pLGG disease burden and healthcare utilization: linked claims and EHR data study

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Background

- Pediatric low-grade glioma (pLGG), the most common brain tumor in children, is an indolent disease with insidious symptoms that progress over months to years[1-4]
- Despite excellent long-term survival, pLGGs cause significant tumor- and treatment-associated morbidities and significant late effects that persist throughout life[4-6]

Objective

- We conducted a retrospective study of linked claims and electronic health records (EHRs) to gain insights into the disease burden and healthcare utilization of patients with pLGG

Methods

- We performed a retrospective study using the Optum® de-identified Market Clarity Dataset linked claims (commercial, Medicare advantage and Managed Medicaid beneficiaries) and EHRs of cases ≤18 years of age, with an ICD-10 code for brain neoplasm and ≥1 physician notes between January 01, 2017 and June 30, 2018 (**Figure 1**)
- The index date was first claim or EHR with an ICD-10 code for brain neoplasm
- Natural language processing was used to identify pLGG-relevant data from physician notes
- The observation period included 3 months prior to index date (pre-index) and 6-month segments from index date for 36 months (post-index)
- Cases had either continuous insurance coverage or continuous EHR activity in this period

Results

- Of 2841 patients assessed for eligibility, a total of 154 patients with pLGG were identified (**Figure 2**)
- Median age was 11 years, 49% were female and 75% were non-Hispanic white (**Table 1**)
- Study results are reported with ranges over a three-year follow-up period (**Figures 3–10**)

Figure 1. Study design

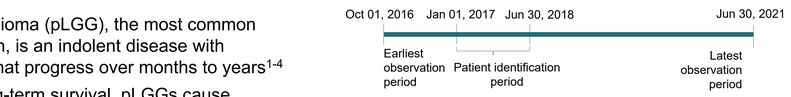
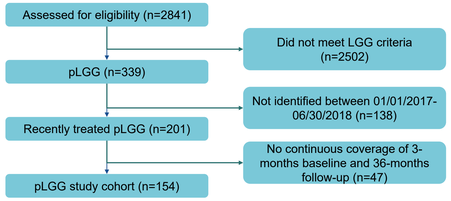


Figure 2. Consort diagram



pLGG, pediatric low-grade glioma

Table 1. Baseline demographics and insurance coverage

	n=154
Age in years, median (range)	11 (2–18)
Male, n (%)	78 (51)
Female, n (%)	76 (49)
Race, n (%)	
Caucasian	116 (75)
Hispanic	20 (13)
African American	7 (5)
Asian	1 (<1)
Other/unknown	10 (6)
Insurance, n (%)	
Commercial	86 (56)
Medicaid	68 (44)

Figure 3. Top 25 reasons for healthcare utilization in the overall study period (n=154)

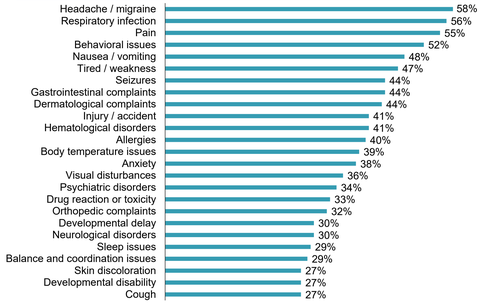
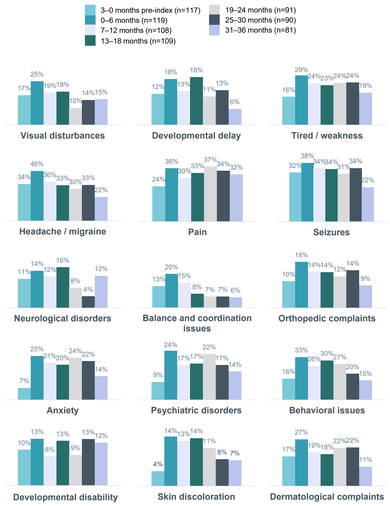


