

City Health Information

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New York City Department of Health and Mental Hygiene

PREVENTING AND MANAGING SUMMER-RELATED HEALTH CONDITIONS

- Summer brings health and safety risks such as asthma exacerbations, heat-related illness, sun exposure, animal bites, mosquito- and tick-borne diseases, and water-related injuries.
- Educate patients about how to reduce these risks.
- Know how to diagnose and manage diseases connected to these risks.
- Report tick- and mosquito-borne diseases, rabies, animal bites, and drownings according to NYC Health Department guidelines (see page 38).

Summer poses certain risks to the health of New Yorkers (**Box 1¹⁻⁷**). Educate patients about prevention and home care for these concerns and be prepared to diagnose, treat, and report them as needed.

BOX 1. COMMON SUMMER-RELATED HEALTH RISKS¹⁻⁷

- Asthma exacerbations
- Heat-related illness
- Sun exposure
- Animal bites
- Mosquito-borne diseases
- Tick-borne diseases
- Water-related injuries

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ASTHMA EXACERBATIONS

Pollen, poor air quality, thunderstorms, and high humidity can trigger summertime asthma attacks.^{7,8} Teach patients and parents how to prevent summertime asthma exacerbations in themselves and their children (**Box 2**^{7,9}). Review asthma management plans with patients and parents and make adjustments if needed before school opens. For more information, see [Managing Asthma](#).

HEAT-RELATED ILLNESS

Each summer, extreme heat causes approximately 450 emergency department visits, 150 hospital admissions, and 13 hyperthermia deaths in NYC.¹ In addition, there are an average of 115 excess deaths due to natural causes associated with extreme heat events.¹⁰

People at greater risk for illness and death are those who do not have an air conditioner or do not use an air conditioner **and** have one or more of the following risk factors^{11,12}:

- age 65 years or older,
- chronic health conditions, including cardiovascular, respiratory, or renal disease, obesity (body mass index >30), diabetes, or psychiatric illness such as schizophrenia or bipolar disorder,
- cognitive or developmental disorders that impair judgment or self-care,
- medications that can impair thermoregulation, including diuretics, anticholinergics, and neuroleptics,
- illicit drug or heavy alcohol use, and
- social isolation or limited mobility.

Most people who die of hyperthermia are overcome by heat in their own homes and do not have or use air conditioning.

- Advise patients at increased risk to stay well hydrated and use home air conditioners or go to air-conditioned places during hot weather (**Resources**).¹¹

BOX 2. PREVENTING SUMMERTIME ASTHMA EXACERBATIONS^{7,9}

- Use an inhaled corticosteroid (ICS) every day as directed
- Use air conditioning when possible
- Pay attention to air quality forecasts and plan your activities for when air pollution and allergen levels will be low
- Avoid common asthma triggers (eg, tobacco smoke, mold, household chemicals, and indoor and outdoor allergens)

- Engage caregivers, family members, and support networks to frequently check on and assist at-risk patients, especially those who cannot care for themselves.¹¹
- Encourage low-income patients to visit mybenefits.ny.gov or call the Home Energy Assistance Program (HEAP) Hotline at 800-342-3009 to determine if they meet eligibility criteria for a free air conditioner.¹¹ To be eligible, a household must meet income requirements and have at least one household member who suffers from a health problem exacerbated by heat.
 - Instruct eligible patients to call 311 or the Human Resources Administration at 718-557-1399 for an application.
 - Provide patients with a written statement explaining their increased risk for heat-related illness, which they will need for the application.

During extreme heat events, NYC opens air-conditioned cooling centers. Patients can find a nearby cooling center by calling 311 or going to [NYC's Cooling Center](#) webpage.

For more information on heat illness, visit [Extreme Heat and Your Health](#) and [Management of Heatstroke and Heat Exhaustion](#).

