

Analysis of Glucagon-Like Peptide-1 Receptor Agonist (GLP-1-RA) Use in Patients with Idiopathic Intracranial Hypertension (IIH)

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INTRODUCTION

- Glucagon-like peptide-1 receptor agonists (GLP-1-RAs), such as exenatide, semaglutide, and liraglutide, have been shown to be effective weight loss medications and their use is becoming increasingly more common
- GLP-1-RAs were approved by the U.S. Food and Drug Administration (FDA) for the treatment of weight loss on June 4, 2021, however they have recently become of interest in the treatment of idiopathic intracranial hypertension (IIH)
- The use of GLP-1-RAs in patients with IIH has been correlated with promising clinical outcomes including higher degrees of weight loss, reduction in headaches, and decreased required dose of acetazolamide
- The abrupt cessation of GLP-1-RAs has also been proposed to contribute to the consequent development or worsening of IIH

AIM:

To investigate the use of GLP-1-RAs in patients with IIH and to highlight relevant trends seen in these patients

METHODS

- A retrospective cohort analysis was conducted using TriNetX, a global federated health research network including inpatient and outpatient medical records from over 220 health care organizations (HCOs) worldwide
 - Our analysis specifically used data from TriNetX's U.S. Collaborative Network, which contains data from 66 HCOs with over 116 million patients
- TriNetX was queried for all adult patients with a diagnosis of IIH and a documented GLP-1-RA prescription from 2014 to 2023 as well as patients with IIH who underwent ventriculoperitoneal (VP) shunt during that same period
 - GLP-1-RAs included in this study: tirzepatide, lixisenatide, exenatide, dulaglutide, liraglutide, and semaglutide
- Conducted a trend analysis of GLP-1-RA prescription among patients with IIH between 2014 to 2023, and compared GLP-1-RA use in patients with IIH before and after their FDA approval for weight loss in 2021
- Also assessed GLP-1-RA prescription in IIH patients with VP shunt overtime and pre- and post-FDA approval of GLP-1-RAs for weight loss in 2021
- Statistical analysis and figure generation were completed using the TriNetX online platform and with R version 4.0 (R Foundation for Statistical Computing, Vienna, Austria)

RESULTS

- 5920 patients with IIH prescribed GLP-1-RAs between 2014 to 2023 were included (**Figure 1**)
- GLP-1-RA use was negatively associated with age ($p = 0.0397$), but there was no association seen with other demographic factors such as gender and race
- From 2014 to 2023:
 - GLP-1-RA use in IIH patients from 2014 to 2023 demonstrated a positive exponential relationship ($R^2 = 0.9375$) (**Figure 2**)
 - There was no significant change in GLP-1-RA prescriptions among IIH patients with VP shunt from 2014 to 2023 ($p = 0.704$)
- Since FDA approval of GLP-1-RAs for weight loss in 2021:
 - There was a significant increase in the proportion of patients with IIH prescribed GLP-1-RAs pre- and post-FDA approval (OR 4.26; 95% CI 4.02-4.52)
 - There was a weakly negative association of GLP-1-RA prescriptions among IIH patients undergoing VP shunt since FDA approval (OR 0.63; 95% CI 0.41-0.96)

Table 1. Patient Demographics

n=5920

Age (median)	50.0 (48.3 - 53.3)
Female (%)	89.9 (88.1 - 92.1)
Race (%)	
White	54.4 (52.0 - 56.5)
Black	30.0 (27.9 - 30.8)
Asian	1.10 (0.20 - 2.55)
Other*	18.1 (16.8 - 19.2)

*including Hispanic, Native American, Hawaiian Islander, and Alaskan Native.

