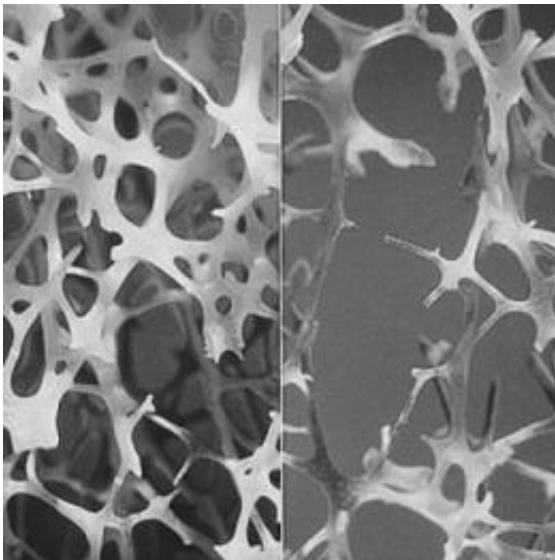


Population health: Statewide study finds decreasing rates of osteoporosis treatment

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On the left is normal bone and on the right is osteoporotic bone. Credit: International Osteoporosis Foundation

A statewide study has found that from 2005 to 2012, fewer than a quarter of men and women with documentation of osteoporosis or fragility fracture, conditions for which national guidelines would recommend treatment for osteoporosis, actually received that treatment.

The study of 37,000 Indiana [patients](#) over age 50 also found that the situation is not improving. Those who met these criteria were half as likely to be treated in 2011-2012 as they were in 2005.

The population health study, from Indiana University School of Medicine, Regenstrief Institute and researchers from Merck Sharp & Dohme Corp., a subsidiary of Merck & Co., Inc. ("Merck") under the auspices of a Regenstrief Institute-Merck collaborative partnership, evaluated real world osteoporosis [treatment](#) patterns using data from the Indiana Network for Patient Care (which contains information on more than 90 percent of state residents), prescribing data and insurance claims statistics. The goal was to establish how many patients were treated within two years of a diagnosis of osteoporosis or fragility fracture attributable to likely osteoporosis.

Males meeting indications to treat for osteoporosis were less likely to be treated than females. Black patients were less likely to be treated than white patients. Individuals with multiple chronic conditions were also less likely to be treated for osteoporosis.

By age 80 only about 20 percent of those for whom guidelines recommend treatment were actually treated. The researchers reported the occurrence of a fragility fracture—even a hip fracture with its painful and potentially debilitating consequences—did not typically prompt treatment for prevention of future fractures. It is known from other studies that older adults are more likely to die in the year following a hip fracture than if the fracture had not occurred.

Why are fewer than a quarter of those who met guidelines treated for osteoporosis?

"There are a variety of potential explanations for the low rates of osteoporosis treatment," endocrinologist Erik Imel, M.D., senior author of the study and an associate professor of medicine at the IU School of Medicine said. "Almost half the patients identified in the study were identified due to fragility fracture. Usually the doctor caring for an acute hip fracture and its complications in the hospital is not the doctor the

patient sees in the long term. And even in this era of electronic medical records, medical care can be disjointed, especially when patients get portions of their care in different health systems."

"Another likely contributing factor is patient fears regarding rare complications reported for osteoporosis medications. Despite the much greater risk of osteoporotic fracture in this patient population, patients may be excessively worried about things that are of much lower risk, and refuse treatment."

Importantly, the researchers were able to see when osteoporosis medication prescriptions were actually filled. However they did not have data on prescriptions that went unfilled or whether the patient did not adhere to physician recommendations regarding a prescription.

"In future studies we will look at the reasons behind limitations in application of osteoporosis therapy," Dr. Imel said. Since patients with multiple medical problems were less likely to be treated, was the issue insufficient time during the medical appointment to address osteoporosis risk among those patients? How often are patients refusing due to fear regarding rare side effects of drugs?

"We also want to investigate how often patients didn't fill prescriptions that were written for an osteoporosis medication. Were they unsure as to why the medication had been prescribed? Were they unaware of the benefits of treatment? Was the drug too costly? Did they hear something bad about a drug?"

Analysis of data from an entire state rather than a random sample provided unique insight into disparities in osteoporosis treatment.

"To our knowledge no one has previously conducted a study of this serious disease using such comprehensive data, which enabled us to look

at all almost eligible patients throughout an entire state—urban, rural, insured, uninsured and across races," said study corresponding author Ziyue Liu, Ph.D., assistant professor of biostatistics at the IU School of Medicine.

"Because of the high quality and wide focus of our data, we were able to analyze a significant problem from different angles to gain a complete, in-depth and accurate perspective of medical practice, confirming previous observations from smaller studies of other geographic areas," Dr. Liu said. "This new information will ultimately help patients, physicians and policy-makers to improve care."

According to Drs. Imel and Liu while this data is from one state with a population of 6.6 million, the data should be reflective of practice patterns among neighboring states if not the entire Midwest and beyond.

The National Osteoporosis Foundation estimates that about 54 million Americans have osteoporosis or low bone mass, which places them at increased risk for osteoporosis. The NOF reports that research suggests that approximately one in two women and up to one in four men age 50 and older will break a bone due to osteoporosis.

By 2025, it is predicted that [osteoporosis](#) will be responsible for approximately three million fractures and \$25.3 billion in costs in the United States each year. Osteoporosis-related fractures create significant quality of life burdens.

"Disparities in Osteoporosis Treatments" appears online in advance of print publication in the journal *Osteoporosis International*. In addition to Drs. Lui and Imel, authors are Jessica Weaver and Anne de Papp of Merck & Co.; Zhuokai Li of Duke University; Joel Martin, M.S.; Katie Allen and Siu Hui, Ph.D. of the Regenstrief Institute. Dr. Imel is a Regenstrief Institute affiliated scientist. The research was funded by the

Regenstrief-Merck Collaboration.

In 2012, the Regenstrief Institute entered a five-year partnership with Merck with the purpose of collaborating on a range of projects using clinical data to study personalized delivery of health care. These projects, representing areas such as epidemiology, predictive modeling, and health outcomes, demonstrate advancement of their fields while taking advantage of the unique resources available through this collaboration. Ultimately, the Regenstrief-Merck Collaboration seeks to improve the health of patients through data analytics, health care innovation, education and research that supports evidence-based health care.

Provided by Indiana University

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