SUN EXPOSURE

Sun exposure is the most preventable risk factor for skin cancer.^{2,13,14} Increased exposure to ultraviolet radiation occurs during summer months and between 10 AM and 2 PM.¹⁵ Reflection from sand and water increases this exposure.¹⁵ Counsel your patients to take preventive measures to avoid sunburn (**Box 3**^{2,14-16}). Advise patients who do get sunburned to stay hydrated and in a cool, shaded, or indoor environment.¹⁴

Topical and oral nonsteroidal anti-inflammatory drugs decrease skin redness if used before or soon after exposure to the sun, and may relieve headache, fever, and local pain.¹³ Cool compresses, moisturizing creams, and topical aloe vera gel may relieve symptoms.¹³ For more information on treating sunburn, see [Travelers' Health: Sun Exposure](#).

ANIMAL BITES

From 2003 through 2006, there were more than 24,000 emergency department visits for animal bites in NYC, largely from dogs (74%), cats (13%), and rodents (7%).³ Children have the highest rate of dog bite-related injuries.¹⁷ Ensure that your patients have received

age-appropriate tetanus vaccinations and offer guidance on avoiding animal bites (**Box 4**^{17,18}).

Advise patients who have been bitten to get the dog owner's contact information so that the Health Department can follow up on the dog's health status. The patient or caregiver should wash the wound with soap and water, apply antibiotic cream, and cover the wound with a clean bandage.¹⁷ Check the patient's immunization record to determine the need for a tetanus shot. Consider prescribing prophylactic antibiotics for all cat bite wounds and for dog bite wounds with a higher risk of infection.¹⁹ For more information, see [Management of Cat and Dog Bites](#).

BOX 3. SUN SAFETY RECOMMENDATIONS^{2,14-16}

- Wear
 - Clothing that covers your arms and legs
 - Hats, particularly those that protect your ears and neck
 - Sunglasses that block both ultraviolet (UV)A and UVB rays
- Always use sunscreen, even on cloudy days
 - Choose a broad-spectrum, water-resistant sunscreen that protects against both UVA and UVB rays and has an SPF of at least 30
 - At least 15 minutes before going outdoors, apply sunscreen to all exposed areas, including your feet, ears, neck, and scalp
 - Rub the sunscreen thoroughly into your skin
 - Reapply sunscreen approximately every 2 hours, or after swimming or sweating
- Seek shade
 - Remember that the sun's rays are strongest between 10 AM and 2 PM; if your shadow is shorter than you are, seek shade
- Use extra caution near sand and water, as they reflect and intensify the damaging rays of the sun, which can increase your chances of sunburn

BOX 4. PREVENTING DOG BITES AND THEIR COMPLICATIONS^{17,18}

- Avoid dogs that are showing signs of fear, aggression, or anxiety, such as trying to make themselves look bigger or smaller, turning or moving away, and defensively growling—even if the dog appears friendly
- Ask the owner's permission before petting a dog
- Teach children when and how to play with dogs and when to leave them alone
- Never leave a baby or young child alone with any dog
- Never approach an unknown dog or a dog that's alone without an owner

Rabies

The last reported case of dog rabies in NYC was more than 60 years ago. In NYC, raccoons and bats are the main reservoirs of the virus, but animals testing positive for rabies have also included cats, skunks, and opossums.²⁰ Animal rabies has been identified in all 5 boroughs, with a larger proportion in Staten Island and the Bronx.²¹

A person is considered to have had a possible rabies exposure if the person²¹

- was bitten by a skunk, fox, coyote, raccoon, or bat that either has tested positive for rabies or is not available for rabies testing,
- was bitten by a dog, cat, or ferret that is unavailable for testing or a 10-day observation period (consider the health and appearance of the animal, circumstances surrounding the bite, and rabies surveillance data for the area), or
- had contact with a bat, or a bat is found in an enclosed setting with a person who may not have been fully aware of its presence (eg, an infant or a person who is sleeping or intoxicated).

Immediately report patients with suspected rabies or exposure to rabies by calling 866-692-3641. For suspected rabid animals, call 311.

For more information, see [Rabies in New York City and Human Rabies Prevention](#).

