

decision support tool powered by CPGx® technology, reduced medication costs, increased adherence, and reduced polypharmacy for patients who had failed monotherapy for psychiatric disorders. The current study, which is a sub-analysis of this larger study, assessed cost savings associated with combinatorial pharmacogenomic testing in patients with generalized anxiety disorder (GAD) and major depressive disorder (MDD). Medication costs were extracted using pharmacy claims data provided by Medco, a large pharmacy benefits manager, for patients with GAD (n = 318) and MDD (n = 459). Medication cost savings per member per year (PMPY) for 1 year following the test were compared between patients whose medication regimens were congruent with the test recommendations and those whose medication regimens were incongruent with these recommendations. When healthcare providers' decisions were congruent with combinatorial pharmacogenomic testing, PMPY savings was \$6,747 (p < 0.004) for GAD patients and \$3,738 (p < 0.004) for MDD patients versus incongruent decisions within these disease states. Among the congruent group, GAD patients experienced greater savings in central nervous system (CNS) medications (2-fold) compared to MDD patients. Additionally, analysis of a subset of patients prescribed at least one benzodiazepine six months prior to testing (n = 660) demonstrated a significant decrease in benzodiazepine drug counts (p < 0.001) and refills (p < 0.001) after testing. Using the GeneSight test as a treatment decision support tool for patients with GAD or MDD resulted in significant medication cost savings when HCPs made congruent decisions with the combinatorial pharmacogenomic results. Furthermore, use of the GeneSight test decreased the use of benzodiazepines.

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### Pseudogout Induced by Vortioxetine

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**ABSTRACT:** Study Objective: Vortioxetine induced monoarticular pain has not heretofore been described. Such a case is presented.

**METHOD:** Case study: A 49 year old right handed female with a past history of multiple hospitalizations for chronic severe migraine, presented with complaints

of depression and stress. She has had depression for 20 years, which has been constant and worsened in the past 5 years. As her migraines became more frequent, her depression also worsened. She has never been suicidal, but does endorse sadness, crying spells, fatigue, demotivation, lack of interest, poor concentration, irritability, anger, guilt, hopelessness, helplessness, anorexia, PM insomnia with frequent awakenings, absent libido and racing thoughts.

**RESULTS:** Abnormalities in her mental status examination: Orientated times 2. Disheveled. Defensive. Motor retardation. Mood: depressed, anxious and irritable with blunted affect. Remote memory: President: Obama,?. Beck Depression Inventory II: 23 (moderate depression). Beck Anxiety Inventory: 25 (moderate anxiety).

The patient was begun on 5 mg of vortioxetine every night. Within two days, she developed pain and swelling of the distal interphalangeal joint of the left great toe. The pain was so severe that she demonstrated an antalgic gait. After five days the medication was discontinued and two days later, there was full resolution of the swelling and pain, and ambulation returned to normal.

**CONCLUSIONS:** The mechanism whereby vortioxetine induced this monoarticular pain is unclear. Underlying depression alone can precipitate arthritic exacerbation (Trivedi, 2004). This was unlikely given the long duration of her depression as well as the timing of the precipitant (vortioxetine use) and resolution shortly after the medication was discontinued. Alternatively, in the depressed state, there may be a greater perception of somatic pain, which allowed her to appreciate any arthritic pain which may have pre-existed the use of vortioxetine (Howard, 1991). As such, this may have represented a correspondence bias (Gilbert, 1995). Furthermore, mild new pain is perceived as more intense in those who are depressed (Howard, 1991). Thus, any minimal arthritic injury may be viewed as more intense. Vortioxetine may have paradoxically exacerbated anxiety and anxiety can precipitate pain (Narasimhan & Campbell). Alternatively, vortioxetine could have caused a generalized allergic reaction, which may have initially manifest in the great toe. If the patient continued the medication, she may have developed a generalized systemic reaction including involvement of multiple joints. Another possibility is that it caused an allergic histamine mediated hive like reaction, generalized, as well as on the toe. Continued use of the joint may have caused this to be intensified, with associated swelling, while the general reaction subsided. Inquiry about monoarticular involvement in those taking vortioxetine is warranted.

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