Identification of Individuals with Post-Bariatric Hypoglycemia in U.S. Claims Data: Insights and Opportunities

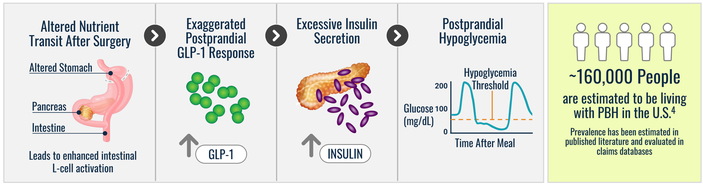
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BACKGROUND

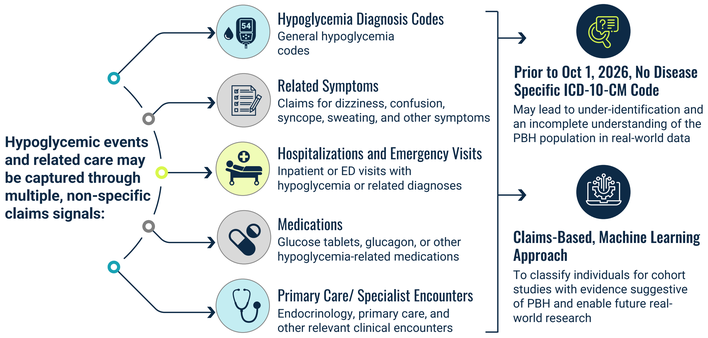
- Metabolic and bariatric surgery (MBS) is a highly effective treatment for obesity, leading to durable weight loss and improvement in cardiometabolic comorbidities[1]
- An estimated 5% of people after sleeve gastrectomy (SG) and 12% after Roux-en-Y gastric bypass (RYGB) develop post-bariatric hypoglycemia (PBH), a chronic condition characterized by recurrent postprandial hyperinsulinemic hypoglycemia driven by an exaggerated glucagon-like peptide-1 (GLP-1) response (**Figure 1**)[2-6]

FIGURE 1. Altered Nutrient Transit After MBS Can Lead to Exaggerated GLP-1 Responses, Excessive Insulin Secretion, and Postprandial Hypoglycemia



- There are no FDA-approved treatments indicated for PBH[4]
- Significant gaps remain in the recognition and management of PBH and there is limited evidence defining the US burden of PBH[4,7,8]
- The real-world epidemiology and clinical characteristics of PBH remain incompletely characterized, in part because PBH historically lacked a disease-specific ICD-10-CM code and hypoglycemic events may be incompletely captured in administrative claims (**Figure 2**)
- Claims-based approaches that identify patterns of clinical evidence consistent with PBH may help characterize the population and enable future real-world research

FIGURE 2. Identifying PBH in Real-World Claims



NEW

Effective October 1, 2026 | POST-BARIATRIC HYPOGLYCEMIA (PBH) | ICD-10-CM E89.830

Center for Medical Services (CMS) recognized the need for a dedicated PBH diagnostic code to support accurate diagnosis, coordinated care, and research[17,19]

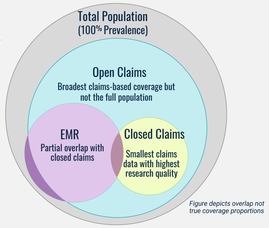
OBJECTIVES

1. Develop an algorithm to identify individuals living with PBH in U.S. open claims data using machine learning methods trained on EMR data
2. Describe real-world burden in PBH using the algorithm in a sample of U.S. closed claims administrative data

METHODS

A Quick Primer on Claims Based Study Cohorts

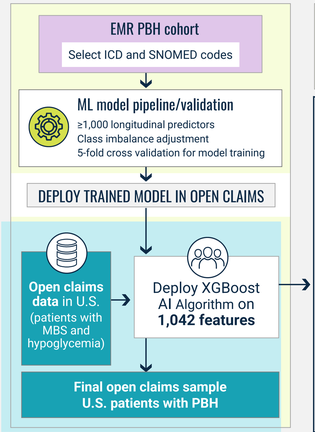
- Claims databases are not a population-based sample and include only a subset of the U.S. population in any given period
  - > Therefore, open and closed claims cohorts are a fraction of population prevalence estimates
  - > Large US open claims database provides broad, longitudinal visibility into medical and pharmacy activity across U.S. healthcare settings
  - > Study eligibility and data availability further narrow the study population



