Hyperlipidemia (augmented)

INDICATOR DEFINITION
2013 NYC Macroscope

Numerator: Men ≥40 years of age and women ≥45 years of age with an ICD-9 code for hyperlipidemia in their electronic health record (EHR) problem list or assessment section during or prior to 2013; *or* prescribed a medication to treat hyperlipidemia in 2013; *or* most recent total cholesterol ≥240 mg/dL in 2013 or year prior

Denominator: Men ≥40 years of age and women ≥45 years of age 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 their blood cholesterol level was high *or* had a measured total cholesterol ≥240 mg/dL, *and* reported seeing a doctor or other healthcare professional in the last 12 months for primary care

SUMMARY

The NYC Macroscope estimate of hyperlipidemia prevalence using the augmented indicator was not statistically equivalent to the NYC HANES estimate. There was moderate sensitivity and low specificity of this indicator when comparing NYC HANES participants' EHRs with their survey responses. Additional validation is strongly recommended.

RECOMMENDATION FOR USE

May be suitable for use

Prevalence and comparisons by data source

Prevalence estimates of hyperlipidemia using the augmented indicator were 54.5% for the NYC Macroscope and 56.8% for NYC HANES. These estimates were not statistically equivalent (p=0.11). The augmented hyperlipidemia indicator met four out of five a priori criteria for agreement when comparing NYC Macroscope with NYC HANES.

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

	2013 NYC Macroscope	2013-14 NYC HANES
Total sample size	N=360,775	N=548
Prevalence, %	54.5%	56.8%
(95% CI)	(54.4%, 54.7%)	(52.3%, 61.2%)
NYC Macroscope providers reporting data, n (%)	330 (93%)	
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 hyperlipidemia, no medication to treat hyperlipidemia, or below range total cholesterol was defined as "no hyperlipidemia."

Prevalence comparison of hyperlipidemia (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%)	2.3% (Yes)
Prevalence ratio (0.85–1.15)	0.96 (Yes)
Two one-sided t-tests (p-value <0.05)	p=0.11 (No)
Two-tailed t-test (p-value ≥0.05)	p=0.31 (Yes)
Spearman's rank correlation of age- and sex-stratified estimates (r ≥0.80)	r=0.80 (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 the NYC HANES in-care population.

Prevalence by data source, sex, and age group

Among women 40 to 59 years of age, the NYC Macroscope estimate of hyperlipidemia prevalence using the augmented indicator was significantly lower compared with the NYC HANES estimate (45.1% vs. 56.5%; p<0.01). No other comparisons of stratified estimates were significantly different.

Hyperlipidemia (augmented)

**Hyperlipidemia (augmented) prevalence
in NYC Macroscope and NYC HANES by sex and age group**
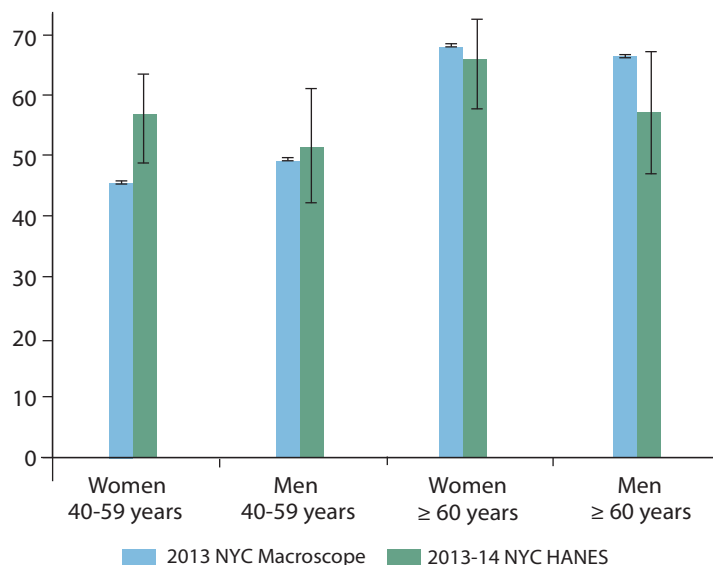
Error bars represent 95% confidence intervals.

Indicator validity

In the sample of NYC Macroscope practice EHRs (N=23), there was fair agreement, moderate sensitivity, and low specificity. In the sample of non-NYC Macroscope practice EHRs (N=80), there was moderate agreement, moderate sensitivity, and low specificity. When restricting this group to a subsample of practices that attested to Stage 1 Meaningful Use (N=50), there was fair agreement, moderate sensitivity, and low specificity.

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

	NYC Macroscope practice EHRs	Non-NYC Macroscope practice EHRs	
		All	Stage 1 Meaningful Use†
	N=23	N=80	N=50
Kappa coefficient	0.37	0.41	0.30
Sensitivity (95% CI)	0.77 (0.46, 0.95)	0.81 (0.67, 0.91)	0.78 (0.58, 0.91)
Specificity (95% CI)	0.60 (0.26, 0.88)	0.59 (0.41, 0.76)	0.52 (0.31, 0.73)
Positive predictive value	0.71	0.75	0.66
Negative predictive value	0.67	0.68	0.67

Table adapted from McVeigh KH, Lurie-Moroni E, Chan PY, et al. Generalizability of indicators from the New York City Macroscope 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.

*Data were restricted to providers who received electronically transmitted laboratory results for at least 10 patients.

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

SUGGESTED CITATION

NYC Macroscope team. NYC Macroscope electronic health record surveillance indicator fact sheet: Hyperlipidemia (augmented). New York City Department of Health and Mental Hygiene; 2017.

NYC MACROSCOPE TEAM

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For more information about this project, please visit

http://www1.nyc.gov/site/doh/data/health-tools/nycmacroscope.page

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