



Epi Data Tables

New York City Department of Health and Mental Hygiene

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Malaria in New York City

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Data Sources

Malaria Surveillance Data. The NYC Health Code mandates reporting of malaria diagnoses by laboratories and primary care providers to the the Health Department, which investigates each report of malaria by conducting a patient or provider interview and/or a medical chart review. This report used malaria surveillance data from 2004 – 2012.

Supplemental Knowledge, Attitude and Belief (KAB) questionnaire. NYC residents diagnosed with malaria from August 14 to October 8, 2011, who traveled outside the US were interviewed with a KAB questionnaire as part of a special research study (n =32).

[To access the related Epi Data Brief, go to \[www.nyc.gov/html/doh/downloads/pdf/epi/databrief29.pdf\]\(http://www.nyc.gov/html/doh/downloads/pdf/epi/databrief29.pdf\)](http://www.nyc.gov/html/doh/downloads/pdf/epi/databrief29.pdf)

Table 1. Demographic characteristics of malaria cases in New York City, 2004-2012

Source: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012

	Total 2004-2012	2004	2005	2006	2007	2008	2009	2010	2011	2012
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	1,899	206	189	173	214	183	207	273	230	224
Age group (years)										
0 – 17	424 (22)	42 (20)	41 (22)	47 (27)	33 (15)	52 (28)	41 (20)	60 (22)	57 (25)	51 (23)
18 – 39	645 (34)	88 (43)	59 (31)	47 (27)	73 (34)	59 (32)	64 (31)	100 (37)	83 (36)	72 (32)
40 – 59	692 (36)	67 (33)	81 (43)	68 (39)	89 (42)	60 (33)	87 (42)	92 (34)	67 (29)	80 (36)
60+	138 (7)	9 (4)	8 (4)	11 (6)	19 (9)	12 (7)	15 (7)	21 (8)	23 (10)	21 (9)
Gender										
Male	1,251 (66)	140 (68)	136 (72)	120 (69)	143 (67)	118 (64)	129 (62)	179 (66)	151 (66)	135 (60)
Female	648 (34)	66 (32)	53 (28)	53 (31)	71 (33)	65 (36)	78 (38)	94 (34)	79 (34)	89 (40)
Race/Ethnicity										
Non-Hispanic Black	1,596 (84)	164 (80)	157 (83)	154 (90)	183 (86)	162 (89)	167 (81)	229 (84)	188 (82)	192 (85)
Non-Hispanic White	96 (5)	14 (7)	8 (4)	5 (3)	15 (7)	8 (4)	12 (6)	11 (4)	14 (6)	9 (4)
Hispanic/Latino	41 (2)	4 (2)	7 (4)	2 (1)	6 (3)	3 (2)	8 (4)	5 (2)	2 (1)	4 (2)
Asian	133 (7)	21 (10)	13 (7)	8 (5)	8 (4)	8 (4)	16 (8)	22 (8)	22 (10)	15 (7)
American Indian/ Alaskan Native	4 (0.2)	0 (0)	3 (2)	0 (0)	0(0)	1 (0.6)	0 (0)	0 (0)	0 (0)	0 (0)
Native Hawaiian/ Other Pacific Islander	1 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	1 (0.4)	0 (0)
Unknown race	28(2)	3 (2)	1 (0.5)	4 (2)	2 (1)	1 (0.6)	4 (2)	6 (2)	3 (1)	4 (2)
Borough of residence										
Bronx	677 (36)	57 (28)	69 (37)	52 (30)	77 (36)	71 (39)	77 (37)	95 (35)	84 (37)	95 (42)
Brooklyn	466 (25)	62 (30)	45 (24)	52 (30)	45 (21)	45 (25)	51 (25)	62 (23)	53 (23)	51 (23)
Queens	336 (18)	35 (17)	34 (18)	36 (21)	38 (18)	27 (15)	36 (17)	50 (18)	48 (21)	32 (14)
Manhattan	324 (17)	44 (21)	33 (18)	25 (15)	38 (18)	28 (15)	33 (16)	49 (18)	35 (15)	39 (17)
Staten Island	93 (5)	8 (4)	7 (4)	8 (5)	15 (7)	12 (7)	10 (5)	16 (6)	10 (4)	7 (3)
Unknown	3 (0.2)	0 (0)	1 (0.5)	0 (0)	1 (0.5)	0 (0)	0 (0)	1 (0.4)	0 (0)	0 (0)

Percentages within each category may not total to 100 due to rounding.

