

MARKETPLACE EXPERTS

Tapping genetic information to support medication management and resident health



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Medication management
has long been a top focus



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for long-term care organizations, given the challenges related to comorbidities and polypharmacy that residents often face.

Studies show that the overwhelming majority (86%) of nursing home residents take five or more medications, and over one in four residents is prescribed ten or more medications.

Researchers have long linked certain medications or combinations of medications to adverse effects, but mitigating the core issues associated with these complex pharmacy profiles requires a complete resident story.

In addition to existing medication management strategies like reconciliations, educational sessions with residents, and monitoring programs, new approaches that use genetic testing and informatics are helping organizations on their quest to get residents the right medications, at the right dose, at the right time, and for their unique needs.

Genetics and drug response

Pharmacogenomics (PGx) is the study of drug-gene interactions based on an individual's unique response to different medications. A simple, non-invasive genetic test is used to analyze specific genetic variations in each

resident's DNA. When the results of the PGx test are combined with standard reference guidelines (including existing on-label prescribing guidance), clinicians can be assisted in determining optimal treatments and dosing for a wide range of medications.

By incorporating PGx insights into resident records and leveraging clinical informatics, doctors and pharmacists can identify potential drug-gene interactions that may be occurring within the resident's current or future prescriptions – in much of the same way they look for potentially dangerous drug-drug and drug-allergy combinations.

In fact, genetics impact resident responses to many commonly prescribed medications, especially among elderly residents. For example, a large number of psychotropics can be guided and dose-optimized by PGx testing. Additional [research](#) found that PGx testing can better prescribe specific opioids and dose amounts to optimize pain management while curbing overall drug consumption and related effects like sedation, which is a win for residents and facilities alike.

Using PGx in long-term care

By leveraging PGx, clinicians can work to proactively reduce and avoid potentially harmful drug-related situations. Three particular areas where PGx has significant impact for long-term care organizations are: preventing and managing falls, opioid stewardship for pain, and reducing antipsychotic use.

Preventing and managing falls. A study in [BMC Geriatrics](#) found more than 87.5% of elderly residents that fell and were admitted to the emergency department for a hip fracture were taking a medication known to increase the risk of falling.

Drugs that increase fall risk can be found among four classes: psychotropics, cardiovascular agents, antidiabetics and urological agents. These drugs are some of the most common medications taken by long-term care residents – and many are also sensitive to certain genetic variations, resulting in unwanted responses. Avoiding the drug categories entirely may be impossible; for example, a resident with depression may need treatment for their condition regardless of an

increased risk of falling, but PGx testing can help evaluate possible alternatives that may better fit the resident's genetic signatures.

A resident's genetics may also make their body less responsive to a certain medication, leading to larger doses which may increase side effects that cause falls, as well as medication buildup in the bloodstream and bone loss with chronic use over time. Tapping into that resident's genetics, however, can help clinicians pinpoint a drug that their body may respond better to and/or perhaps at a smaller dose, and in the process, decrease the fall-inducing side effects.

Opioid stewardship for pain management. Opioids represent another drug category widely prescribed to seniors and with a number of potential side effects. Facilities already closely monitor opioid use, including the number of days on the drug as well as how the medication is impacting pain levels. However, PGx testing can be another tool in the medication management toolbox by giving clinical staff more information about which drug will best manage each resident's symptoms and come with the lowest risk of side effects.

Some of the most commonly used opioids – codeine, tramadol, and hydrocodone – are all greatly affected by genetic variability. This means certain residents may have heightened sensitivity, others might experience side effects like dizziness, and others may need alternative

agents to feel any relief. This is not just specific to opioids. Other popular pain- and inflammation-relieving medications, such as non-steroidal anti-inflammatory drugs, are also impacted by genetics. Understanding the drug-gene interactions at play can help manage resident pain, while also uncovering potential opportunities for deprescribing and curbing issues associated with polypharmacy and long-term opioid use.

Reducing antipsychotic use. Antipsychotic use among the elderly can be contentious as these drugs are not recommended for this population, yet are often needed to address behavioral health challenges related to dementia and other aging conditions. This is a critical topic for the space between industry-wide initiatives and individual facilities striving for appropriate use of antipsychotics and reduced risks of negative side effects.

Antipsychotics often contribute to prescribing cascades by treating a behavioral health condition that is the side effect of another medication. To untangle this web and determine which drug (or drugs) in the cascade might be causing negative responses, prescribing teams can use PGx insights to pinpoint any negative drug-gene interactions occurring. Combining PGx with other analyses on medication response can shed light on the causes of the episode, how future episodes can be avoided, and what safer alternative drugs or doses should be considered.

Making it happen

Incorporating drug-gene information into medication management can be invaluable, but only if clinicians can access it quickly in the moment they need it and in a format that is easy to understand. In other words, PGx insights must be easily available and utilized without burdening the existing demands of the clinical or pharmacy workflow. Clinical informatics technologies, which may already be in use for other elements of medication management and resident care, are an optimal way to bring PGx insight into existing clinical workflows and systems that track outcomes.

In place of a static reference document listing drug-gene interactions, clinical systems can integrate pharmacogenetic insights into the resident record and continuously monitor decision-making to alert the care teams and pharmacists of possible interactions and resolutions, even as resident health conditions and/or medications change over time. This can start with identifying the residents likely to benefit most from PGx testing and continuing to analyze drugs for individual residents based on their genetic markers, and even informing prescribers of new medications on the market that might suit certain residents better.

Whether long-term care teams are working to prevent resident falls and steady their balance, ensure pain is tolerable without overly upping doses, or responding to

mental health concerns and stressors, they need access to robust information on each resident and each medication involved. Understanding how medications interact with a resident's unique metabolic profile is a positive contributor to supporting resident health and decreasing unwanted circumstances, and technology can help organizations tap into genetic testing while retaining simplified processes and remaining focused on keeping residents healthy and experiencing quality of life.

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