocast. All observers, including members of the public, attended virtually.

MEMBERS OF THE PUBLIC PRESENT at OPEN SESSION

NIH STAFF PRESENT at CLOSED SESSION

Olga Acosta
Maureen Akubu-Odero
Brian Albertini
Anita Ambs
Nisan Bhattacharyya
Kris Bough
Libbey Bowen
Yvonne Bryan
Shalanda Bynum
Joanna Case
William Duval
Anne Fitzpatrick
Dionne Godette-Greer
John Grason
Cheryl Howard
Karen Huss
Danielle Impraim
Karen Kehl
Weiqun Li
Liz Perruccio
Eli Provencio-Vasquez
Sheila Cox Sullivan
David Tilley
Sean Tolliver
Kevin Wilson
Sarah Yoon

The closed session was held in person.