

SOCIETY OF GENERAL INTERNAL MEDICINE-ASSOCIATION OF CHIEFS OF GENERAL INTERNAL MEDICINE-ASP T. FRANKLIN WILLIAMS SCHOLARS AWARD IN GERIATRICS



AWARD RECIPIENT

ELIZABETH HANEY, MD

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PROJECT

"BONE TURNOVER AND BONE LOSS AMONG OLDER SELECTIVE SEROTONIN REUPTAKE INHIBITOR USERS"

MENTORSHIP TEAM

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Depression and osteoporosis are both important and prevalent conditions in older adults and account for significant morbidity and mortality. Depression has been associated with low bone mineral density (BMD) in some but not all studies. Several mechanisms have been proposed to explain the association, but it remains unclear whether depression or antidepressant medications are responsible for the effects.

One possible mechanism for the relationships between depression, antidepressants, and bone density involves serotonin metabolism. Serotonin is important in the pathophysiology of depression because anti-depressant medications block the serotonin transporter. Recent studies have linked serotonin levels to depression and bone loss. Functional serotonin transporters and receptors are present in osteoblasts, osteoclasts, and osteocytes, providing a complete signaling pathway that can potentially cause downstream events that regulate bone density. Research has shown that mice with global disruption of the serotonin transporter gene have lower trabecular bone volume, smaller bones, and earlier breaking points than their wild-type counterparts. We have demonstrated a relationship between selective serotonin reuptake inhibitors (SSRI) and increased bone loss in older women as well as lower BMD in older men. Together, these data suggest that the serotonin transporter may be important in bone physiology.

My long-term research goal is to understand the role of serotonin in bone physiology and maintenance to provide a translational basis for understanding serotonin transporters in bone. We will examine changes in bone density and bone turnover in older men and women following initiation

of treatment with SSRI medications. We will enroll a sample of postmenopausal women and older men who are starting SSRIs and compare them to a group of non-SSRI users. By following these groups for changes in biomarkers of bone turnover and BMD, we will examine the changes that occur in BMD and bone turnover with pharmacologic manipulation of the serotonin transporter.

In addition, complementary projects in a large cohort of men over age 65 will examine the relationship between SSRI use, BMD, and fractures as well as the relationship between genetic variation at the serotonin transporter and BMD. If SSRIs and serotonin transporters are implicated in bone loss, individuals with these risk factors may be targeted for screening. We anticipate that results from this research will lead to future studies designed to address the risk for fracture conferred by depression and SSRI treatment, examine the impact of dose and duration of SSRI treatment on bone, and develop recommendations for prevention of bone loss in patients with depression.

The Society of General Internal Medicine-Association of Chiefs of General Internal Medicine-ASP T. Franklin Williams Scholars Award in Geriatrics will support the training and research necessary for me to attain my long-term research goals. As a general internist with outpatient teaching responsibilities, I look forward to the training and mentorship in geriatrics that the award provides. This award will advance my research in osteoporosis and depression, help me develop clinical expertise in geriatrics, and achieve the goal of becoming an investigative and educational leader in geriatrics.