November 3, 2023

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National Institutes of Health
31 Center Drive, Room 5B03
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**RE: NOT-NR-23-018: Request for Information (RFI) on Advancing Nursing Research in Climate and Health**

Dear Dr. Zenk,

The Council for the Advancement of Nursing Science (CANS) and the American Academy of Nursing (Academy) appreciate the opportunity to respond to the request for information on advancing nursing research in climate and health. As the scientific voice for the Academy, CANS formulates and advances research, scientific training, and career development within the profession. In the effort to promote better health, CANS enhances communication among nurse scientists and the public to develop, disseminate, and implement nursing research. For 50 years, the Academy has been advancing health policy and practice through the generation, synthesis, and dissemination of nursing knowledge. Academy Fellows are inducted into the organization for their extraordinary contributions to improve health locally and globally. With more than 3,000 Fellows, the Academy represents nursing's most accomplished leaders in policy, research, administration, practice, and academia.

The vision of the Academy is *Healthy Lives for All People*. To actualize this vision, the Academy's mission is to improve health and achieve health equity by influencing policy through nursing leadership, innovation, and science. The Academy is on record in support of protections for communities from climate change and environmental toxicants, and we are steadfast in championing policies that would rebuild the nation's public health infrastructure in preparation for national emergencies and natural disasters as well as prevent injuries and respond to infectious diseases.[1,2] We applaud the National Institutes of Health's (NIH) Climate Change and Health Initiative and are pleased that the National Institute of Nursing Research (NINR) is actively participating to advance nursing's unique contribution to this initiative. NINR has presented a strong framework of potential research topics for nursing to advance,[3] and we support all areas of research already outlined. To build upon what NINR has outlined, we offer the following responses to the four questions in NINR's request for information.

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[1] American Academy of Nursing. (2023, January). *2023-2024 Policy Priorities to Achieve Health Equity.* https://www.aannet.org/policy-advocacy/policy-priorities.
[2] Couig, M. P., Travers, J. L., Polivka, B., Castner, J., Veenema, T. G., Stokes, L., & Sattler, B. (2021, July). At-Risk populations and public health emergency preparedness in the United States: Nursing leadership in communities. *Nursing Outlook*, *69*(4), 699–703. https://doi.org/10.1016/j.outlook.2021.06.005.
[3] NINR Request for Information (RFI): Advancing Nursing Research in Climate and Health (NOT-NR-23-018). (2023, September 20). https://grants.nih.gov/grants/guide/notice-files/NOT-NR-23-018.html.

**Question 1: Where can nursing research make a difference and/or provide a unique perspective regarding social and structural factors that contribute to health effects of climate change, and mitigation and adaptation responses?**

Nurses work closely with communities through many levels of patient care and nursing research has a distinct and profound perspective to contribute to research. Notably, nursing research may focus on work with communities to assess and evaluate their ability to respond to climate-related disasters with a specific emphasis on supporting people who live and/or work in settings that put them at higher risk of becoming infected or exposed to hazards, including the following:

- People in skilled nursing facilities;
- Frail elderly still living at home;
- Children;
- People experiencing homelessness;
- People who are deaf or hard of hearing or who are blind or have low vision;
- People with an intellectual or developmental disability;
- Pregnant people and people with infants;
- People who use a wheelchair or mobility device;
- People with one or more chronic conditions (for example: asthma, diabetes, hypertension, need for dialysis);
- Persons with or in recovery from substance use disorder;
- People with a mental illness;
- People with limited English proficiency;
- People with undocumented status;
- First responders;
- Marginalized communities, including low income, people from racial and ethnic minority groups, and other stigmatized communities;
- Rural communities; and
- Redlined communities impacted by historic disenfranchisement and environmental racism.

