

Identifying Prediabetic Patients Using Administrative Claims Linked With Lab Data to Assess Progression to Type 2 Diabetes

Queeny Ip,¹ Xiyuan Wu,¹ Andi Chin,¹
Ngan Pham,¹ Rehan Waheed²

¹Komodo Health
New York, NY, and San Francisco, CA

²Quest Diagnostics, Cleveland, OH



Introduction

- Prediabetes is a condition in which blood sugar levels are elevated, but not high enough for a patient to be diagnosed with type 2 diabetes (T2D).
- There is currently only one ICD-10-CM diagnosis code (ICD) to identify prediabetes (R73.03). It is uncertain whether this ICD alone accurately identifies patients with prediabetes in claims.

Objectives

- To explore the identification of patients with prediabetes using claims data linked with HbA1c lab results and to assess their progression to T2D.

Methods

Data Source

- Komodo Research Dataset: administrative data and claims
- Komodo Lab Results
- Quest Diagnostics laboratory data

Komodo Research Dataset (KRD): Composed of administrative data and claims, KRD captures routinely collected health services utilization records and expenditures for over 330 million de-identified unique individuals in the US. Native to HIPAA-compliant, privacy-preserving tokens, KRD offers extended patient-level observations of medical encounters and outpatient pharmacy dispensings via linkage across health and pharmacy insurance plans. Data availability is as early as 2016. Specialty datasets such as genomics, laboratory test results, and electronic medical records are readily accessible via additional linkage. KRD is the optimized schema of the underlying Healthcare Map™ from Komodo Health for RWE generation and HEOR.

Komodo Lab Results (KLR): Unit-standardized laboratory results of routine and specialized tests generated by over 73 million unique individuals across care settings of hospitals, nursing facilities, and ambulatory offices in the US.

Study Design

- This is a retrospective study linking 3 datasets of claims and lab results to identify patients with prediabetes from January 2017 to May 2023 and to assess their progression to T2D.

Inclusion/Exclusion Criteria

- Patients with ≥2 ICD R73.03 codes or ≥1 laboratory record with HbA1C 5.7% to 6.4%
- The index date was the date of the first qualifying ICD or HbA1c result for prediabetes
- Continuous enrollment (1 year pre- and 3 years post-index)
- No evidence of prior diabetes during the 1-year baseline (no diabetes type 1 or 2 ICD or drugs for type 1 or 2 diabetes) required to assess progression to T2D

Key Study Variables

- The proportion of patients identified using ICD and/or HbA1c was evaluated.
- Baseline characteristics for those who never progressed to T2D (NDM), progressed within the first year (D1Y), and within the second year (D2Y) after index date were examined.

Results

- Among 29,566,421 patients with prediabetes identified by using ICD code and HbA1c information, 34.7% and 78.7% could be identified using ICD alone and HbA1c alone, respectively.
 - 65.3% of all identified patients with prediabetes had HbA1c 5.7% to 6.4% only.
 - 21.3% of all identified patients with prediabetes had ICD R73.03 only.
 - 13.4% of all identified patients with prediabetes had both ICD R73.03 and HbA1c 5.7% to 6.4%.

- Among the study cohort, 10.3% progressed to T2D within 2 years post-diagnosis.
 - 6.0% progressed during first year post-prediabetes diagnosis.
 - 4.3% progressed during second year post-prediabetes diagnosis.
- Demographic characteristics for the cohorts (NDM, D1Y, and D2Y cohorts):
 - Mean age (50.3, 54.6, 53.9 years) and female distribution (56.5%, 57.5%, 55.0%).
 - The majority of patients were White (30.9%, 35.7%, and 32.7%), from the South (35.6%, 38.1%, 35.5%), and enrolled in commercial health plans (56.5%, 49.7%, 52.1%).
 - The proportion of adults (≥18 years) for patients who progressed to T2D within 2 years was (70.2%, 79.9%, 78.9%).