MOSQUITO-BORNE DISEASES

West Nile virus

West Nile virus is transmitted to humans by the *Culex* species mosquito. In 2017, 21 cases of West Nile disease were diagnosed in NYC.⁴ There are no vaccines against human West Nile virus infection or medications to treat it, so prevention of mosquito bites is key.²²

- Counsel patients, especially those aged 60 years and older or those who are immunosuppressed, to take protective measures against mosquito bites (**Boxes 5**²²⁻²⁶ and **6**^{22,25,26}).
- Suspect West Nile viral disease in patients with viral meningitis or encephalitis, acute flaccid paralysis, and/or symptoms compatible with West Nile fever, particularly between July 1 and October 31.²⁷
 - Possible symptoms include fever, headache, fatigue, rash, or body aches, although most patients do not have symptoms.²⁸

See [West Nile Virus](#) for guidance on testing for West Nile viral disease.

BOX 5. PREVENTING MOSQUITO-BORNE DISEASES²²⁻²⁶

Personal protection

- Wear protective clothing such as long pants, long-sleeved shirts, and socks when outside
- Avoid shaded, bushy areas where mosquitoes like to rest
- Use insect repellent (**Box 6**)
- Make sure that doors and windows have tight-fitting screens
- Repair or replace screens that have tears or holes

Mosquito reduction

- Remove standing water around your home because mosquitoes lay eggs in standing water
- Make sure roof gutters drain properly
- If you see a significant problem with standing water on someone else's property, report it either online at www1.nyc.gov/nyc-resources/service/2510/standing-water-complaint or by calling 311

Other mosquito-borne diseases

Zika virus disease is spread to people primarily through the bite of an infected *Aedes* species mosquito. Zika can also be spread through sexual contact and, rarely, through blood products.^{29,30} Zika during pregnancy can cause serious birth defects including microcephaly.^{29,30} To date, all cases of Zika diagnosed in NYC were acquired through travel to an area with active Zika virus transmission. See [Zika Virus Information for Providers](#) for up-to-date guidance.

Neither dengue nor chikungunya has been transmitted in NYC to date; all cases of these infections have been acquired through travel to an area with active transmission of these viruses.³¹

TICK-BORNE DISEASES

Lyme disease, babesiosis, anaplasmosis, ehrlichiosis, Powasson virus, tularemia, and Rocky Mountain spotted fever (RMSF) are all transmitted through bites from infected ticks.^{5,32} Most cases of tick-borne diseases, with the exception of tularemia and RMSF, are acquired outside of NYC,^{5,33-35} commonly in upstate

BOX 6. ABOUT INSECT REPELLENT^{22,25,26}

| Do | Don't |
|--|--|
| <ul style="list-style-type: none"> • Use a repellent with DEET, picaridin, IR3535, 2-undecanone, or oil of lemon eucalyptus • Follow the manufacturer's directions on the repellent's label • Apply a light coat of repellent to exposed skin only—not to skin covered by clothing • Encourage older patients and patients with suppressed or compromised immune systems to apply repellent • Re-apply repellent as recommended on the label • After returning indoors, wash treated skin with soap and water and always wash your hands before eating or drinking • If using permethrin, apply it to clothing and boots, but not to skin | <ul style="list-style-type: none"> • Apply repellent to children aged younger than 2 months • Apply oil of lemon eucalyptus to children aged younger than 3 years • Apply repellent to skin that is under clothing • Apply repellent to cuts, wounds, or irritated skin • Exceed the maximum number of applications on the label directions • Apply aerosol or pump products directly to your face; instead, spray your hands and then rub them carefully over the face, avoiding the eyes and mouth |

For adults

- 15% to 30% DEET is recommended for extended periods (5 to 8 hours) outdoors
- Less than 15% DEET or picaridin is recommended for 1 to 5 hours outdoors
- Oil of lemon eucalyptus can also be used if time outdoors will be limited to less than 4 hours

For children aged 2 months or older

- Less than 10% DEET or picaridin is recommended (oil of lemon eucalyptus is not recommended for use on children aged younger than 3 years)
- Adults should apply repellent to their hands and rub it onto the child's skin, avoiding the eyes, mouth, and hands, and using sparingly on the ears

New York, Long Island, Connecticut, New Jersey, and Massachusetts. However, local transmission of Lyme disease, babesiosis, and anaplasmosis has been reported from Staten Island; Lyme disease and babesiosis have been reported from the Bronx (NYC Health Department, unpublished data).