Given the wide differences in needs between various communities, we recommend approaches such as community-based participatory research (CBPR) be utilized to develop and test interventions that build resilience and increase capacity in varying communities. Each community faces a unique set of circumstances and as environmental concerns increase and intersect; communities may be impacted by multiple factors. In research, multivariate analysis will be critical to evaluate the efficacy of essential multilevel interventions. Special attention should be paid to the social, political, and environmental determinants of health as research is designed and carried out. Innovative models of care that address social and environmental determinants of health via community-based care should be explored, such as the Buurtzorg model[4] and the CAPABLE program.[5,6] We also recommend research evaluating post-disaster recovery periods; the impact of climate change on indoor air quality particularly for schools, workplaces, and homes; and the efficacy and effectiveness of behavioral interventions on health outcomes. It is important to emphasize as well that climate change has widespread mental health effects. Nursing interventions that build personal resilience should be developed and tested in a variety

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[4] *The Buurtzorg Model.* (n.d.). Buurtzorg International. https://www.buurtzorg.com/about-us/buurtzorgmodel/.

[5] Fischer, R. (2022, September 19). Nursing's CAPABLE Program Helps Older Adults Live Independently. *Johns Hopkins University*. https://giving.jhu.edu/story/capable-program/.

[6] American Academy of Nursing. (2018). *Edge Runners: Community Aging in Place: Advancing Better Living for Elders (CAPABLE).* https://www.aannet.org/initiatives/edge-runners/profiles/edge-runners--community-aging-place.

of settings.[7] This could be explored and supported by research studies to assess what effective messaging and role modeling on mental health could be for nurses. Finally, environmental factors pose a threat to cultural preservation. It is critical that interventions also be tested in this capacity to assess resilience and account for any potential risks in cultural loss.

**Question 2: Where can nursing research make a difference and/or provide a unique perspective about individual, population, and community factors regarding climate change that create associated health challenges and relevant solutions?**

Nurses have a unique view of the interrelationship between the social determinants of health and the emerging focus on the environmental determinants of health. Nurse researchers can contribute to knowledge on improved integrated approaches throughout the life cycle of disasters and climate-related events, which can help inform community preparedness, more coordinated responses from the health care system, and most importantly, more coordinated and targeted recovery efforts. Specifically, we recommend epidemiological studies be directed relating health to impacts of climate-related events including heat and smoke exposures, fire-related soot and particulate matter that blanket communities after wildfires, vector-borne diseases, and water access and quality. Furthermore, we encourage planetary health principles to be applied to research questions for studies to address multi-layered, interactive elements that impact how individual, population, and community factors impact climate change-related health outcomes. As climate change-related events become increasingly complex, studying the complexity itself of the interacting factors will be key to identifying effective interventions. Finally, nursing research has a unique opportunity to explore effective behavioral interventions, for example, encouraging populations at risk of wildfire hazards to monitor air quality and respond in a timely and appropriate manner to reduce their risk and exposure.

**Question 3: Where can nursing research make a difference and/or provide a unique perspective regarding approaches to counteracting the negative health effects of climate change?**

Across the country, innovative approaches to counteracting negative health effects of climate change are being tested and implemented. Beyond identifying innovative strategies, nursing research can explore the effectiveness and sustainability of such strategies, which will be key in revealing which strategies have been and will continue to be most effective in combating negative effects of climate change. Within health care delivery itself, there are numerous strategies for climate-related improvements to be studied such as:
- Reduction of single-use devices;
- Reduction of plastics and replacement with stainless steel and other sustainable materials (while evaluating the financial burden and return on investment);
- Waste reduction;
- Support of a circular economy through reuse, reprocessing, and donations;
- Reducing the outgassing into the atmosphere of waste anesthetic gases;
- Assessing certified registered nurse anesthetists' (CRNA) adoption of and leadership around decreasing greenhouse gas emissions associated with anesthesia (for example, eliminating desflurane and reducing waste from nitrous oxide);
- Reduction in the prescribing of metered dose inhalers;
- Incentivizing the use of electric vehicles, public transportation, and active transportation;
- Evaluating engagement in green teams, sustainability programs, and building a culture of climate-healthy practices;

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[7] Liu, J., Potter, T., & Zahner, S. (2020, July/August). Policy brief on climate change and mental health/well-being. *Nursing Outlook*, 68(4), 517–522. https://doi.org/10.1016/j.outlook.2020.06.003

- Integration of nurses within health care systems into community-wide emergency response;
- Identifying and assessing the effectiveness of nurse-specific actions to decarbonize health care;
- Educating nurses about the energy transition and measuring impacts they can make with employers, elected officials, organizations, and agencies; and
- Testing nurses' roles and effectiveness with reducing the carbon intensity of meals served in health care settings (and/or communities) while reducing food waste and supporting regenerative agriculture.

