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For More Information:
Nicole Winston-Ramirez 847-384-4162 winston-ramirez@aaos.org
Deanna Killackey 847-384-4035 killackey@aaos.org

New study finds early hormone replacement therapy reduces risk of osteoporosis and fractures for older women

Real-world data from more than 137,000 women shows early HRT significantly improves long term bone health

NEW ORLEANS (March 2, 2026)—Hormone replacement therapy (HRT) has been shown to reduce bone loss in postmenopausal women, but there is limited research on long-term outcomes in real-world populations. In the largest study to date, researchers looked at the impact of HRT on bone health in more than 137,000 postmenopausal women during a five-year period. Their findings reveal that women who initiate early HRT after a menopause diagnosis face a significantly lower risk of osteoporosis over the long term.

Presented at the 2026 Annual Meeting of the American Academy of Orthopaedic Surgeons (AAOS), the study, **"**Early Hormone Replacement Therapy and Long-Term Bone Health in Postmenopausal Women: A Real-World Propensity-Matched Study," also found that early HRT reduces the risk of fracture in postmenopausal women by 13%. This data contributes to the growing body of research suggesting that early hormone replacement therapy can improve bone density during the postmenopausal period.

"As our population ages, age-related conditions like bone loss have become common, and the risk of falling and fracturing bones increases exponentially. From an orthopedic standpoint, this often leads to hospitalization, surgery and morbidity. Anything we can do to mitigate the risk of conditions like osteoporosis and fractures for postmenopausal women is a positive step," said James Barsi, MD, FAAOS, Clinical Associate Professor of Orthopaedic Surgery, Stony Brook University. "The data from this study is particularly meaningful because of the large number and uniformity of participants, and we hope it leads to more doctors having conversations with eligible patients about HRT as an option."

Previous HRT studies have provided valuable insights, but many were constrained by small sample sizes and potential confounding. In this retrospective study, conducted over 2,000 days, researchers used the TriNetX Research Network to identify 137,484 participants under the age of 60 with a documented menopause diagnosis within the last 20 years. Using 1:1 propensity score matching, participants were selected based on demographics, comorbidities, nutritional deficiencies, metabolic conditions affecting bone health and the use of bone-modifying agents. Those with prior use of HRT, preexisting bone malformations and previous fractures did not qualify. Participants were then divided into two equal cohorts with balanced baseline characteristics, one group having initiated HRT within one year of their menopause diagnosis and the other never using it.

A highlight of findings from the study include:

- During the five-year follow-up, the non-HRT group demonstrated a significantly higher risk of developing osteoporosis compared to the HRT group (OR 1.18, 95% CI 1.092– 1.284, $p < 0.0001$).
- For fractures, no significant difference was found between the groups at 3 years (RR 1.02, not significant), but the non-HRT group had 6% higher risk at 5 years (RR 1.06, $p < 0.05$) and 13% higher risk at max follow-up (RR 1.13, $p < 0.05$).

"The true power of this study was the large database that allowed us to compare a high number of patients with similar factors over time," shared Dr. Barsi. "Given evidence that early HRT may improve bone health and reduce fracture risk later in life, perimenopausal and menopausal women are encouraged to discuss HRT with their gynecologists or primary care physicians."

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2026 AAOS Annual Meeting Disclosure Statement

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