Tick-borne diseases can have serious consequences. Advise patients to protect against ticks and to promptly detect and remove them (**Boxes 7^{32,33,34}** and **8³⁶**).

See [Tick-Borne Diseases in the New York City Area: A Reference Manual for Physicians](#) for more information.

WATER-RELATED INJURIES

In the US, drowning is the leading cause of unintentional injury death among children aged 1 to 14 years. Black children aged 5 to 19 years drown in swimming pools at rates 5.5 times higher than those of Whites.³⁷ Among children aged 11 to 12 years, Blacks drown in swimming pools at rates 10 times those of Whites.³⁷

Advise all of your patients to take safety precautions when in the water. In particular, remind them to maintain close supervision when children and the elderly are involved (**Box 9³⁸**).

REPORTING TO THE NYC HEALTH DEPARTMENT

NYC health care providers are required to report diseases of public health importance to the Health Department.

BOX 8. HOW TO SAFELY REMOVE AN EMBEDDED TICK³⁶

- Remove ticks on the skin as soon as possible
- DO NOT use nail polish, petroleum jelly, or a hot match
- DO NOT wait for the tick to detach
- Use fine-tipped tweezers
- Grasp the part of the tick closest to the skin and slowly pull the tick straight out with steady outward pressure until it lets go
- DO NOT squash, squeeze, twist, or jerk the tick during removal, as that may increase the risk of transmitting disease
- If parts of the tick become detached, remove them with clean tweezers; if this can't be done easily, leave them alone and let the skin heal
- Thoroughly clean the bite area and your hands with rubbing alcohol, iodine scrub, or soap and water
- Clean and disinfect any instruments that touched the tick

See [NYS Department of Health—Proper Tick Removal for an instructional video](#)

BOX 7. PREVENTING TICK-BORNE DISEASES^{32,33,34}

| When in tick-infested areas | When returning indoors from tick-infested areas |
|--|---|
| <ul style="list-style-type: none"> • Keep grass cut and remove leaf litter, brush, and weeds • Stay away from tall grass, wooded, or brushy areas; stick to cleared paths or the center of trails • Wear long-sleeved, light-colored shirts and long pants tucked into socks; this keeps ticks away from your skin and makes them easy to spot on your clothing • Wear gloves while gardening • Use insect repellent on exposed skin; treat clothing with permethrin (Box 6) • Check for ticks on yourself, children, and pets every 2 to 3 hours | <ul style="list-style-type: none"> • Carefully check yourself, your children, and your pets for ticks • Look for ticks in all joint areas, the navel, the hairline, behind the ears, and other skin folds • Carefully remove any tick you find on your skin as soon as possible (Box 8) • Wash all skin treated with insect repellent thoroughly • Shower as soon as possible after coming indoors (preferably within 2 hours) • Wash clothes in hot water to kill ticks; if clothes cannot be washed in hot water, tumble dry clothes in a dryer on high heat for 10 minutes • See your doctor right away if you develop a rash or flu-like symptoms |

Talk to your veterinarian about protecting your animals against ticks

Report the following immediately to 866-692-3641; do not wait for laboratory confirmation:

- Suspected West Nile virus and arboviral infections (eg, chikungunya virus, Japanese encephalitis virus, Rift Valley fever virus)
- Suspected rabies or exposure to rabies (eg, animal bite from vector species at high risk for rabies)

Report the following within 24 hours via NYC MED:

- Nonarboviral encephalitis
- Tick-borne disease, confirmed cases
- Animal bites, confirmed cases
- Drownings

For more information, see [Provider Reporting: How to Report Diseases, Events, and Conditions to the NYC Health Department](#).