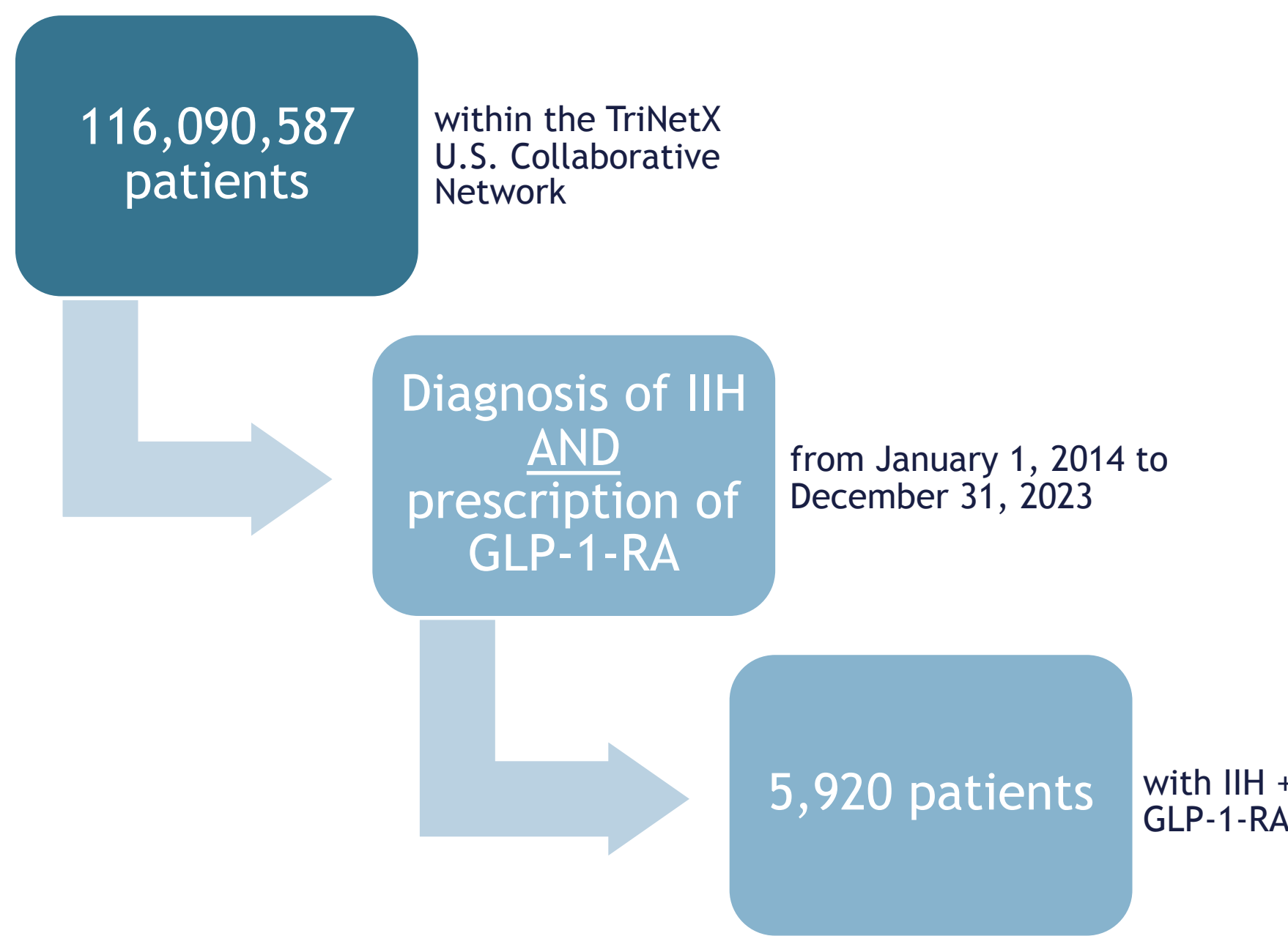


Figure 1. TriNetX query and patient inclusion.