Researching the overall effectiveness and efficacy of these interventions will be key. Additionally, within health care systems across many settings, there is a critical opportunity for nurses to improve educational efforts at the point of care and improve discharge planning to encourage patient self-preparation for specific climate change-related events. For example, nurses may educate patients about early symptoms of hyperthermia, ensure patients are registered for emergency alert notifications, and assist patients with planning for evacuation in certain communities as part of discharge planning across multiple settings. Outside of care delivery settings, nurses also have ample opportunity to educate communities and prevent harm.

Furthermore, we recommend that intervention studies be directed to improve primary care and emergency room diagnosis and treatment of extreme heat-related effects as well as emerging diseases such as Valley fever, malaria, dengue, and other vector-borne diseases that are associated with climate change. Interventions should account for community health workers in these efforts as well. As in other areas, CBPR will be critical to work directly with affected communities, including farmworkers, public utility workers, construction and landscaping workers, as well as low-income individuals or people experiencing homelessness. Given the mental health effects of climate-related events, early interventions should be identified as well to prevent and address mental health stressors for youth.

Another area for nursing research to make a unique contribution is evaluating the use of emerging (such as generative Artificial Intelligence technologies and drones) and existing technologies (telehealth, electronic health records [EHR]) in detecting and preventing climate change threats to populations and communities. For example, telehealth technology can be utilized during patient intake and discharge planning to facilitate patient education on key topics related to emergency preparedness. Additionally, EHRs may be utilized to guide preparedness efforts as well as emergency response based on known factors. Given patient conditions and social factors described in the EHR, resources and information can be more targeted as part of preparation and response.

Finally, as circumstances continue to evolve in response to the shifting climate, we emphasize that impacts on individual communities are critical to study and understand. As certain industries shift, for example away from fossil fuels and toward renewable energy, community-wide disruptions are bound to occur with individual, family, and population effects on health and well-being. These health impacts will be a key component of studies and the long-term energy transition strategy to ensure that all are prepared and able to adapt to changes. Nursing input is critical in the planning of healthy communities.
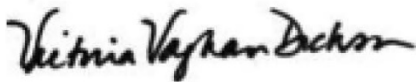
**Question 4: What are additional topic areas in climate and health research in which nursing research can make a difference and/or provide a unique perspective?**

In addition to the topic areas identified in response to previous questions, there are several key areas where nurses can make an impact. In communities, organizations, boards, and elected office, nurses play a key role as experts who have a wholistic and compassionate lens. While it may not be under the scope of NINR, research about nurses' effectiveness in these roles as messengers, planners, and problem solvers could be an important contribution of research. Importantly, nursing research is needed in

economic studies that evaluate the impact of climate-related events on individuals, families, communities, and governments. These studies are needed to assess the cost of climate-related events in relation to adverse health and mental health outcomes; lost productivity and wages; infrastructure and material damages; lost or reduced business; and tax revenue shifts. Additionally, nursing's expertise is key in policy research on climate change mitigation strategies related to disaster preparedness, response, and recovery practices; the impact of shifts and incentives toward renewable energy sources; and effective strategies for building climate resiliency through the lens of equity. Nurses are critical to the development and implementation of public health initiatives and urban planning efforts as well. Nurse researchers can evaluate the impact of community-specific factors that would affect health, such as public transportation and average income levels, and are uniquely positioned to formulate mitigation strategies that can be implemented in different communities since interventions must be tailored to be most effective.

CANS and the Academy thank NINR for the opportunity to provide comments on advancing nursing research on climate and health. If we can be of any assistance to you or your staff, please do not hesitate to contact the Academy's Chief Policy Officer, Christine Murphy, at cmurphy@aannet.org or 202-777-1170.

Sincerely,

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