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ADHD Medication Adherence in College Students: A Call to Action for Clinicians and Researchers

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Due to increased awareness of ADHD as a condition affecting individuals across the lifespan, the rate of ADHD diagnosis and treatment in college students is on the rise, with current estimates suggesting that 2–8% of U.S. college students have ADHD.¹ Although prior studies have shown poor continuity of treatment for most children and adolescents with ADHD,^{2–8} surprisingly little is known about ADHD medication adherence rates or patterns in college students. Poor treatment adherence may have especially dire consequences for university students with ADHD given their risk for deficient academic performance and lower college graduation rates.^{9, 10} Therefore, ADHD medication adherence in college students is an important area for study which Gray and colleagues investigate in this issue of the *Journal of Developmental and Behavioral Pediatrics*.¹¹

Gray et al use electronic monitoring to examine trajectories of ADHD medication adherence across an academic semester (e.g., at four time points, each approximately one month apart) in 51 undergraduate students, including comparing adherence patterns in freshmen to returning upperclassmen. On average, Gray and colleagues found that the sample *as a whole* adhered to only 53% of prescribed medication doses. However, there were striking differences between incoming and returning students, with freshmen having lower adherence rates compared to upperclassmen at all time points. As the authors point out, this is not unexpected, given that upperclassmen – unlike freshmen – have had a year or more to adjust to managing their ADHD medications on their own. In addition, there may have been a selection effect for the upperclassmen sample, as it is likely that only those students who successfully manage their ADHD as freshmen continue with subsequent years of college. What is more surprising is the characteristic adherence trajectory over the course of the semester, a pattern common to both the incoming and returning students: adherence increased from the beginning of the semester to peak at the end of the first month, and then declined at the semester's end. Specifically, freshmen adhered to an average of 34% of prescribed doses at the semester's start, with adherence increasing to 52% at the end of the first month and then decreasing to 44% at the semester's end. Upperclassmen had initial adherence rates of 68% of prescribed doses, with adherence increasing to 77% at the end of the first month and then declining to 51% at the semester's end.

We can learn much from the patterns of ADHD medication adherence in college students reported by Gray et al. Although one might assume that adherence rates would improve during the finals period at the semester's end given that it is a time of high academic stakes, the decreased treatment adherence at the semester's end may be related to students' lack of fixed demands and regularly scheduled classes during this part of the academic calendar. Indeed, the primary reasons participants in Gray et al's study gave for missing ADHD medication doses during final exams included "forgetfulness, waking up too late, and not having schoolwork or class." These findings remind us that following a fixed routine is an important—although difficult to accomplish—anchor for individuals with ADHD. To address difficulties with organization and adhering to a set routine experienced by college students with ADHD, Gray and colleagues underscore the importance of providing anticipatory guidance to families of college-bound youth with ADHD, and provide the reader with some excellent clinical tips and resources (see article's Discussion section).

Suboptimal stimulant medication adherence in college students also highlights an important and growing danger – misuse and diversion¹² of stimulants (e.g., "sharing" leftover pills). As such, the findings by Gray and colleagues highlight our responsibility as clinicians to educate patients about the legal ramifications of providing one's medications to others and to discuss ways to deal with pressure to "share" medications. Since short-acting stimulants are more likely than long-acting formulations to be misused,¹³ clinicians are also advised to avoid prescribing immediate release stimulants to adolescents¹⁴ and college students.¹⁵ Surprisingly, however, only 18% of Gray et al's study sample was prescribed extended release stimulants, while 82% were taking immediate release, illustrating the need for more provider education, quality improvement efforts, and advocacy regarding availability of long-acting generic stimulants at equivalent prices to short acting formulations. The crisis of ADHD medication diversion on college campuses should also serve as a call to action for the medical community to consider the risks and benefits of prescribing stimulant medications to this age group. Of note, we must ask ourselves how much is truly known about the benefits of prescribing stimulants to college students, as research on ADHD medication efficacy in college students is extremely limited.^{16, 17} Although one randomized controlled trial in college students showed a link between stimulant medication treatment and reduced ADHD symptoms as well as improved executive functioning,¹⁷ uncontrolled studies showed no significant differences in college GPA¹⁸ or adjustment to college (in terms of academic concerns, social satisfaction, or alcohol/drug use)¹⁹ for college students with ADHD who were treated versus not treated with medications. Clearly, there is much we still need to learn to optimize treatment and outcomes for college students with ADHD, and Gray et al's study is a welcome addition to the scant available literature.

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