Leveraging a National Ambulatory Care Clinic Network for Real World Evidence: Insights from a Large U.S. EHR Dataset

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BACKGROUND

Real-world evidence (RWE) plays a critical role in drug development and regulatory decision-making by leveraging data from electronic health records (EHRs), insurance claims, and clinical registries.[1,2] RWE is used to evaluate drug safety, effectiveness, and economic outcomes in routine clinical practice, outside the constraints of controlled clinical trials. It supports informed decision-making across the product lifecycle, including approval of new indications, post-market safety surveillance, and accelerated regulatory pathways.[2]

CVS MinuteClinic® EHR is a novel source for RWE studies.

OBJECTIVES

- To describe MinuteClinic and its EHR data.
- To characterize the scope and research utility of these data for epidemiologic and HEOR research.

METHODS

Data Source: MinuteClinic, a national ambulatory care clinics network operates over 1,100 sites across the U.S., providing care for minor illnesses and injuries, chronic condition monitoring, immunizations, annual physical exams, wellness services, and routine lab tests

- MinuteClinic EHRs contain longitudinal, real-world clinical data collected during routine healthcare delivery.
- The EHRs capture a broad and diverse patient population, enhancing generalizability for RWE studies.
- Data include comprehensive demographic information and clinical details across multiple facets of care.
- Medical conditions and encounters recorded through diagnoses and procedures
- Immunizations and vaccination history
- Detailed medication records with NDC codes, and timing of prescribing, prescribers, and administration
- Laboratory values, pathology reports, and imaging study results
- Vital signs and unstructured clinical notes
- Data available from October 6, 2014, onward
- Data custodianship maintained by CVS Health®

Study Design: This retrospective analysis used the ambulatory care EHR data from patients of all ages and coverage who visited MinuteClinic between January 1 and December 31, 2023.

The prevalence of common diagnoses, procedures, and vaccine administrations were estimated at the network between January 1, 2023, and December 31,2023. The CDC Social Vulnerability Index (SVI), AHRQ SDOH database, and Social Vulnerability Metric (SVM) were appended to the EHR data at the zip code level. SVI ranges from 0 to 1, SVM percentile ranges from 0 to 100, a higher value indicating higher vulnerability for both scales.[3] The individual level and neighborhood level SDOH were assessed.

RESULTS

A total of 4,939,927 patients were identified who received healthcare services in the network in 2023, 59.8% were female, mean [SD] age was 36.5 [19.3]; 69.2% had commercial insurance and 13% had Medicaid or Medicare; 58% were White, 13% Hispanic, 10.7% Black, 7.8% Asian, and 10.5% Other.

For the 6,986,540 visits, the prevalence of most common diagnoses were acute pharyngitis (459,303), streptococcal sore throat (162,537), acute upper respiratory infection (153,769), and acute pansinusitis (118,440) (Figure 1); the most common diagnostic procedures were COVID-19 test (15.5%), strep molecular point-of -care testing (9.9%), tuberculosis skin test (7.78), and urine dipstick POCT (3.24%) (Figure 2). Figure 3 presented the most common medication used. Figure 4 presented the most common vaccines administered.

