



# HHS Public Access

Author manuscript

*Res Gerontol Nurs.* Author manuscript; available in PMC 2018 October 02.

Published in final edited form as:

*Res Gerontol Nurs.* 2018 January 01; 11(1): 14–15. doi:10.3928/19404921-20171220-02.

## Response to the Commentary: Precision Health: Using Omics to Optimize Self-Management of Chronic Pain in Aging:

From the Perspective of the NINR Intramural Research Program

**Ann K. Cashion, PhD, RN, FAAN [Scientific Director]** and

Division of Intramural Research, National Institute of Nursing Research, National Institutes of Health, Bethesda, Maryland.

**Patricia A. Grady, PhD, RN, FAAN [Director]**

National Institute of Nursing Research, National Institutes of Health, Bethesda, Maryland.

---

As discussed in the commentary by Dorsey, Resnick, and Renn (2018), nurse scientists currently use a variety of research methods to study symptoms. In all methods, nurse scientists view research through a clinical lens. It is the clinical foundation of the profession of nursing that leads its researchers to prioritize research focused on improving patient outcomes. For that reason, nursing research occupies a unique position in science.

At the National Institute of Nursing Research (NINR), use of diverse research methods within a clinical context is clearly demonstrated through the Intramural Research Program, which is composed primarily of nurse scientists, many of whom are also nurse practitioners. The nurse scientists in the NINR Intramural Research Program conduct symptom science research motivated by their clinical practices and experiences in clinical settings, including the National Institutes of Health (NIH) Clinical Center. In addition, the intramural nurse-led research programs have a strong basic science component. On the main campus of the NIH in Bethesda, Maryland, NINR's intramural nurse scientists implement basic science programs that are clinically relevant, and partner with other scientists to translate the findings into clinical contexts and modalities to affect positive changes in patient outcomes.

The authors agree with Dorsey et al. (2018, page 9 that “nurse scientists are uniquely poised to employ precision health methods to address symptoms...” To capture and articulate the blend of behavioral and biological research conducted by nurse scientists, the NIH Symptom Science Model was developed (Cashion & Grady, 2015). In the model, a symptom or cluster of symptoms is presented, the symptom or cluster undergoes phenotypic characterization, and biologic or omic discoveries are made, leading to new insights and clinical applications which result in symptom reduction and improvement. This model is helpful for NIH intramural scientists and has potential to capitalize on the varied characteristics of academic, clinical, and other research settings as well.

---

Corresponding author: Ann K. Cashion, 3 Center Dr. RM 5E26, Bethesda, MD 20892, ann.cashion@nih.gov.

The authors have disclosed no potential conflicts of interest, financial or otherwise.

NINR intramural scientists are leading collaborative, interdisciplinary teams of researchers who combine expertise to answer complex clinical research questions, such as those posed by Dorsey et al. (2018). For example, intramural investigator Dr. Jessica Gill leads an interdisciplinary team to examine how gene activity in immune cells and inflammation following neurological trauma relate to recovery in athletes, civilians, and military personnel; and how improving sleep quality might reduce inflammation as well as behavioral and neurological symptoms. These hallmark studies have provided insight into the complex relationship between inflammation and recovery from traumatic brain injuries, showing that acute inflammation is essential to initiate neuropeptide activity required for recovery, but that prolonged inflammation increases risk for symptoms and deficits. These findings provide insight needed to improve care of individuals most at risk for poor recovery from brain injuries, and will ultimately improve the health and well-being of individuals at risk for these symptoms and deficits.

The intramural program at NINR uses a disease agnostic approach to conduct behavioral and omics studies to elucidate mechanistic pathways and identify biomarkers associated with symptoms to design interventions that will manage, treat, and improve symptoms. The authors support the premise of Dorsey et al. (2018) that identifying biomarkers for symptoms such as pain will provide objective measures allowing providers to monitor treatment, and thus improve patient care. Symptoms are a common complaint heard by health care providers of patients in the clinical setting. Therefore, it is logical for nurses to focus on symptoms regardless of the underlying pathology/condition. Nurse scientists are not required to have an omics component to their program, but having an omics component provides additional tools to answer questions posed by patient symptoms. Consenting for and collecting samples such as blood allows for further analysis at a later time, and for possible sharing through sites such as the Omics Nursing Science and Education Network (access <http://omicsnursingnetwork.net>) that match researchers' needs for data with available data. An additional advantage of data sharing is that it facilitates the inclusion of many types of diversity (e.g., racial, ethnic, gender, geographical).

In summary, the authors concur with the Dorsey et al. (2018) commentary. Nurse scientists are combining omic, behavioral, and clinical data within the context of individual patients and leading interdisciplinary teams in the implementation of precision health initiatives. This approach will rapidly advance clinical and symptom science to improve the lives of individuals across the nation.

## REFERENCES

- Cashion AK, & Grady PA (2015). The National Institutes of Health/National Institutes of Nursing Research intramural research program and the development of the National Institutes of Health symptom science model. *Nursing Outlook*, 63, 484–487. doi:10.1016/j.outlook.2015.03.001 [PubMed: 26187087]
- Dorsey SG, Resnick BM, & Renn CR (2018). Precision health: Using omics to optimize self-management of chronic pain in aging. *Research in Gerontological Nursing*, 11(1), 7–13. doi: 10.3928/19404921-20171128-01 [PubMed: 29370441]