

**RESULTS:**

- Data set included responses from 1454 psychiatrists and 488 PCPs who completed all assessment questions during the study period
- Psychiatrists: Knowledge/competence improved ( $P < .001$ ;  $V = 0.54$ ; large educational effect) following participation in the CME activity:
  - While 5% answered all 3 questions correctly on pre-assessment, 70% answered them all correctly on post-assessment, with the largest increases on accurate differentiation between possible signs of mania and depression, accurate diagnosis of bipolar depression, and ability to select treatments for MDD with mixed features
  - 20% reported being more confident in their ability to select treatments for various presentations of mood disorders
- PCPs: Knowledge/competence improved ( $P < .001$ ;  $V = 0.49$ ; large educational effect) following participation in the CME activity:
  - While 2% answered all 3 questions correctly on pre-assessment, 48% answered them all correctly on post-assessment, with the largest increases on accurate differentiation between possible signs of mania and depression, accurate diagnosis of bipolar depression, and ability to select treatments for MDD with mixed features
  - 24% reported being more confident in their ability to select treatments for various presentations of mood disorders

**CONCLUSIONS:** Online CME in a clinically relevant interactive case-based format can improve knowledge, competence, and confidence in management of various presentations of mood disorders and better equip physicians to recognize key features, accurately diagnose, and treat the complex spectrum of this patient population.

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## 146 Effect of Heroin Use on Changes of Brain Functions as Measured by fMRI, a Systematic Review

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**ABSTRACT:** In this study the authors focus on reviewing imaging studies that used resting state functional magnetic resonance imaging for individuals with a history of heroin use. This review study compiled existing research addressing the effect of heroin use on decision making by reviewing available functional neuroimaging data. Systematic review of the literatures using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist. Eligible articles were retrieved through a computer-based MEDLINE and PsycINFO search from 1960 to December 2015 using the major medical subject headings "heroin, fMRI" (all fields). Only English language was included. Thirty-seven articles were initially included in the review. Sixteen were excluded because they did not meet the inclusion criteria. The results of 21 articles that met all the inclusion criteria were presented. Based on the 21 studies included in the current review, there is evidence that heroin use may have a direct and damaging effect on certain brain functions and that these changes may be associated with impulsive and unhealthy decision making. From the review of these studies, the authors understand that a longer duration of heroin use may be associated with more damaging effects on brain functions. The authors also understand that these brain changes could last long after abstinence, which may increase the risk of relapse to heroin use. More research is needed to create a biomarker map for patients with heroin use disorder that can be used to guide and assess response to treatment.

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## 148 Visual Snow Defeats Guardians of the Galaxy Volume 2: Unremitting Pixelation Despite Three-Dimensional Stereoscopic Film

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**ABSTRACT:** Introduction: Pixelated vision or visual snow has been associated with schizophrenia (Silverstein 2011). The impact of viewing a 3D motion picture on such a visual phenomenon has not heretofore been described.

**METHOD:** Case Study: A 28 year old right handed single male three years prior to presentation noticed that all his vision was pixelated. The pixelated vision is panoramic, involving the entire visual field. The pixels are characterized by 10,000 flat white and gray dots measuring 1mm x 1mm. No changes in color, shape, or size were noted in high and low intensity light. White, dark, gray, or multicolored backgrounds had no effect on his vision. The visual distortions are not impacted by head movements, emotions, degree of tiredness, driving, or his hedonic perception of the object being visualized. The pixels were noted to disappear upon closure of both eyes but persisted during monocular vision with either eye. These visual hallucinations were sporadic during the first year and became continuous over the following two years. Two weeks after onset of pixelated vision he developed auditory hallucinations and hyperacusis. These increased in intensity and frequency to 500-600 times per day. He denied palinopsia, migraines, tinnitus, and photophobia. These hallucinations persisted despite treatment with aripiprazole, paliperidone, lurasidone, olanzapine, clozapine, ziprasidone, benztropine, bupropion, lamotrigine, modafinil, trazodone, atomoxetine, and amphetamine.

**RESULTS:** Abnormalities in Examination: Hypoverbal, blunted affect, impaired concentration, preoccupied with racing thoughts. Admitted to actively having auditory and visual hallucinations, without suicidal or homicidal ideations. Memory testing: Able to recall 2 out of 4 objects in 3 minutes and 3 out of 4 with reinforcement. Similarities interpreted concretely. Visual Acuity: 20/20 OU. Retinal examination: Normal. Intraocular Pressure: 19 mm OD, 20 mm OS (normal). Automotive Perimetry Testing: Normal. Cover/Uncover: Normal. Near Convergence: 3 inches (normal). Lens or filtered prism have no effect on visual snow. MRI of his brain, EEG, BAER, liver function tests, CBC, vitamin B12, folate, and thyroid function tests were normal. MRA: mild hypoplasia of distal right vertebral artery.

**DISCUSSION:** Visual snow has been anecdotally described as static, continuous, and independent of the specific visual environment (McKendrick, 2017). However, the persistence of visual snow in the presence of 3D movies has never been reported. The visual snow paralleled auditory hallucinations and hyperacusis in frequency and intensity, which suggests there may be generalized hyperexcitability of the brain inducing both auditory and visual hallucinations. Agents that reduce cortical hyperexcitability (i.e., anticonvulsants, anxiolytics) may have

efficacy. Treatment with these agents has been described (Ghannam, 2017), warrants further investigation.

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## 149 Deutetrabenazine for the Treatment of Tardive Dyskinesia: Results From an Open-Label, Long-Term Study

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**ABSTRACT:** Introduction: Tardive dyskinesia (TD) is an involuntary movement disorder resulting from exposure to dopamine-receptor antagonists. In the 12-week ARM-TD and AIM-TD studies, deutetrabenazine demonstrated significant improvements in Abnormal Involuntary Movement Scale (AIMS) scores at Week 12 compared with placebo, and was generally well tolerated.

**OBJECTIVE:** To evaluate the efficacy and safety of long-term deutetrabenazine therapy in patients with TD.

**METHODS:** Patients with TD who completed the ARM-TD or AIM-TD studies were eligible to enter this open-label, single-arm, long-term safety study after they completed the 1-week washout period and final evaluation in the blinded portion of the trial. Efficacy endpoints included the change in AIMS score from baseline, and treatment success (defined as "much improved" or "very much improved") on the Clinical Global Impression of Change (CGIC) and Patient Global Impression of Change (PGIC). This analysis reports results up to Week 54.