times more inpatient admissions (22,029 [18.3%] vs 17,011 [9.3%]; \( P < .001 \)), 5.2 times more home health services (7,989 [6.7%] vs 2,446 [1.3%]; \( P < .001 \)), and 1.7 times more therapy needs (57,279 [47.7%] vs 50,329 [27.6%]; \( P < .001 \)). The 39.7% of children with high-intensity neurological impairment accounted for 61.3% ($2,946,765,384) of total health care costs and had 2.4 times the per-member-per-year spending ($24,532 vs $10,205) of those with lower-severity neurological impairment (Table).

**Discussion** | Distinguishing children with high-intensity neurological impairment from those with lower-intensity neurological impairment is important, as evidenced by their greater multimorbidity, polypharmacy, and health care use and spending. Although inherent limitations exist when using diagnostic codes, the results of this study suggest that high-intensity neurological impairment codes may allow health care systems and payers such as Medicaid to efficiently identify these medically complex children with unique, higher-intensity needs. We believe the use of high-intensity neurological impairment codes could enable the prioritization of comparative effectiveness, health outcomes, and pharmaceutical research in this vulnerable population.

Joanna E. Thomson, MD, MPH
James A. Feinstein, MD, MPH
Matt Hall, PhD
James C. Gay, MD, MHHC
Breann Butts, MD
Jay G. Berry, MD, MPH

**Author Affiliations:** Division of Hospital Medicine, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio (Thomson); Department of Pediatrics, University of Cincinnati College of Medicine, Cincinnati, Ohio (Thomson); Adult and Child Consortium for Health Outcomes Research & Delivery Science, Children's Hospital Colorado, University of Colorado, Aurora (Feinstein); Children's Hospital Association, Lenexa, Kansas (Hall); Division of General Pediatrics, Department of Pediatrics, Monroe Carell Jr Children's Hospital at Vanderbilt, Vanderbilt University Medical Center, Nashville, Tennessee (Gay); Pediatric Housestaff, Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio (Butts); Complex Care Service, Division of General Pediatrics, Department of Medicine, Boston Children's Hospital, Harvard Medical School, Boston, Massachusetts (Berry).

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**Corresponding Author:** Joanna E. Thomson, MD, MPH, Division of Hospital Medicine, Cincinnati Children’s Hospital Medical Center, 3333 Burnet Ave, ML 9016, Cincinnati, OH 45229 (joanna.thomson@cchmc.org).

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**Acquisition, analysis, or interpretation of data:** All authors.

**Drafting of the manuscript:** Thomson, Feinstein, Hall, Berry.

**Critical revision of the manuscript for important intellectual content:** Feinstein, Gay, Butts, Berry.

**Statistical analysis:** Thomson, Feinstein, Hall.

**Obtained funding:** Thomson, Feinstein, Berry.

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**Association of No Promotion of Homosexuality Laws and Electronic Cigarette Use Disparities for Sexual Minority Youth**

Although US laws regarding sexual minorities have advanced in recent years, many state laws may still foster environments that can promote health disparities. As of March 2019, 7 US states (Texas, Arizona, South Carolina, Oklahoma, Louisiana, Alabama, and Mississippi) with nearly 9 million public school students¹ have laws explicitly prohibiting positive portrayals of sexual minority individuals or nonheterosexual activities in public school education (no promotion of homosexuality [NPH] laws). Recent school climate studies have demonstrated that the presence of NPH laws in a state is associated with a greater likelihood that students with sexual minority status will experience harassment or assault at school.¹ Thus, NPH laws may reflect and support school environments that exacerbate stress for these adolescents.²

Use of tobacco is a stress-driven health disparity for sexual minority individuals.³ Most research on tobacco use by members of sexual minority groups has focused on cigarette smoking, but use of e-cigarettes has increased rapidly in recent years, and in 2016, e-cigarettes became the most commonly used tobacco product among middle school and high school students.⁴ Adolescents believe that flavored e-liquids, which contain glycerin-based liquids not meant to be inhaled,⁵ are targeted toward them.⁶ We investigated the associations between current e-cigarette use and NPH laws by sexual orientation and sex.
Table. Unadjusted Rates of E-Cigarette Use Among States With and Without No Promotion of Homosexuality Laws and Adjusted Odds Ratios Comparing E-Cigarette Use Between States