Figure 4. Select reasons for healthcare utilization over time in 6-month intervals*



*n for each of the time periods indicates the number of patients in the study cohort that had ≥1 EHR of symptoms and signs of pLGG for that time period

Figure 5. Select coexisting conditions in the overall study period (n=154)

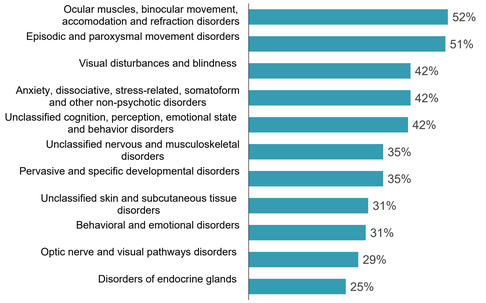
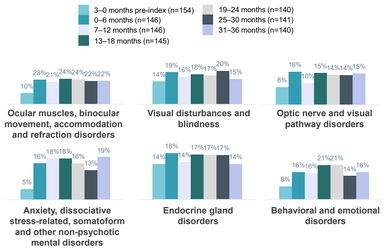


Figure 6. Select coexisting conditions over time in 6-month intervals*



*n for each of the time periods indicates the number of patients in the study cohort that had ≥1 claims or EHR for that time period

Figure 7. Healthcare providers consulted in the overall study period (n=154)

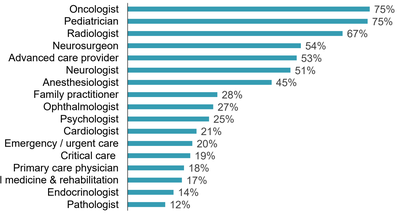
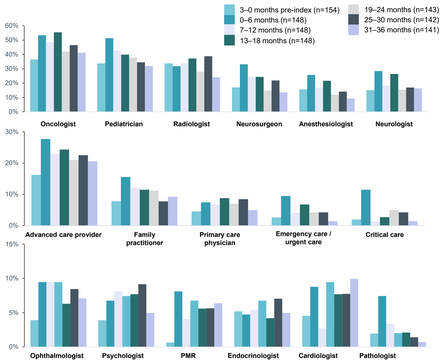


Figure 8. Healthcare providers consulted over time in 6-month intervals*



PMR, physical medicine and rehabilitation
*n for each of the time periods indicates the number of patients in the study cohort that had ≥1 claims EHR for that time period

Figure 9. Places of healthcare services in the overall study period (n=154)

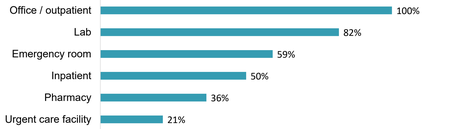
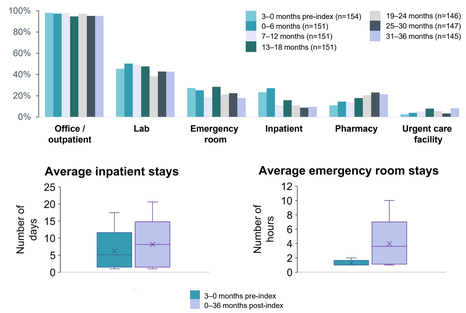


Figure 10. Places of healthcare service in 6-month intervals*



*n for each of the time periods indicates the number of patients in the study cohort that had ≥1 claims or EHR for that time period
*Inpatient stays: 3-month pre-index (n=36); 36-month post-index (n=74); emergency rooms stays: 3-month pre-index (n=42); 36-month post-index (n=84)

Conclusions

- Despite the low-grade classification, patients with pLGG experience significant symptomatology and have complex healthcare needs that require high utilization of healthcare services, that persist over years
- Further studies using integrated data sources are warranted to help us better understand the disease burden of pLGG

References

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Acknowledgments

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