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Title of Initiative: Interventions to Reduce Sleep Health Disparities

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Objective: The objective of the proposed initiative is to support non-pharmacological interventions to promote sleep health, reduce sleep health disparities, and examine sleep as a modifiable factor to reduce health disparities for other health outcomes among populations that experience health disparities.

Background: Sleep is an important determinant of overall health and is required to support health and well-being across the lifespan. Sleep deficiencies, defined for the purposes of this initiative as insufficient sleep duration; poor sleep efficiency, quality, timing, or regularity; as well as sleep/circadian disorders, occur disproportionately among populations that experience health disparities. Sleep deficiencies are associated with a wide variety of negative health outcomes, including hypertension, stroke, diabetes, liver disease, cancer, obesity, and poorer cognitive, emotional, and social functioning. Conversely, healthy sleep is a protective factor for overall quality of life and from a variety of adverse health outcomes, and successful treatment of sleep disorders (e.g., via CPAP for obstructive sleep apnea) has been associated with improvements in cardiometabolic health and quality of life.

According to Centers for Disease Control (CDC) survey data, the prevalence of age-adjusted 7 or more hours of recommended sleep is lower for racial and ethnic minority populations, particularly for Native Hawaiians and Other Pacific Islanders, African American or Black individuals, and American Indians and Alaska Natives, compared with White, Latino, and Asian adults. For some populations, these sleep disparities emerge early in life: among children aged 4 months to 14 years, insufficient sleep duration is highest in non-Hispanic Black children compared to all other racial and ethnic groups. Sleep deficiencies also occur more commonly among unemployed compared to employed adults, as well as among those with high school diplomas only compared to those with college degrees. Furthermore, there is geographic clustering in experiences of sleep deficiencies. The highest prevalence of sleep deficiencies in the U.S. is observed in the Southeastern and Appalachian regions, and the lowest prevalence is observed in the Great Plains states. Recent evidence also suggests that sexual and gender minority (SGM) individuals experience sleep health disparities compared to cisgender and heterosexual individuals, at least in part due to influences of stigma, minority stressors, and mental health challenges. In sum, distribution of sleep deficiencies overlaps with the same geographic regions and same populations as those most impacted by conditions with known health disparities.

Emerging research has shed light on the factors and mechanisms influencing sleep health and sleep health disparities. Determinants of sleep health disparities occur across multiple levels and domains of influence (see the NIMHD research framework, <https://www.nimhd.nih.gov/about/overview/research-framework.html>) and may interact with one another to affect sleep health. For example, individual-level factors such as experiences with discrimination or sleep health literacy or awareness; interpersonal-level factors such as family beliefs about sleep health, household chaos, or working non-traditional hours; community-level factors such as heat or light exposure or exposure to neighborhood violence; and societal-level factors such as school start times or exposure to climate-change-related disasters, can all affect individuals' ability to achieve healthy sleep and contribute to sleep health disparities. Populations that experience health disparities may also lack access to evidence-based medical treatment for sleep disorders. Because the causes of sleep health disparities are complex and occur across multiple levels and domains, interventions to reduce sleep health disparities and improve sleep health among populations that experience health disparities must take these complexities into consideration.

NIMHD has led programmatic efforts, with collaboration from other NIH institutes and centers (ICs), to stimulate research on the underlying causes and consequences of sleep health disparities in the U.S. (Mechanisms and Consequences of Sleep Disparities in the U.S.; PAR-17-234/235, PAR-20-164). This initiative received applications from 2017-2022, with 9 NIMHD-funded projects and 24 total projects funded across NIH conducting multidisciplinary research on social determinants, consequences, and mechanisms of sleep health disparities in the U.S. In 2018, NIMHD, in collaboration with NHLBI and OBSSR, also held a workshop on the causes and consequences of sleep health disparities. A published [Workshop Report](#) outlined strategies to address sleep health disparities, including the need for development of effective multilevel, multidomain sleep interventions that are culturally acceptable and relevant as well as scalable and sustainable. It is a logical progression of these efforts to put forth a new initiative on interventions to reduce sleep health disparities. NIH has supported sleep interventions (27 grants, FY2018-2022, of which NIMHD funded 2 studies), yet most funded studies (81.5%) had no focus on minority health or health disparities, and no studies focused on certain populations particularly at risk for sleep health disparities, including American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander individuals, or underserved rural populations. Few studies (26%) focused on children or adolescents, even though sleep disparities emerge in early childhood, and childhood and adolescence may be critical periods for prevention. There is now a need to stimulate intervention research, conducted in a variety of settings, that promotes sleep health among underserved populations, reduces sleep health disparities, addresses social and environmental determinants of health, considers critical life stages, and is designed with the needs of populations and communities experiencing poor sleep health in mind.

Description of Initiative: This initiative will support the development and testing of multilevel, multidomain interventions to promote sleep health, treat sleep disorders, reduce sleep health disparities, and/or examine sleep as a modifiable health factor to reduce disparities for other

health outcomes. This initiative emphasizes promoting interventions to improve sleep health via addressing one or more behavioral, social, environmental, or structural determinants of disparities in sleep health or deficiencies, rather than on pharmacological interventions that do not address these underlying causes. Interventions should consider the important contextual factors that can influence sleep and sleep health disparities.

Interventions should examine the underlying mechanisms of action of changes in sleep behavior or sleep health, and must focus on one or more [NIH-designated populations](#) that experience health disparities in the U.S. and its territories (Black or African American, Hispanic or Latino, American Indian and Alaska Native, Asian, or Native Hawaiian and Pacific Islander persons, socioeconomically disadvantaged populations, underserved rural populations, and sexual and gender minority [SGM] groups). Since sleep disparities begin in early life and occur across the lifespan, interventions among populations across the life course are encouraged, as well as those that consider key life transition points known to co-occur with changes in sleep. Interventions may consider multiple facets of sleep health, including sleep quality, quantity, efficiency, and timing. The expectation is that improving sleep health and treating sleep disorders may translate to improvements in various health outcomes and reduce health disparities.

Research Priorities: Intervention research topics of interest include, but are not limited to:

- Improving sleep health awareness, early detection of poor sleep and sleep disorders, and early intervention, in clinical and other settings
- Population-level interventions focused on policies and practices to promote healthy sleep
- Approaches that incorporate environmental and social determinants of health to address sleep health disparities, such as interventions addressing the home or neighborhood built environment
- Prevention of sleep health disparities across the lifespan or at key life course transition points, such as during early childhood, periods of unemployment, pre/peri/postnatal periods, parenthood, etc.
- Adapt and develop evidence-based, culturally appropriate interventions for populations that experience health disparities including specific vulnerable populations, such as shift workers
- Investigate sleep as primary prevention for health outcomes with observed health disparities through community-based research
- Determine whether sleep mediates or modifies intervention effectiveness for health outcomes with observed disparities