Table 2. Malaria cases by neighborhood, New York City, 2004-2012

Source: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012

UHF Neighborhood	# of cases	(%)
Bronx		
Kingsbridge-Riverdale	9	(0.47)
Northeast Bronx	68	(3.58)
Fordham-Bronx Park	131	(6.9)
Pelham-Throgs Neck	81	(4.27)
Crotona-Tremont	122	(6.42)
High Bridge-Morrisania	217	(11.43)
Hunts Point-Mott Haven	49	(2.58)
Brooklyn		
Greenpoint	7	(0.37)
Downtown-Heights-Slope	30	(1.58)
Bedford Stuyvesant	118	(6.21)
East New York	56	(2.95)
Sunset Park	7	(0.37)
Borough Park	21	(1.11)
East Flatbush-Flatbush	134	(7.06)
Canarsie-Flatlands	46	(2.42)
Bensonhurst-Bay Ridge	7	(0.37)
Coney Island-Sheepshead Bay	18	(0.95)
Williamsburg-Bushwick	22	(1.16)
Manhattan		
Washington Heights-Inwood	36	(1.9)
Central Harlem-Morningside Heights	137	(7.21)
East Harlem	27	(1.42)
Upper West Side	25	(1.32)
Upper East Side	20	(1.05)
Chelsea-Clinton	13	(0.68)
Gramercy Park-Murray Hill	24	(1.26)
Greenwich Village-Soho	11	(0.58)
Union Square-Lower East Side	17	(0.9)
Lower Manhattan	5	(0.26)
Queens		
Long Island City-Astoria	14	(0.74)
West Queens	54	(2.84)
Flushing-Clearview	17	(0.9)
Bayside-Little Neck	1	(0.05)
Ridgewood-Forest Hills	14	(0.74)
Fresh Meadows	2	(0.11)
Southwest Queens	35	(1.84)
Jamaica	96	(5.06)
Southeast Queens	67	(3.53)
Rockaway	33	(1.74)
Staten Island		
Port Richmond	33	(1.74)
Stapleton-St. George	55	(2.9)
Willowbrook	4	(0.21)
South Beat-Tottenville	1	(0.05)
Missing UHF Neighborhood	15	(0.79)

