# The Nerve! Readers Speak

## Reader response: Medical retirement from sport after concussions: A practical guide for a difficult discussion

Nitin K. Sethi, New York, NY

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I read with interest the Davis-Hayes et al.[1] suggested algorithm to help guide medical retirement from sport discussion after an athlete has a single or multiple sports-related concussions (SRC). The authors are to be lauded for attempting to standardize this decision-making process. The decision to medically disqualify and retire a professional athlete from his or her chosen sport is not to be made lightly for it threatens the livelihood of not just the athlete but the entire family. Both the physician and the athlete have to make tough decisions about the athlete's future brain health in the absence of any validated biofluid (blood, CSF) or imaging biomarker for concussion and late-life neuropsychiatric sequelae of brain injury such as chronic traumatic encephalopathy, dementia pugilistica, chronic postconcussion syndrome, chronic neurocognitive impairment, posttraumatic dementia, posttraumatic cognitive impairment, posttraumatic parkinsonism, and persistent posttraumatic headaches. One size does not fit all. Risk stratification is the process of identifying the individual athlete's risk of the abovementioned late-life neuropsychiatric sequelae of brain injury after careful review of history and other clinical and imaging tests. Some professional athletes may warrant medical disqualification or denial of licensure (if combat sports) and others may be medically cleared to return to sport under supervision. Finally, the authors use the term "immediate epilepsy" interchangeably with "impact seizures." This should be avoided since impact seizures differ in their pathophysiology and prognosis from immediate epilepsy/early post-traumatic epilepsy. It would also be helpful to the readers if the authors define how they differentiate "impact seizures" from "concussive convulsions" (including fencing and other tonic postures).

1. Davis-Hayes C, Baker DR, Bottiglieri TS, et al. Medical retirement from sport after concussions: a practical guide for a difficult discussion. Neurol Clin Pract 2018;8:40–47.

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## Author response: Medical retirement from sport after concussions: A practical guide for a difficult discussion

James M. Noble, New York, NY

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On behalf of my co-authors, we appreciate the letter from Dr. Sethi. In the course of developing our algorithm and manuscript,[1] we were careful to be inclusive of the various terms, both current and historic, describing sudden neurologic phenomena following concussion aside from simply loss of consciousness. In our experience, some of these phenomena, particularly "concussive convulsions" (fencing postures and other tonic postures), are not uniformly known by neurologists to be a part of concussions unless the neurologists are involved with sports medicine programs supervising high-risk sports, or very frequently encounter patients with mild traumatic brain injury. The neurologic localization of concussive convulsions, either as cortical or subcortical phenomena, has been a matter of some debate, but these events are inarguably obvious signs of sudden neurologic dysfunction following concussion.

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We agree that the terms "immediate epilepsy" and "impact seizures" are potentially confusing and warrant further clarification. The term impact seizure is best used to describe an obvious seizure (focal or generalized) at the time of concussion, instantaneous to or within seconds of the time of injury. We included the term immediate epilepsy in our review, as some of the older literature interchangeably used the terms impact seizure and immediate epilepsy, to represent seizures at the time of concussion. The term immediate epilepsy would be used differently now (if at all) and reflects changing definitions of the term epilepsy over time.[2] Epilepsy in its current use reflects a chronic or recurrent condition involving unprovoked seizures, including those with a recent or remote history of head trauma. For the sake of inclusiveness, we cited the term immediate epilepsy, which Jennett[3] defined in 1974, "as a fit occurring within seconds of injury, this uncommon phenomenon consists of a generalized seizure following a mild injury in an adult." Further, we agree that in current clinical practice, "early posttraumatic epilepsy" describes an epilepsy syndrome following the concussion (and not at the time of injury), and consider such a distinction in an early step of our retirement algorithm.[1]


1. Davis-Hayes C, Baker DR, Bottiglieri TS, et al. Medical retirement from sport after concussions: a practical guide for a difficult discussion. Neurol Clin Pract 2018;8:40–47.
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3. Jennett B. Early traumatic epilepsy: incidence and significance after nonmissile injuries. Arch Neurol 1974;30:394–398.