Algorithm Study Design and Data

- **Data Source:** Linked IQVIA Ambulatory EMR & open claims data
- **Study Period:** October 1, 2015 – December 31, 2024
- **Population:** Adults with MBS and ≥1 hypoglycemic event in claims

FIGURE 3. Machine Learning (ML) Algorithm Process



The ML algorithm was trained and validated to identify the likelihood that a patient with MBS and ≥1 hypoglycemic event has PBH (**Figure 3**)

TABLE 1. Key Clinical Features

Out of over 1,000 predictors used in the ML model, 6 clinical feature categories were of highest importance for PBH patient identification

Hypoglycemia diagnoses and treatments	E16.1 other / E16.2 unspecified hypoglycemia
Healthcare resource utilization	Example features: emergency department, family medicine encounters
Malabsorption and vitamin deficiency	K91.2 postsurgical malabsorption, NEC*
Mental health	F41.9 anxiety disorder, unspecified*
HCP bariatric surgery experience	Feature: number of bariatric patients per HCP
Specialty visits / dietary counseling	Z71.3 dietary counseling and surveillance*

ICD-10-CM examples. *Illustrative mappings NEC = not elsewhere classified.

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DISCLOSURES

GV, SG and **KF** are full-time employees of and may have stock option ownership in Amylyx Pharmaceuticals, Inc. **DV, STP** are acting within vendor capacity through IQVIA Ltd and report consulting fees from Amylyx.

ACKNOWLEDGEMENTS

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ABBREVIATIONS

AI, artificial intelligence; CE, continuous enrollment; EMR, electronic medical records; GLP-1, glucagon-like peptide 1;ICD-10, International Classification of Diseases, Tenth Revision; K, thousand; M, million; MBS, metabolic and bariatric surgery; ML, machine learning; PBH, post-bariatric hypoglycemia; RYGB Roux-en-Y gastric bypass , SG, sleeve gastrectomy; SHAP, Shapley Additive Explanations; SNOMED, Systematized Nomenclature of Medicine.

RESULTS

The EMR and open claims study cohorts were compared to demonstrate the ML algorithm validity

A retrospective closed claims study cohort applied stringent inclusion/ exclusion criteria to best characterize burden in a small high-quality longitudinal subset of the total PBH population

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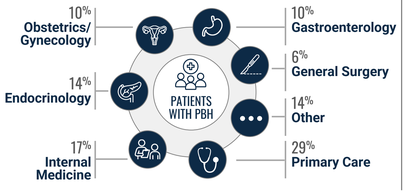
Comparing the EMR and open claims cohorts demonstrates the algorithm performance in real-world data

FIGURE 4. EMR and Open-Claims Demographic and Clinical Characteristics

CHARACTERISTIC	EMR-derived PBH cohort	Open-claims PBH cohort
Average age[a]	56 years	55 years
Female	87%	87%
Time from MBS to first hypoglycemia claim[b]	2.8 years	2.1 years

[a]Age reported as of December 2024, [b]Data updated from abstract to reflect updated methods

FIGURE 5. Multiple Specialties are Involved Early in the Patient Journey



Many patient characteristics such as age, gender in the open claims PBH cohort were similar to the EMR characteristics (**Figure 4**)

- Consistency in data attributes across groups demonstrates clinical plausibility of the algorithm's ability to quantify a PBH cohort

In addition, patients initially presented outside of endocrinology, highlighting the importance of PBH education and recognition across specialties (**Figure 5**)

- In alignment with care guidance, early referral to endocrinologist may streamline care[18]

Patient identifiers from the **open claims PBH cohort** were linked to enhanced **closed claims** data from IQVIA's PharMetrics Plus® to study real-world burden

4,077 linked open and closed claims PBH patients

INCLUSION

- ≥18 years of age
- Hypoglycemia claim after MBS
- ≥6 months continuous enrollment (CE) prior to and ≥30 days CE first hypoglycemia claims