Table 3. Risk factors among malaria cases in New York City, 2004-2012

Source: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012

	Total 2004-2012	2004	2005	2006	2007	2008	2009	2010	2011	2012
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	1,899	206	189	173	214	183	207	273	230	224
Reason for Travel										
Visiting Friends and Relatives (VFR)	1,279 (67)	121 (59)	131 (69)	119 (69)	148 (69)	134 (73)	132 (64)	189 (69)	147 (64)	158 (71)
Refugee/Immigrant	159 (8)	12 (6)	12 (6)	12 (7)	12 (6)	17 (9)	14 (7)	36 (13)	28 (12)	16 (7)
Tourism	89 (5)	19 (9)	11 (6)	7 (4)	13 (6)	9 (5)	11 (5)	9 (3)	6 (3)	4 (2)
Business	73 (4)	6 (3)	6 (3)	4 (2)	10 (5)	4 (2)	13 (6)	7 (3)	15 (7)	8 (4)
Student/Teacher	44 (2)	4 (2)	3 (2)	3 (2)	5 (2)	3 (2)	7 (3)	6 (2)	8 (4)	5 (2)
Missionary/Dependent	15 (0.8)	2 (1)	1 (0.5)	1 (0.6)	0 (0)	1 (0.6)	2 (1)	2 (1)	3 (1)	3 (1)
Airline/Ship crew	2 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	2 (1)	0 (0)	0 (0)	0 (0)
Peace Corps	1 (0.1)	0 (0)	0 (0)	0 (0)	1 (0.5)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Other reasons	79 (4)	13 (6)	2 (1)	4 (2)	7 (3)	5 (3)	17 (8)	12 (4)	11 (5)	8 (4)
Unknown reason for travel	158 (8)	29 (14)	23 (12)	23 (13)	18 (8)	10 (6)	9 (4)	12 (4)	12 (5)	22 (10)
Region of Travel										
West Africa	1,429 (75)	148 (72)	135 (71)	144 (83)	166 (78)	151 (83)	158 (76)	189 (69)	166 (72)	172 (77)
All other regions in Africa	123 (6)	18 (9)	18 (10)	7 (4)	16 (8)	11 (6)	8 (3)	12 (4)	18 (7)	15 (7)
South Asia	117 (6)	19 (9)	12 (6)	6 (4)	6 (3)	8 (4)	16 (8)	19 (7)	23 (10)	8 (4)
All other regions of Asia	10 (0.5)	1 (0.5)	0 (0)	3 (2)	2 (1)	1 (0.6)	1 (0.5)	2 (1)	0 (0)	0 (0)
Caribbean	104 (5)	9 (4)	12 (6)	6 (4)	12 (6)	8 (4)	10 (5)	28 (10)	10 (4)	9 (4)
Central America and Mexico	15 (0.8)	3 (2)	4 (2)	0 (0)	5 (2)	1 (0.6)	1 (0.5)	1 (0.4)	0 (0)	0 (0)
South America, tropical	55 (3)	4 (2)	4 (2)	2 (1)	2 (1)	1 (0.6)	7 (3)	12 (4)	10 (4)	13 (6)
Australia and South Pacific	7 (0.4)	2 (1)	1 (0.5)	2 (1)	0 (0)	0 (0)	1 (0.5)	0 (0)	1 (0.4)	0 (0)
Middle East	3 (0.2)	1 (0.5)	0 (0)	0 (0)	1 (0.5)	0 (0)	1 (0.5)	0 (0)	0 (0)	0 (0)
Other regions	4 (0.2)	0 (0)	1 (0.5)	1 (0.6)	0 (0)	1 (0.6)	1 (0.5)	0 (0)	0 (0)	0 (0)
Unknown region of travel	32 (2)	1 (0.5)	2 (1)	2 (1)	4 (2)	1 (0.6)	3 (2)	10 (4)	2 (1)	7 (3)
Country of Travel										
Nigeria	489 (26)	72 (35)	49 (26)	70 (40)	67 (31)	46 (25)	64 (31)	43 (16)	39 (17)	39 (17)
Other countries	1,410 (74)	134 (65)	140 (74)	103 (60)	147 (69)	137 (75)	143 (69)	230 (84)	191 (83)	185 (83)
Pregnant										
All females (n=648)	58 (9)	8 (12)	3 (6)	3 (6)	6 (9)	5 (8)	6 (8)	15 (16)	4 (5)	8 (9)
Females 18-39 years (n=254)	49 (19)	8 (25)	3 (19)	3 (20)	4 (12)	4 (17)	6 (23)	11 (25)	4 (13)	6 (19)

Percentages within each category may not total to 100 due to rounding.