Figure 1. Identifying Patients With Prediabetes Using ICD-10-CM Linked With Lab Data

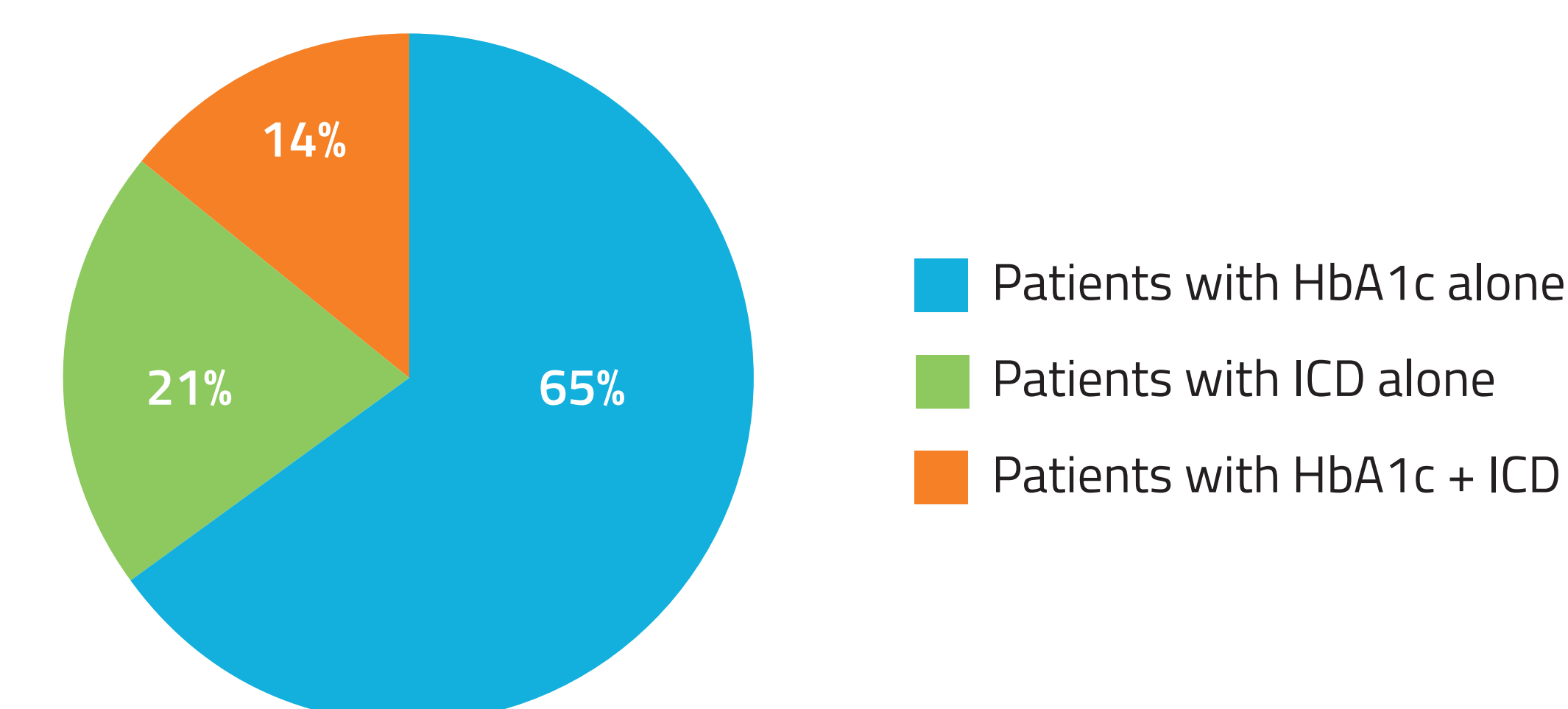
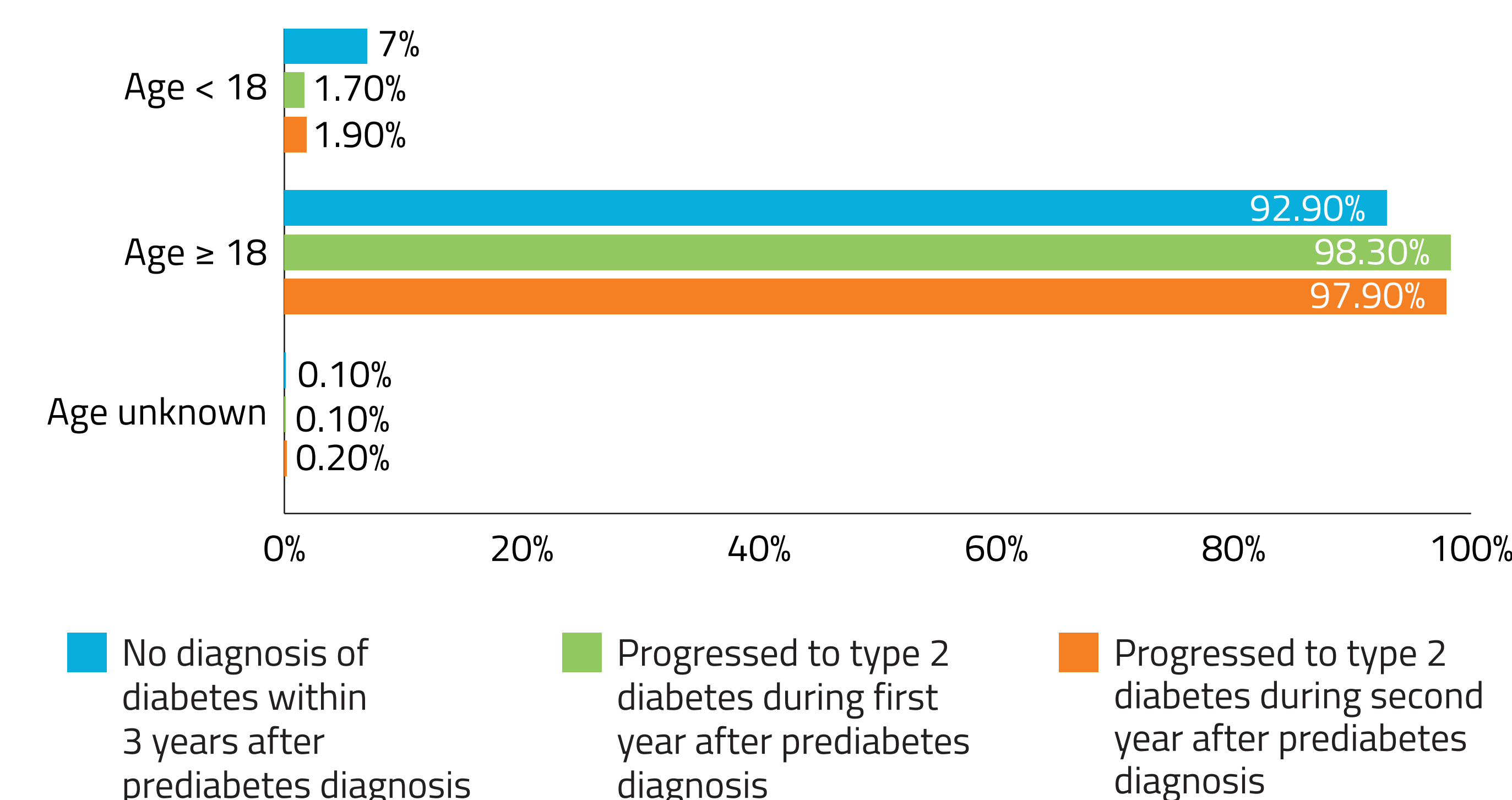


Figure 2. Adult Age (≥18 Years) Distribution of 3 Prediabetes Groups With or Without Progression to Type 2 Diabetes



Conclusion

- The proportion of patients with prediabetes identified was higher using laboratory data vs. claims data, but it was highest when both were used.
- Similar baseline characteristics among the cohorts (NDM, D1Y, D2Y) were observed, except the proportion of adults (≥18 years) was higher among patients who progressed to T2D within 2 years.

References

- Centers for Disease Control and Prevention. National Diabetes Statistics Report. CDC, Nov. 2023, <https://www.cdc.gov/diabetes/data/statistics-report/index.html>. Accessed 1 Apr. 2024.