EXCLUSION

- Pregnancy
- Evidence of endocrine pancreas neoplasms
- Evidence of MBS other then SG or RYGB
- Invalid gender, year of birth, insurance enrollment

After inclusion and exclusion, the closed claims sample of patients with PBH was 1,818

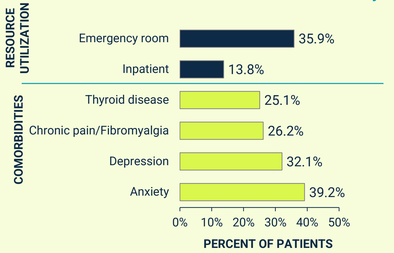
FIGURE 6. Closed Claims Patient Characteristics

Average age	Female	Time from MBS to first hypoglycemia claims
48.7 years	87.5%	1.8 years

After inclusion and exclusion, the sample of patients with PBH had characteristics similar to the EMR PBH cohort, demonstrating generalizability of the cohort (**Figure 6**)

Resource utilization and comorbidities demonstrate high clinical burden with more then 30% of patients reporting ER visits, anxiety, and depression in the 6-months before the first hypoglycemia claim (**Figure 7**)

FIGURE 7. Baseline* Resource Utilization and Comorbidities in the Closed Claims PBH Study



*Baseline is defined as the 6 months prior to first hypoglycemia claim during the potential period of onset of PBH symptoms and care seeking

CONCLUSIONS

- This study describes a solution-oriented method to quantify people with PBH in commercial claims data where there was previously no specific ICD-10 code
  - > Overall, the characteristics of the patient populations were similar in the EMR and claims, suggesting high performance of the ML algorithm
- In addition, the EMR, open claims and early insights from the closed-claims study demonstrates the high burden of PBH

LIMITATIONS AND IMPLICATIONS

- Limitations include the potential for false negatives/positives, label misclassification, database capture limitations in open and closed claims PBH cohorts
- Once completed, additional insights from the closed claims study will further characterize the real-world burden of PBH
- This ML algorithm provides a foundational approach for identifying patients in claims data during the transition to clinical adoption of a new ICD-10 code for PBH[19]

REFERENCES

1. Courcoulas A, et al. BMJ. 2023;383:e071027. **2.** Athavale A, et al. Postbariatric surgery hypoglycemia. In: StatPearls. Updated August 15, 2023. Accessed May 12, 2026. **3.** Craig CM, et al. Diabetes Obes Metab. 2018;20:352-361. **4.** Craig CM, et al. Surg Obes Relat Dis. 2026; 22(6):674-683. **5.** Patti M, et al. Gastroenterology. 2014;146(3):605-608. **6.** Salehi M, et al. J Clin Endocrinol Metab. 2018;103(8):2815-2826. **7.** Rossini G, et al. Diabetes Metab Res Rev. 2024;e3750. 8. Sheehan A, et al. Diabetes Metab Syndr Obes. 2020;13:4469-4482. **9.** Estimate of Bariatric Surgery Numbers, 2013-2023. American Society for Metabolic and Bariatric Surgery (ASMBS). Accessed May 8, 2025. 10. Bellgoli A, et al. Obes Surg. 2017;27:3179-3186 797-802. **11.** Brix JM, et al. Obes Facts. 2019;12:397-406. **12.** Fischer LE, et al. Surg Obes Relat Dis. 2021;17(10):1787-1798. **13.** Lee CJ, et al. Surg Obes and Relat Dis. 2018;14(6):797-802. **14.** Lupoli R, et al. Nutr Metab Cardiovasc Dis. 2022;32(1):32-39. **15.** de Heide LJM, et al. Diabetes Obes Metab. 2023;25:735-747. **16.** Lee CJ, et al. Obesity. 2016.24(6):1342-1348. **17.** Raverdy V, et al. Annals Surg. 2016.264(5):878-885. **18.** Lawler HM, McGinnis T, Patti ME. Diagnosis and Management of Post-Bariatric Hypoglycemia. J Am Board Fam Med. 2025 Mar-Apr;38(2):383-394. , **19.** National Center for Health Statistics, Centre for Disease Control. ICD-10 tabular list of diseases and injuries. Accessed September 15, 2026. https://icd10coded.com/cm/

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