SUMMARY

Summer brings health risks for New Yorkers, including asthma exacerbations, heat-related illness, sun exposure, animal bites, mosquito- and tick-borne diseases, and water-related injuries. Educate your patients about ways to minimize these risks and prevent the diseases and conditions associated with them. Know how to diagnose and manage these conditions and what you must report to the NYC Health Department.

SUMMER HEALTH QUIZ

1. Increased exposure to ultraviolet radiation occurs during summer months and between
 - a. 10 AM and 2 PM
 - b. 11 AM and 3 PM
 - c. 12 PM and 4 PM
 - d. 1 PM and 5 PM
2. Which of the following is recommended when using insect repellent?
 - a. Apply repellent to children aged younger than 2 months
 - b. Apply oil of lemon eucalyptus to children aged younger than 3 years
 - c. Apply a light coat of repellent to exposed skin only, not to skin covered by clothing
 - d. Discourage immunocompromised patients from applying repellent

Answers: 1-A; 2-C

BOX 9. WATER SAFETY³⁸

- Learn to swim^a
- Always swim with a buddy
- Swim in areas supervised by a lifeguard
- Never leave a child unobserved around water, even when a lifeguard is on duty
- Wear Coast Guard-approved life jackets in and around water; this is especially important for children and inexperienced swimmers
- Obey all rules and posted signs
- Know the water environment and its potential hazards, such as deep and shallow areas, currents, changes in water depth, and rip tides
- Watch out for the dangerous "too's"—too tired, too much strenuous activity, too cold, too much sun, and too far from safety
- Enter water feet first; only dive in areas clearly marked for diving
- Don't mix alcohol with swimming, diving, or boating
- If outdoors, stop swimming at the first sign of bad weather
- If you or someone else has a water injury and there is no lifeguard available, call 911

^aSee [NYC Parks Department Swim Programs](#) to find free swimming lessons for adults and children (membership in a Parks Department Recreation Center is required)

RESOURCES FOR PROVIDERS

Asthma exacerbations

- American Academy of Family Physicians. Management of acute asthma exacerbations: www.aafp.org/afp/2011/0701/p40.html
- National Heart, Lung, and Blood Institute. Asthma care quick reference: diagnosing and managing asthma: www.nhlbi.nih.gov/files/docs/guidelines/asthma_qrg.pdf

Heat-related illness

- NYC Health Department. Heat wave preparedness checklists for vulnerable population service providers: www1.nyc.gov/assets/doh/downloads/pdf/ehs/provider-heat-checklists.pdf
- American Academy of Family Physicians. Management of heatstroke and heat exhaustion: www.aafp.org/afp/2005/0601/p2133.html

Animal bites

- NYC Health Department. Information for veterinarians: www1.nyc.gov/assets/doh/downloads/pdf/zoo/zoo-vet-poster.pdf

Mosquito-borne diseases

- NYC Health Department
 - West Nile virus: www1.nyc.gov/site/doh/providers/health-topics/west-nile-virus.page

- Zika virus: www1.nyc.gov/site/doh/health/health-topics/zika-virus.page
- Centers for Disease Control and Prevention
 - West Nile virus information for health care providers: www.cdc.gov/westnile/healthcareproviders/index.html
 - About Zika: www.cdc.gov/zika/about/index.html

Tick-borne illnesses

- NYC Health Department. Zoonotic and vectorborne diseases: www1.nyc.gov/site/doh/health/health-topics/zoonotic-and-vectorborne-diseases.page
- NYS Department of Health. Ticks and Lyme disease—a guide for preventing lyme disease: www.health.ny.gov/publications/2813/index.htm

NYC Health Department reporting information

- Reporting diseases and conditions: www1.nyc.gov/site/doh/providers/reporting-and-services/notifiable-diseases-and-conditions-reporting-central.page

City Health Information archives: www1.nyc.gov/site/doh/about/about-doh/publications.page

- *Preventing and managing Lyme and other tick-borne diseases*
- *Rabies in New York City and human rabies prevention*

