

NYC MACROSCOPE ELECTRONIC HEALTH RECORD SURVEILLANCE INDICATOR FACT SHEET



Hypertension (augmented)

INDICATOR DEFINITION 2013 NYC Macroscope

Numerator: Patients with a hypertension ICD-9 code in the electronic health record (EHR) problem list or assessment section during or prior to 2013, *or* prescribed medication to treat hypertension during 2013, *or* most recent blood pressure $\geq 140/90$ mmHg in 2013

Denominator: Patients with a visit in 2013

2013-14 NYC Health and Nutrition Examination Survey (HANES)

Participants who reported being told by a doctor or other healthcare professional that they had hypertension *or* blood pressure $\geq 140/90$ mmHg at exam, *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

SUMMARY

The NYC Macroscope estimate of hypertension prevalence using the augmented indicator was statistically equivalent to the NYC HANES estimate. There was moderate sensitivity and moderate to high specificity of this indicator when comparing NYC HANES participants' EHRs with their survey responses.

RECOMMENDATION FOR USE

Recommended

Prevalence and comparisons by data source

Prevalence estimates of hypertension using the augmented indicator were 39.2% for the NYC Macroscope and 40.3% for NYC HANES. These estimates were statistically equivalent ($p < 0.01$). The augmented hypertension indicator met all five a priori criteria for agreement when comparing NYC Macroscope with NYC HANES.

Prevalence of hypertension (augmented) in NYC Macroscope and NYC HANES

| | 2013 NYC Macroscope | 2013-14 NYC HANES |
|--|-------------------------|-------------------------|
| Total sample size | N=552,254 | N=1,115 |
| Prevalence, % (95% CI) | 39.2% (39.1%, 39.3%) | 40.3% (37.3%, 43.5%) |
| NYC Macroscope providers reporting data, n (%) | 357 (91%) | |
| NYC Macroscope patients with missing data, n (%) | NA* | |

Table adapted from Thorpe LE, McVeigh KH, Perlman SE, et al. Monitoring prevalence, treatment, and control of metabolic conditions in New York City adults using 2013 primary care electronic health records: A surveillance validation study. eGEMS. 2016;4(1):28. DOI: <http://dx.doi.org/10.13063/2327-9214.1266>.

CI, confidence interval; NA, not applicable.

*Not applicable because lack of an ICD-9 code for hypertension, no medication to treat hypertension, or below range recorded blood pressure were defined as "no hypertension."

Prevalence comparison of hypertension (augmented) for NYC Macroscope vs. NYC HANES

| Prevalence comparison statistics (a priori criterion for agreement) | 2013 NYC Macroscope* vs. 2013-14 NYC HANES Value (meets criterion?) |
|--|--|
| Absolute difference (<5%) | 1.1% (Yes) |
| Prevalence ratio (0.85–1.15) | 0.97 (Yes) |
| Two one-sided t-tests (p-value <0.05) | $p < 0.01$ (Yes) |
| Two-tailed t-test (p-value ≥ 0.05) | $p = 0.47$ (Yes) |
| Spearman's rank correlation of age- and sex-stratified estimates ($r \geq 0.80$) | $r = 0.94$ (Yes) |

Table adapted from Thorpe LE, McVeigh KH, Perlman SE, et al. Monitoring prevalence, treatment, and control of metabolic conditions in New York City adults using 2013 primary care electronic health records: A surveillance validation study. eGEMS. 2016;4(1):28. DOI: <http://dx.doi.org/10.13063/2327-9214.1266>.

*NYC Macroscope estimates were weighted to NYC HANES in-care population.

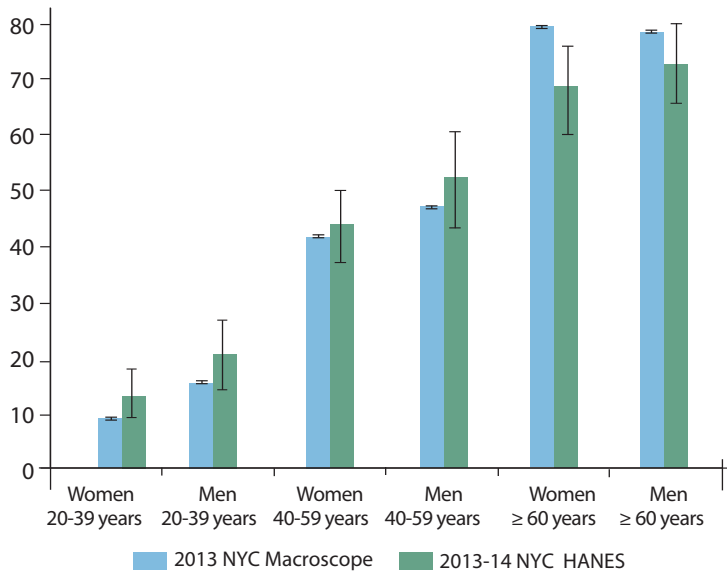
Prevalence by data source, sex, and age group

Among women 60 years of age and older, the NYC Macroscope estimate of hypertension prevalence using the augmented indicator was significantly higher compared with the NYC HANES estimate (79.6% vs. 68.8%; $p < 0.01$). No other comparisons of stratified estimates were significantly different.

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Hypertension (augmented) prevalence in the NYC Macroscopic and NYC HANES by sex and age group



Error bars represent 95% confidence intervals.

Indicator validity

In the sample of NYC Macroscopic practice EHRs (N=48), there was substantial agreement, moderate sensitivity, and high specificity. In the sample of non-NYC Macroscopic practice EHRs (N=142), there was substantial agreement, moderate sensitivity, and high specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=86), there was substantial agreement, moderate sensitivity, and moderate specificity.

Validity of hypertension indicator (augmented) in a sample of EHRs from NYC HANES participants

| | NYC Macroscopic practice EHRs | Non-NYC Macroscopic practice EHRs | |
|---------------------------|-------------------------------|-----------------------------------|-------------------------|
| | | All | Stage 1 Meaningful Use* |
| | N=48 | N=142 | N=86 |
| Kappa coefficient | 0.78 | 0.72 | 0.71 |
| Sensitivity (95% CI) | 0.83 (0.59-0.96) | 0.80 (0.68-0.89) | 0.82 (0.65-0.93) |
| Specificity (95% CI) | 0.93 (0.78-0.99) | 0.91 (0.83-0.96) | 0.88 (0.77-0.96) |
| Positive predictive value | 0.88 | 0.88 | 0.82 |
| Negative predictive value | 0.90 | 0.86 | 0.88 |

Table adapted from McVeigh KH, Lurie-Moroni E, Chan PY, et al. Generalizability of indicators from the New York City Macroscopic Electronic Health Record Surveillance System to Systems Based on Other EHR Platforms. eGEMS. 2017;5(1):25. DOI:<http://doi.org/10.13063/egems.247> CI, confidence interval; EHRs, electronic health records.

*Restricted to EHRs from providers or practices attesting to Stage 1 Meaningful Use as of December 31, 2013.

ACKNOWLEDGMENTS

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SUGGESTED CITATION

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For more information about this project, please visit

<http://www1.nyc.gov/site/doh/data/health-tools/nycmacroscopic.page>

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