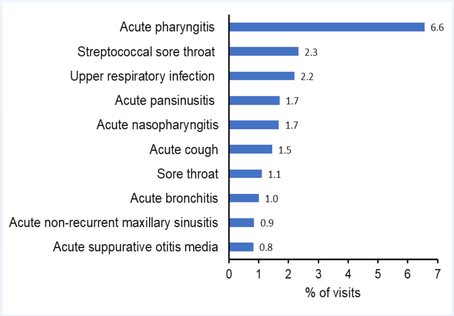

Figure 1. Top 10 most common diagnosis

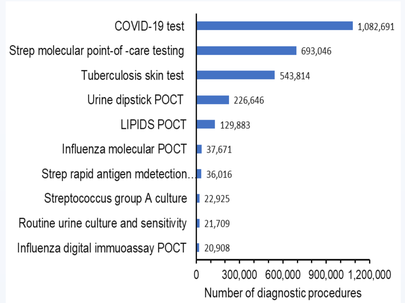

Figure 2. Top 10 most common diagnostic procedure

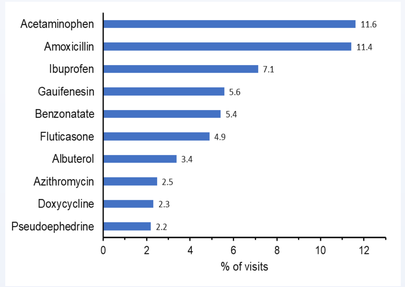

Figure 3. Top 10 most common medications use

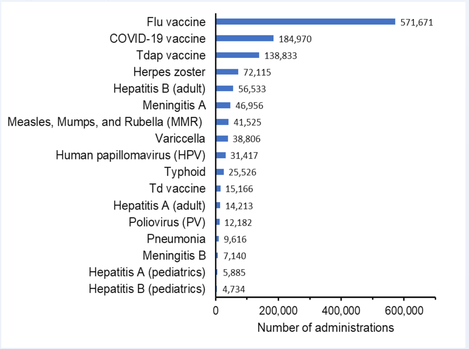

Figure 4. Number of individual vaccines administered

Among 4,939,927 patients who received healthcare services in the network in 2023,

- Median household income (IQR) was $67,942 [52,545 - 84,923]
- 35% of patients lived in rural area, 34% in suburban, and 31% in urban.
- 75% of patients have the same first 3 digits of residence zip-code as the neighborhood of the network, mean [SD] distance from patient residence to the nearest CVSMC was 4.38 [3.83] miles.
- Mean [SD] SVI was 0.38 [0.27], SVM percentile was 27.1 [25.6].

Patients with the greatest social vulnerability (90 to 100 SVM percentile) had a higher prevalence of common chronic conditions compared to the least vulnerable (0 to 10 SVM percentile): Obesity (37.2% vs 15.3%), chronic obstructive pulmonary disease (9.0% vs 4.3%), diabetes mellitus (12.4% vs 7.4%), obesity (37.2% vs 25.2%), coronary heart disease (7.6% vs 4.5%), stroke (4.3% vs 2.1%), and mental health conditions (17.0% vs 9.9%), all $p < 0.0001$ (Figure 5).

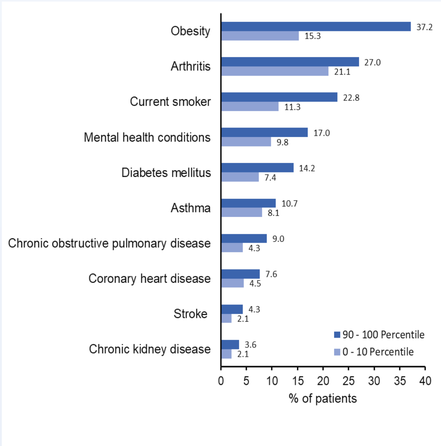

Figure 5. Prevalence of 10 common conditions in the least and highest socially vulnerable subpopulation identified using SVM

Selected Published Case RWE Studies

- Sun X, et al. Assessment of long COVID symptom burden in patients testing positive for SARS-CoV-2 at a nationwide retail pharmacy. PLoS One. 2026;21(3):e0345639.
- Schiltz NK, et al. Patient-Centered Priorities for Older Adults in Ambulatory Care. JAMA Netw Open. 2025 Oct 1;8(10):e2535769.
- Dai D, et al. Social determinants of health burden in patients using CVS MinuteClinic health clinics. J Manag Care Spec Pharm. 2024;30(10c):S142.
- Rayburn WF, Armstrong J, Fairchild D. Women Accessing Care at a National Network of Retail Health Clinics. J Womens Health (Larchmt). 2024;33(6):774-777.
- Di Fusco M, et al. Effectiveness of BNT162b2 BA.4/5 Bivalent COVID-19 Vaccine against Long COVID Symptoms: A US Nationwide Study. Vaccines (Basel). 2024;12(2):183.
- Polinski JM, et al. Antibiotic stewardship in the retail clinic setting: Implementation in 1100 clinics nationwide. Healthc (Amst). 2017 Sep;5(3):89-91.

CONCLUSIONS

- The MinuteClinic EHR provides a comprehensive and granular dataset for real-world evidence research, enabling analyses of epidemiology, healthcare resource utilization, patient registries, and longitudinal outcomes.
- The large data volume and national representativeness make this resource well suited for patient identification and recruitment for clinical trials or prospective studies.
- The ability to link EHRs with healthcare claims and mortality data supports robust evaluations of health initiative programs, policies, and both economic and clinical outcomes.

References

1. Dagenais S, et al. Clin Pharmacol Ther. 2022;111(1):77-89.
2. Sauer CM, et al. Lancet Digit Health 2022; 4: e893–e898.
3. Saulsberry L, et al. Health Serv Res. 2023;58:873-881.