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>States, No. (%)</th>
<th>Unweighted</th>
<th>Weighted</th>
<th>Age-Adjusted Odds Ratio (95% CI)</th>
<th>P Value for Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>All respondents</td>
<td>450 (16.4)</td>
<td>468 (22.5)</td>
<td>0.65</td>
<td>(0.45-0.93)</td>
<td>NA</td>
</tr>
<tr>
<td>Sexual orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sexual minority</td>
<td>84 (30.4)</td>
<td>72 (27.9)</td>
<td>1.11</td>
<td>(0.77-1.59)</td>
<td>.01</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>366 (14.7)</td>
<td>396 (21.8)</td>
<td>0.59</td>
<td>(0.39-0.89)</td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>268 (19.3)</td>
<td>266 (23.7)</td>
<td>0.72</td>
<td>(0.49-1.07)</td>
<td>.11</td>
</tr>
<tr>
<td>Female</td>
<td>182 (13.4)</td>
<td>202 (21.3)</td>
<td>0.56</td>
<td>(0.37-0.85)</td>
<td></td>
</tr>
<tr>
<td>Sex and sexual orientation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male sexual minority</td>
<td>27 (37.2)</td>
<td>21 (27.6)</td>
<td>1.53</td>
<td>(0.78-3.01)</td>
<td></td>
</tr>
<tr>
<td>Female sexual minority</td>
<td>57 (27.6)</td>
<td>51 (28.0)</td>
<td>0.97</td>
<td>(0.57-1.63)</td>
<td>.03</td>
</tr>
<tr>
<td>Male heterosexual</td>
<td>125 (10.8)</td>
<td>151 (19.8)</td>
<td>0.48</td>
<td>(0.29-0.78)</td>
<td></td>
</tr>
<tr>
<td>Female heterosexual</td>
<td>241 (18.0)</td>
<td>245 (23.5)</td>
<td>0.68</td>
<td>(0.45-1.01)</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: NA, not available.

* Values in the first 2 columns represent the unweighted count and weighted percentages. Age-adjusted odds ratios compare across states with and without no promotion of homosexuality laws; states without such laws are the reference group.

Methods | The present study was waived for ethical review by the institutional review board at the University of Texas at Austin because it used publicly available data from the 2017 Youth Risk Behavior Survey (YRBS). Consent for state YRBS participation is obtained through active or passive parental permission. The State YRBS varies in assessment of sexual orientation and vaping product use. Thus, we selected 2 states that do not have NPH laws (Colorado and Arkansas) and collected all relevant data to compare with neighboring, demographically similar states that had NPH laws and collected all relevant data (Arizona and Oklahoma). Sexual orientation was assessed using self-identification (eg, gay/lesbian, bisexual). We controlled for age in analyses and assessed interactions between state laws, sex, and sexual orientation. Appropriate variables were designated as weights, strata, and clusters to account for the complex survey design of the YRBS. We used SPSS version 25 (IBM) for data analysis, with a 2-sided P value of .05 considered significant. Data analysis occurred from February 2019 to March 2019.

Results | The final analytic sample contained 5507 adolescents (of whom 3024 were in NPH states and 2483 in non-NPH states; 2752 were female and 2755 male; and 5011 [91.0%] were aged 13 to 17 years). Logistic regression results are presented in the Table. States with NPH laws had lower rates of e-cigarette use (odds ratio [OR], 0.65 [95% CI, 0.45-0.93]). However, examining across sexual orientation, e-cigarette use was lower only among heterosexual adolescents (OR, 0.59 [95% CI, 0.39-0.89]) and not sexual minority adolescents (1.11 [95% CI, 0.77-1.59]; P = .01). Decomposing the interactions by sex and sexual orientation, this trend appeared to be driven by heterosexual girls (OR, 0.48 [95% CI, 0.29-0.78]), with a marginal association among heterosexual boys (OR, 0.68 [95% CI, 0.45-1.01]); for sexual minority boys (OR, 1.53 [95% CI, 0.78-3.01]) and girls (OR, 0.97 [95% CI, 0.57-1.63]; all comparisons, P = .03), there was no reduction in e-cigarette use from living in an NPH state. The Figure displays the relative elevations in e-cigarette use in NPH states among sexual minority adolescents.

Discussion | These results demonstrated that, within the NPH law states assessed, sexual minority youth reported elevated risks of current e-cigarette use compared with their heterosexual peers. Students in the states without NPH laws had higher overall rates of e-cigarette use compared with those in the NPH states. In states without an NPH law, sexual minority students and heterosexual students had comparable rates of e-cigarette use. These findings suggest that there is a possible overall health benefit for adolescents who live in states with NPH laws with regard to e-cigarette use, but this health benefit is only present for heterosexual adolescents. The approach of pairing states driven by the data structure of the State YRBS and subsequent analyses may take into account state-level factors (eg, price of tobacco, smoke-free air laws). The NPH laws may be associated with increased stress for students who are sexual minority members, as reflected in higher rates of e-cigarette use.