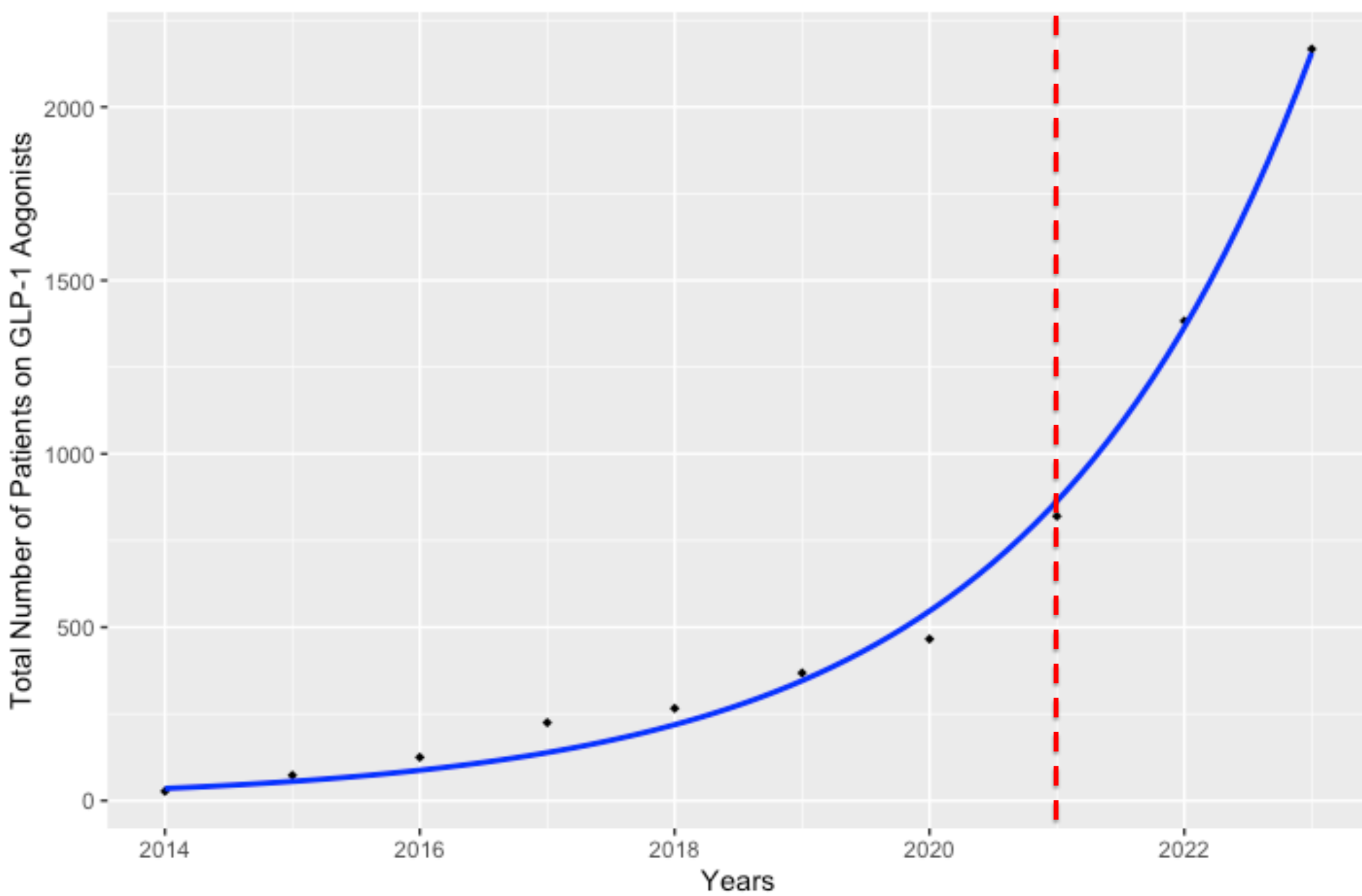


Figure 2. Trend in GLP-1-RA prescription among IIH patients from 2014-2023. The red dashed line indicates FDA approval of GLP-1-RAs for weight loss (June 4, 2021).

DISCUSSION

- Our results demonstrate that over the years patients with IIH have been more frequently prescribed GLP-1-RAs, and that GLP-1-RA use is more often seen in younger patients with IIH.
- While the number of GLP-1-RA prescriptions increased among all patients with IIH, among those patients undergoing VP shunt, there was a negative association of GLP-1-RA prescriptions from year to year.
- This could suggest that IIH patients who receive GLP-1-RAs are less likely to require a shunt, or that IIH patients with VP shunts are less likely to need additional therapy for symptomatic control and disease management.
- This generates an interesting hypothesis involving GLP-1-RA use and shunting in patients with IIH which presents a promising area of future investigation.

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