Table 4. Chemoprophylaxis use and outcomes among malaria cases in New York City, 2004-2012

Source: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012

	Total 2004-2012	2004	2005	2006	2007	2008	2009	2010	2011	2012
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	1,899	206	189	173	214	183	207	273	230	224
Chemoprophylaxis Use (any)										
Yes	309 (16)	42 (20)	28 (15)	31 (18)	32 (15)	29 (16)	39 (19)	30 (11)	39 (17)	39 (17)
No	1,501 (79)	158 (77)	159 (84)	133 (77)	174 (81)	146 (80)	162 (78)	230 (84)	174 (76)	165 (74)
Unknown	89 (5)	6 (3)	2 (1)	9 (5)	8 (4)	8 (4)	6 (3)	13 (5)	17 (7)	20 (9)
Adherence to chemoprophylaxis										
Adhered to all pills	98 (5)	13 (6)	7 (4)	12 (7)	10 (5)	8 (4)	12 (6)	8 (3)	14 (6)	14 (6)
Took some pills	211 (11)	29 (14)	21 (11)	19 (11)	22 (10)	21 (12)	27 (13)	22 (8)	25 (11)	25 (11)
No pills taken	1,501 (79)	158 (77)	159 (84)	133 (77)	174 (81)	146 (80)	162 (78)	230 (84)	174 (76)	165 (74)
Unknown	89 (5)	6 (3)	2 (1)	9 (5)	8 (4)	8 (4)	6 (3)	13 (5)	17 (7)	20 (9)
Admitted to Hospital										
Yes	1,421 (75)	154 (75)	124 (65)	129 (75)	157 (73)	148 (81)	169 (82)	209 (77)	158 (69)	173 (77)
No	452 (24)	47 (23)	58 (31)	42 (24)	54 (25)	33 (18)	37 (18)	64 (23)	68 (29)	49 (22)
Unknown	26 (1)	5 (2)	7 (4)	2 (1)	3 (1)	2 (1)	1 (0.5)	0 (0)	4 (2)	2 (1)
Fatal case										
Yes	6 (0.3)	0 (0)	0 (0)	1 (0.6)	1 (0.5)	1 (0.6)	0 (0)	1 (0.4)	0 (0)	2 (1)
No	1,826 (96)	196 (95)	178 (94)	167 (97)	207 (97)	179 (98)	202 (98)	270 (99)	214 (93)	213 (95)
Unknown	67 (4)	10 (5)	11 (6)	5 (3)	6 (3)	3 (2)	5 (2)	2 (1)	16 (7)	9 (4)

Percentages within each category may not total to 100 due to rounding.

Table 5. Malarial parasite type among malaria cases in New York City, 2004-2012

Source: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012

	Total 2004-2012	2004	2005	2006	2007	2008	2009	2010	2011	2012
	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)	N (%)
Overall	1,899	206	189	173	214	183	207	273	230	224
Species										
<i>P. falciparum</i>	1,481 (78)	150 (73)	149 (79)	139 (80)	166 (78)	155 (85)	159 (77)	211 (77)	172 (75)	180 (80)
<i>P. vivax</i>	183 (10)	34 (17)	21 (11)	12 (7)	16 (8)	12 (7)	11 (5)	26 (10)	31 (13)	20 (9)
<i>P. ovale</i>	62 (3)	6 (3)	5 (3)	6 (4)	11 (5)	5 (3)	9 (4)	7 (3)	8 (4)	5 (2)
<i>P. malariae</i>	56 (3)	6 (3)	6 (3)	6 (4)	9 (4)	2 (1)	9 (4)	6 (2)	7 (3)	5 (2)
Mixed, 2 species	9 (0.5)	1 (0.5)	0 (0)	1 (0.6)	1 (0.5)	1 (0.6)	3 (2)	1 (0.4)	0 (0)	1 (0.5)
Species not specified	108 (6)	9 (4)	8 (4)	9 (5)	11 (5)	8 (4)	16 (8)	22 (8)	12 (5)	13 (6)

Percentages within each category may not total to 100 due to rounding.