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## Reader response: Incorporating students into clinic may be associated with both improved clinical productivity and educational value

Pete Roy, State College, PA

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The recent article by Tanner et al.[1] concluding that medical students in outpatient clinic can improve productivity is surprising. As a private practice neurologist who routinely interacts with medical students in the hospital and outpatient clinic, I believe that medical students adversely affect productivity. This study was done only in academic outpatient clinics. There was no mention of clinic hours, number of scheduled patients, or patient time intervals. Without more specific scheduling information, this study seems incomplete.

A full daily schedule has no free time for students. If there was no opening in the preceptor's schedule, then preceptors were looking for something to do while waiting for the students and running behind. Alternatively, the preceptor already had an open time slot to do work while waiting for the student. In that case, the schedule was not full. If preceptors were "completing prior notes or interpreting procedures" waiting for the student, that only increases net invoices for that time period, as those tasks would have to be done anyway.

Interacting with students in the hospital typically requires more time, which results in a late arrival to the outpatient clinic, decreasing daily productivity (relative value unit [RVU] generation). RVU generation is paramount to a neurologist's income. The majority of surveyed neurologists list RVUs as a main basis of compensation.[2] Burnout in neurology is high[3] and finishing late by increased workload or teaching is a major contributor to this,[4] particularly if compensation shrinks. Therefore, the positives from teaching come with a high cost—a direct negative effect on compensation. A future study including inpatients as well as private practice outpatient clinics would be interesting.

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1. Tanner JA, Rao KT, Salas RE, et al. Incorporating students into clinic may be associated with both improved clinical productivity and educational value. Neurol Clin Pract 2017;7:474–482.
2. The 2017 Neurology Compensation and Productivity Survey. Available at: reporting.qualtrics.com/AAN/. Accessed January 17, 2018.
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# Author response: Incorporating students into clinic may be associated with both improved clinical productivity and educational value

Jeremy A. Tanner, San Francisco, CA, Rachel Marie E. Salas, and Charlene E. Gamaldo Baltimore, MD

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We thank Dr. Roy for the comments on our article.[1] As noted, the most striking result of our study was the demonstration of an increase in relative value units (RVU) for preceptors when students were present in clinic. We were similarly surprised at the results, particularly since many neurologists at our institution shared a similar anecdotal perception that students impede productivity. There are few studies on this topic, although similarly students did not appear to affect emergency medicine resident financial productivity (RVU).[2]

We agree that productivity in relation to preceptor time is an important question. We are currently performing a second analysis to evaluate whether there is increased work after clinic for preceptors when a student is present in clinic.

Each clinic session involved a 4-hour time window. Clinical templates may vary based on the call for "add-on" slots and the acuity needs of their patients at a particular point in time. The template within the Johns Hopkins University neurology department generally slots follow-up patients for 30 minutes and 1 hour for new patients, resulting in a total of 6–8 patients per session. To attempt control for variability in daily clinic schedules (no-show rates, scheduling), preceptors were compared to themselves as controls. Productivity data in this study are limited to academic outpatient clinics and further investigations need to be performed regarding this relationship in an inpatient setting and in nonacademic environments. Of note, our clerkship students are exposed to private practice neurologists working in an ambulatory setting as part of the curriculum, but we did not have access to financial data for private practices to include them in the productivity analysis. When students were afforded the opportunity to provide value-added care and clinical exposure, they were able to have a more positive experience, allowing the preceptor the potential opportunity to see another patient or accomplish other work. However, we were unable to operationalize a method to collect and evaluate these data. As part of the clerkship, students and faculty are given detailed instructions and an inservice from our institution and the clerkship directors regarding student roles, responsibilities, and electronic medical record documentation capabilities. Standard and formalized instructions may have also helped to optimize students' roles as active participants on the clinical team and therefore the results of our study may not be generalizable to other settings.