RESOURCES FOR PATIENTS

Asthma exacerbations

- Centers for Disease Control and Prevention
 - Common asthma triggers: www.cdc.gov/asthma/triggers.html
 - Know how to use your asthma inhaler (includes video): www.cdc.gov/asthma/inhaler_video/default.htm
 - Air quality index: airnow.gov/index.cfm

Heat-related illness

- NYC Health Department. Extreme heat and your health: www1.nyc.gov/site/doh/health/emergency-preparedness/emergencies-extreme-weather-heat.page
- NYC Emergency Management. Extreme heat: www1.nyc.gov/site/em/ready/extreme-heat.page
- NYC Cooling Assistance Program: www1.nyc.gov/nyc-resources/service/3945/cooling-assistance-program
- NYC Cooling Center webpage: www1.nyc.gov/nyc-resources/service/4843/cooling-center

Sun safety

- American Academy of Dermatology
 - Public and patients: www.aad.org/public
Information on sun safety and a variety of skin conditions
 - How to treat sunburn: www.aad.org/public/skin-hair-nails/injured-skin/treating-sunburn

- American Cancer Society. How do I protect myself from UV rays?: www.cancer.org/cancer/cancercauses/sunanduvexposure/skincancerpreventionandearlydetection/skin-cancer-prevention-and-early-detection-u-v-protection

Dog bites

- Humane Society of the United States. Prevent your dog from biting: www.humanesociety.org/animals/dogs/tips/prevent_dog_bites.html
- Centers for Disease Control and Prevention. Preventing dog bites: www.cdc.gov/features/dog-bite-prevention

Rabies

- NYC Health Department. Rabies protection for humans and pets brochure: www1.nyc.gov/nyc-resources/service/2304/rabies-protection-for-humans-and-pets-brochure

Mosquito control

- NYC Health Department
 - Reducing mosquito exposure around your home: www1.nyc.gov/site/doh/health/health-topics/west-nile-virus-community.page
 - Standing water report: www1.nyc.gov/apps/311universalintake/form.htm?serviceName=DOHMH+Standing+Water or call 311

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RESOURCES FOR PATIENTS (continued)**Insect repellent**

- NYC Health Department. Insect repellent use and safety: www1.nyc.gov/site/doh/health/health-topics/insect-repellent-safety.page
- Environmental Protection Agency. Pesticides: www.epa.gov/pesticides
- Centers for Disease Control and Prevention. West Nile virus prevention: www.cdc.gov/westnile/prevention/index.html

West Nile virus

- NYC Health Department. West Nile virus (WNV): www1.nyc.gov/site/doh/health/health-topics/west-nile-virus.page
Includes FAQs, prevention measures, and insect repellent safety
- Centers for Disease Control and Prevention. West Nile virus: www.cdc.gov/westnile/index.html

Zika virus

- NYC Health Department
 - Zika virus: www1.nyc.gov/site/doh/health/health-topics/zika-virus.page
 - Your guide to safe and healthy travel: www1.nyc.gov/assets/doh/downloads/pdf/cd/cd-travel-health-brochure.pdf
- Centers for Disease Control and Prevention. About Zika: www.cdc.gov/zika/about/index.html

Tick-borne diseases

- NYC Health Department. Ticks: www1.nyc.gov/site/doh/health/health-topics/ticks.page
- NYS Department of Health. Proper tick removal (video): www.youtube.com/watch?v=1Vj-qhxCjBA
- Centers for Disease Control and Prevention
 - Ticks: www.cdc.gov/ticks
 - Preventing ticks in the yard: www.cdc.gov/lyme/prev/in_the_yard.html

Water safety

- American Red Cross. Water safety tips: www.redcross.org/images/MEDIA_CustomProductCatalog/m11840095_H21309.AquaticsSafetyV3.pdf
- NYC Health Department. Swimming pool safety tips: www1.nyc.gov/site/doh/health/health-topics/pools.page
- NYC Parks and Recreation Department. Swim programs: www.nycgovparks.org/programs/aquatics
Free or low-cost membership at Parks Department Recreation Centers

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Preventing and managing summer-related health conditions.
City Health Information. 2018;37(5):34-42.

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