Lexie Wille, BS
Mike C. Parent, PhD

Author Affiliations: Department of Educational Psychology, University of Texas at Austin.

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Figure. Current E-Cigarette Use Percentages, by State Law Status, Sex, and Sexual Identity

This shows the relative elevations in e-cigarette use among sexual minority adolescents in states with no promotion of homosexuality laws (Arizona and Oklahoma) relative to those in states without such laws (Colorado and Arkansas).
Prevalence and Correlates of Meeting Sleep, Screen-Time, and Physical Activity Guidelines Among Adolescents in the United Kingdom

There is convincing evidence that modifiable lifestyle behaviors, such as sleep, moderate to vigorous physical activity (MVPA), and screen time (ST), are associated with physical, social, and mental health outcomes in adolescents. However, much of this evidence comes from studies examining behaviors independently. There is growing interest in the importance of combinations of these behaviors because of their potential synergistic effects on health. To improve the health of adolescents, it is necessary to better understand the determinants of combinations of behaviors. There are few nationally representative data on the prevalence of meeting combinations of recommendations for sleep, ST, and MVPA, and little is known about the associated contextual factors.

Methods | Data from members of the UK-representative Millennium Cohort Study, collected from January 2015 to March 2016, when the members were aged 14 years, were used. Sleep duration and ST were self-reported, and MVPA was assessed using the GENEActiv wrist-worn accelerometer (Activinsights Ltd) worn for 24 hours on a randomly selected week and weekend day (data were included if participants had ≥10 hours of valid wear for both days). A behavioral risk score of zero was applied when all recommendations were met (≥8 hours of sleep on a school night, ST ≤2 hours per day, and MVPA ≥60 minutes/day). The likelihood of having a behavioral risk score of zero was examined by logistical regression according to weighted household income, depressive symptoms, and obesity; these analyses were stratified by sex. Ethical approval was granted by the Northern and Yorkshire Multi-Centre Research Ethics Committee of the National Health Service. Written informed consent was received from parents or caregivers. Data analysis was completed with SPSS version 22 (IBM) from January to April 2019. All P values less than .05 were regarded as significant.

Results | Data from 3899 adolescents were included in the present analyses (of the 11872 individuals for whom consent was on file at age 14 years [32.8%]). Excluded participants tended to be from lower socioeconomic strata (highest income level: included individuals, 885 [22.7%]; excluded individuals, 1547 [19.4%]; P = .001) and have higher prevalence of depressive symptoms (included individuals, 561 [14.4%]; excluded individuals, 1276 [16.0%]; P = .02) and obesity (included individuals, 257 [6.6%]; excluded individuals, 630 [7.9%]; P = .003), although differences were small. Overall, 378 adolescents (9.7%) met recommendations for sleep, ST, and MVPA concurrently; 3481 adolescents (89.3%) met guidelines for sleep, 1579 (40.5%) for MVPA, and 900 (23.1%) for ST; and 842 (21.6%) met guidelines for both sleep and ST, 1415 (36.3%) for both sleep and MVPA, and 409 (10.5%) for both ST and MVPA. Adolescent girls from the highest income tertile, compared with girls from the lowest, were more likely to meet all 3 recommendations (adjusted odds ratio [aOR], 2.13 [95% CI, 1.28-3.54]). Additionally, adolescent girls with depressive symptoms were less likely to meet all 3 recommendations (compared with those without depressive symptoms: aOR, 0.63 [95% CI, 0.41-0.96]) (Table). Adolescent boys who were obese (compared with those of normal body mass index; aOR, 0.39 [95% CI, 0.15-0.96]) and those with depressive symptoms (compared with those without depressive symptoms: aOR, 0.46 [95% CI, 0.21-1.00]) were less likely to meet all 3 recommendations (Table).

Conclusions | Screen time was the main driver of not meeting all 3 recommendations, followed by MVPA and then sleep. Combinations of behavioral risk factors are highly prevalent among British adolescents, with only 9.7% meeting recommendations for sleep, ST, and MVPA. This value is higher than that reported in a study of US adolescents in which only 5% met all 3 recommendations, and it is marginally lower than that reported in a regional study of British children aged 9 to 11 years. Differences might be attributable in part to the older age of the US sample (16-17 years) and/or differences in methods used to assess the behaviors (ie, the use of devices to measure MVPA vs self-reports). Indeed, the physical activity recommendations were developed and established based on...