We share concerns regarding physician burnout. However, involving medical students as a resource in clinic may help to address this by improving preceptor financial productivity, rather than worsen it. Furthermore, new Centers for Medicare and Medicaid Services 2018 criteria allowing student documentation to be used by preceptors provides

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exciting new pathways to optimizing the productivity potential of having students in clinic.[3]


1. Tanner JA, Rao KT, Salas RE, et al. Incorporating students into clinic may be associated with both improved clinical productivity and educational value. Neurol Clin Pract 2017;7:474–482.
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3. Department of Health and Human Services. Centers for Medicare and Medicaid Services (CMS) online manual system. CMS Man Syst 2018;3971:1–4.


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## Reader response: Pimavanserin: A novel therapeutic option for Parkinson disease psychosis

Abigail C. Keys Lawler, Yasar Torres-Yaghi, Fahd Amjad, Charbel Moussa, and Fernando Pagan, Washington, DC

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Hawkins and Berman[1] acknowledge limitations to current therapeutic approaches (including medication costs), but underestimate potential negative effects of Parkinson disease psychosis (PDP) on the patient, caregiver, and health care system. PDP may be a harbinger of increased risk of morbidity and mortality, as well as portend admittance to a long-term care facility; these factors ultimately correlate with a surmountable burden on the system and higher cost to the patient over time.

The authors suggest that pimavanserin should be used as a second-line agent to an initial trial of low-dose quetiapine. An efficacious low dose is unlikely, and even at a low dose quetiapine can cause harmful side effects.[2] Early use of pimavanserin may be more cost-effective and result in no worsening of motor functions and no reduction in dopaminergic agents.[3] Atypical antipsychotics should be second line to pimavanserin when Parkinson disease dementia is not sufficiently controlled.

Pimavanserin should be used as a first-line agent for the treatment of PDP and treatment should be started at symptom onset since PDP progression can be unpredictable. We agree with the Food and Drug Administration's indication for the use of pimavanserin[4] given its efficacy data and safety profile and considering the broad side effect profile of the alternative antipsychotic medications.


1. Hawkins T, Berman BD. Pimavanserin: a novel therapeutic option for Parkinson disease psychosis. Neurol Clin Pract 2017;7:157–162.
2. Ballanger B, Strafella AP, van Eimeren T, et al. Serotonin 2A receptors and visual hallucinations in Parkinson disease. Arch Neurol 2010;67:416–421.
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4. FDA approves first drug to treat hallucinations and delusions associated with Parkinson's disease. Available at: fda.gov/newsevents/newsroom/pressannouncements/ucm498442.htm. Accessed November 8, 2017.


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## Author response: Pimavanserin: A novel therapeutic option for Parkinson disease psychosis

Brian D. Berman, and Trevor Hawkins, Aurora, Colorado

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We appreciate the comments from Lawler et al. on our recent review of pimavanserin for the treatment of Parkinson disease psychosis (PDP) and agree that PDP can lead to major

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negative effects on patients and caregivers. Indeed, we stated PDP is "associated with functional decline, greater caregiver burden, and risk of nursing home placement, as well as increased morbidity and mortality."[1] We, however, did not suggest that low dose quetiapine be tried prior to pimavanserin. Rather, we reported pimavanserin meets Level B recommendation criteria—a level "higher than that for quetiapine." Nevertheless, available evidence does not support that pimavanserin should always be first-line and started at symptom onset for every patient. As we reported, Food and Drug Administration approval was largely based on a single, 6-week randomized placebo-controlled trial in which an improvement of 37% on a newly adapted psychosis scale for PDP (compared to 14% for placebo) was observed.[2] As such, additional trials and open-label extension studies are needed to provide a more complete safety profile and information about long-term efficacy. In addition, important first steps at symptom onset continue to be ruling out secondary causes of psychosis and assessing for medications that may be contributing to symptoms.

1. Hawkins T, Berman BD. Pimavanserin: a novel therapeutic option for Parkinson disease psychosis. Neurol Clin Pract 2017;7:157–162.
2. Cummings J, Isaacson S, Mills R, et al. Pimavanserin for patients with Parkinson's disease psychosis: a randomized, placebo-controlled phase 3 trial. Lancet 2014;383:533–540.

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