



## Pharmacogenomics: A Valuable Step in Fall Prevention

Pharmacogenomics (PGx) is a vital precision medicine tool that delivers insights into how an individual's genetics affect how their body processes medications. While its usefulness is well-known in specialties like oncology, the application of PGx is both available and beneficial in many other clinical areas and care settings.

For fall prevention programs, PGx can help improve resident safety and avoid injuries that lead to hospitalizations and functional decline. According to recent statistics, each year, three million older people are treated in emergency departments for fall injuries.<sup>1</sup> Incorporating PGx into fall prevention strategies could significantly reduce this alarming statistic by tailoring medication management to an individual's genetic makeup.

**The National Human Genome Research Institute** defines pharmacogenomics as "a component of genomic medicine that involves using a patient's genomic information to tailor the selection of drugs used in their medical management. In this way, pharmacogenomics aims to provide a more individualized (or precise) approach to the use of available medications in treating patients."

### Reducing the Polypharmacy Burden

Houda Hachad, PharmD, an internationally recognized PGx expert and the Vice President of Clinical Operations at SinguLab, said, "PGx testing can assess many commonly used medications, but current science doesn't have the knowledge to assess all marketed medications." She stressed, "Pharmacogenomics isn't just testing. You need to translate it into practice to make it useful for patient care."

Dr. Hachad added, "Many residents are elderly and have serious health conditions and comorbidities. We can potentially help reduce some polypharmacy burden by avoiding inappropriate or harmful medications." She further noted, "When a resident is on one or more medications and experiences adverse effects, we want to mitigate the risk of undesired response. This is particularly important in this population, which is already at risk of accumulating medications onto their regimen."

### A Key Component of Fall Prevention

Studies have shown that polypharmacy – the simultaneous use of multiple medications to treat a certain condition – can lead to higher risks of falls for residents, and half of long-term care residents fall annually. Several medication classes often found in long-term care polypharmacy situations, like psychotropics,

<sup>1</sup> <https://www.cdc.gov/falls/facts.html>

opioids, and antidepressants, have multiple medications with evidence-based PGx insights. So, not surprisingly, PGx can help identify medications that put people at risk of falls in the LTC space. As Dr. Hachad said, “Many medications are commonly overprescribed in seniors and have adverse effects that result in falls.”

PGx can help determine what medication and/or dosage may help minimize fall risk in this population. Dr. Hachad explained, “Psychotropics may have central nervous system side effects that can lead to falls. You can tell from genetics what dose may increase the fall risk in a specific patient.” She added, “Regardless of the genetics, the elderly population has a diminished capacity because of age. However, if you know about offending agents and the patient’s genetic signature, you have an opportunity to stop or change medications or doses.” **By combining possible PGx results with established medication protocols, facilities can implement pharmacogenomics as part of a fall prevention program.**

## Improved Health and Safer Residents

Nursing homes and other long-term care communities can use PGx to identify patients most likely to benefit from fall prevention efforts. “Instead of just looking at past falls, we can look at patients taking one or more medications that can contribute to falls or those complaining of medication side effects such as dizziness or sedation,” Hachad said. You can test residents and see who has high-risk genetic signatures and is taking one or more high-risk medications. “This is where tests help identify opportunities to reduce dosages and polypharmacy.” This is an important part of a proactive fall prevention effort.