Table 6. Sample of malaria cases completing the Knowledge, Attitude and Belief (KAB) supplemental questionnaire in 2011, compared with all malaria cases in New York City, 2004-2012

Sources: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012, Supplemental Knowledge, Attitude, Belief (KAB) questionnaire, 2011

	KAB sub-sample 2011 n (%)	Total 2004-2012 n (%)
Overall	32	1,899
Age group (years)		
0 - 17	10 (31)	424 (22)
18 - 39	8 (25)	645 (34)
40 - 59	13 (41)	692 (36)
60+	1 (3)	138 (7)
Gender		
Male	12 (38)	1,251 (66)
Female	20 (63)	648 (34)
Race/ethnicity		
Non-Hispanic Black	28 (88)	1,596 (84)
Other races/ethnicities	4 (13)	303 (16)
Borough of residence		
Bronx	11 (34)	677 (36)
Brooklyn	10 (31)	466 (25)
Queens	6 (19)	336 (18)
Manhattan	4 (13)	324 (17)
Staten Island	1 (3)	93 (5)
Unknown	0 (0)	3 (0.2)
Reason for travel		
Visiting Friends and Relatives (VFR)	28 (88)	1,279 (67)
All other reasons	4 (13)	620 (33)
Region of travel*		
West Africa	24 (75)	1,429 (75)
Other regions or missing	8 (25)	470 (25)
Country of travel		
Nigeria	5 (16)	489 (26)
Other countries and missing	27 (84)	1,410 (74)
Chemoprophylaxis use (any)		
Yes	13 (41)	309 (16)
No	19 (59)	1,501 (79)
Unknown	0 (0)	89 (5)
Adherence to chemoprophylaxis		
Adhered to all pills	9 (28)	98 (5)
Took some pills	4 (13)	211 (11)
No pills taken	19 (59)	1,501 (79)
Unknown	0 (0)	89 (5)
Admitted to hospital		
Yes	19 (59)	1,421 (75)
No	13 (41)	452 (24)
Unknown	0 (0)	26 (1)
Pre-travel medical advice		
Yes	12 (38)	N/A
No	20 (63)	N/A

*all 32 cases completing the KAB questionnaire traveled to malaria endemic regions.
Percentages within each category may not total to 100 due to rounding.

Table 6. Sample of malaria cases completing the Knowledge, Attitude and Belief (KAB) supplemental questionnaire in 2011, compared with all malaria cases in New York City, 2004-2012

Sources: NYC DOHMH Bureau of Communicable Disease, Malaria Surveillance Data 2004 - 2012, Supplemental Knowledge, Attitude, Belief (KAB) questionnaire, 2011

	KAB sub-sample 2011 n (%)	Total 2004-2012 n (%)
Worried about getting sick when traveling		
Yes	4 (13)	N/A
No	28 (88)	N/A
Anyone else got malaria		
Yes	5 (16)	N/A
No	27 (84)	N/A
Traveled with children		
Yes	13 (41)	N/A
No	19 (59)	N/A
Pre-travel knowledge about risk of contracting and impact of malaria		
Knew about, took chemoprophylaxis	13 (41)	N/A
Knew about, no chemoprophylaxis	11 (34)	N/A
Did not know about malaria/risk	8 (25)	N/A
Yes	19 (59)	1,417 (75)
No	13 (41)	451 (24)
Unknown	0 (0)	26 (1)
Used a preventive method other than chemoprophylaxis		
Yes	10 (31)	N/A
No	22 (69)	N/A
Type of other preventive measure (among those using other measures)		
Mosquito bed net	6 (60)	N/A
Insect repellent	2 (20)	N/A
Ceiling fan	1 (10)	N/A
Window screen	1 (10)	N/A
Had any health insurance		
Yes	27 (84)	N/A
No	5 (16)	N/A
Had Medicaid		
Yes	9 (33)	N/A
No	18 (67)	N/A
Money a reason travelers did not take chemoprophylaxis		
Yes	10 (31)	N/A
No	12 (38)	N/A
Don't Know	10 (31)	N/A
Highest level of education		
Less than high school	4 (13)	N/A
Some high school	3 (9)	N/A
High school grad	3 (9)	N/A
Some college	3 (9)	N/A
College grad	9 (28)	N/A
Graduate/Professional degree	6 (19)	N/A
Refused	4 (13)	N/A

*all 32 cases completing the KAB questionnaire traveled to malaria endemic regions.
Percentages within each category may not total to 100 due to rounding.