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CLINICAL GUIDELINES FOR ADULTS EXPOSED TO THE WORLD TRADE CENTER DISASTER

- Five years after the World Trade Center (WTC) attack, many New Yorkers continue to suffer disaster-associated physical and mental health conditions.
- Primary care providers should ask patients about WTC exposure, especially patients with respiratory symptoms, reflux disease, mental health problems, or substance use disorders.
- Providers should know how to identify, evaluate, treat, and refer patients with conditions that could be associated with exposure to the disaster.
- Because physical and mental health conditions are often intertwined, a coordinated approach to care usually works best and referral may be necessary.

The World Trade Center (WTC) terrorist attack and its aftermath exposed hundreds of thousands of people to debris, dust, smoke, and fumes. Studies conducted after September 11, 2001, among rescue and clean-up workers,¹⁻⁴ office workers,⁵ building evacuees,⁶ and residents of lower Manhattan⁷⁻⁹ showed an increase in respiratory and other physical and mental health problems, including post-traumatic stress disorder.

Many New Yorkers have health problems that could be associated with – or made worse by – exposure to the attack and its aftermath. Primary care physicians need to know how to identify, evaluate, treat, and if necessary, refer these individuals to expert care.

This publication suggests how clinicians can take a brief exposure history and describes common health problems that could be caused or exacerbated by exposure to the disaster. It offers algorithms to evaluate and care for exposed individuals, and provides brief tools to assess and

treat physical and mental health disorders. Resources are also featured, including information about free (or need-based) treatment programs that may benefit WTC-exposed individuals (**Resources**).

While these recommendations are targeted to adults, some principles and diagnostic methods may be applicable to children and adolescents. Consult appropriate resources such as the American Academy of Pediatrics for general (non-WTC-specific) pediatric guidelines (**Resources**).



EXPOSURES AND POTENTIAL HEALTH EFFECTS

Physical Exposures

The collapse and burning of the WTC and neighboring buildings released a complex mixture of irritant dust, smoke, and gaseous materials. Pulverized concrete, glass, plastic, paper, and wood produced alkaline dust. The dust cloud also contained heavy metals, as well as asbestos and other substances that may be carcinogenic. In addition, smoke released from the persistent fires in the months that followed also contained hazardous and potentially carcinogenic substances.

Environmental test results showed that the composition of dust and smoke released into the air and deposited on indoor and outdoor surfaces varied by date and location.¹⁰

Individual exposure to contaminants was determined by duration, site, activities, and use of appropriate protective equipment. Health effects related to these exposures may also vary, depending on the intensity and duration of exposure as well as on underlying medical conditions, tobacco use, and individual susceptibility.

Although heavy metals were detected in the air and dust, clinical tests performed on specimens from more than 10,000 firefighters showed no clinically significant concentrations of mercury, lead, or beryllium.¹¹ Heavy metals are usually cleared from the blood and urine within months of exposure.

Table 1. Key Occupational and Residential Exposure History Questions

Ask: "Were you exposed to the World Trade Center disaster?"

If patient answers yes, ask further questions regarding the nature and duration of exposure, such as:

- 1) Were you showered by the cloud of debris and dust when the towers collapsed?
- 2) Were you in Manhattan on the streets near the World Trade Center at the time of the impact of the planes, the collapse of the towers, or shortly afterwards?
- 3) Did you work or volunteer at the World Trade Center site providing rescue and recovery, cleanup, construction, or support services, or at the World Trade Center Recovery Operation on Staten Island or on a barge? What tasks did you perform? Did you consistently use a respirator? If so, describe what kind.
- 4) If you lived, worked, volunteered, or attended school in lower Manhattan in the months after September 11th, what was the condition of your home, work, or school?
- 5) Are there other WTC-related exposures that concern you?

Mental Health Implications

For many New Yorkers, the trauma of September 11th triggered or exacerbated depression, anxiety, or substance use disorders.^{12,13}

Many survivors witnessed the death of friends and co-workers; thousands lost family members in the attacks. In the wake of the disaster, rescue, recovery, and other workers and volunteers, as well as residents, office workers, and students in downtown Manhattan were subjected to daily stress for months.¹⁴⁻¹⁶ Serious psychological distress was documented 2 or 3 years later among many survivors of collapsed or damaged buildings.⁶

IDENTIFYING WTC-RELATED CHRONIC MEDICAL CONDITIONS

When assessing for WTC-related disease, clinicians should consider:

- Direct exposure to the cloud of debris and dust released by the collapse of the towers;
- Duration, type, and intensity of exposure to dust, smoke, and fumes in the days and months after the disaster;
- Whether onset of symptoms occurred after, but within plausible proximity to, WTC pollutant or trauma exposure.

While the dust, smoke, and fumes caused by the disaster extended beyond lower Manhattan, the heaviest exposures occurred in the immediate vicinity of the attacks.

Most individuals who developed respiratory illness did so within 6 months of exposure to the disaster site. For others, symptom onset was gradual, occurring a year or more after exposure.

Because individuals have different levels of tolerance, the intensity of symptoms may not be directly proportional to exposure.

Other risk factors for WTC-associated illness may be identified in the future. Providers should monitor the literature as more information about WTC-related diseases becomes available.

Possible Exposure Scenarios

Examples of possible exposure scenarios include, but are not limited to, the following:

- Being caught in the dust cloud on 9/11
- Working on the pile, dismantling damaged building structures in the surrounding rubble, or handling WTC debris without adequate protection
- Cleaning affected commercial and residential buildings in lower Manhattan
- Cleaning or reoccupying homes covered in dust
- Being exposed to high levels of dust or smoke while restoring services in lower Manhattan

PHYSICAL HEALTH CONDITIONS

The physical health problems discussed in this publication are common and may not be WTC-related even among persons exposed to the disaster. The algorithm (Figure 1, see *in fold*) and treatment options offered here are applicable regardless of the cause of illness.

Evaluate the patient for WTC exposure (Table 1). Inhalation and ingestion of WTC dust and fumes may have caused new illness or exacerbated preexisting conditions (Table 2). The mechanism may be an irritant-induced process in which symptoms persist due to inflammation in addition to the initial exposure.¹⁷

Develop a diagnosis and treatment plan that covers upper airway, lower airway, and reflux disease.^{18,19} Symptoms may be due to multiple causes; combination treatment may be useful. Continue treatments even if only partially effective.¹⁸ Always evaluate the patient's adherence to the treatment regimen before altering it. Assess the patient's ongoing environmental and occupational exposures and counsel accordingly. A brief review of the diagnosis and treatment of the most commonly associated conditions follows.

Upper airway cough syndrome (UACS)

Upper airway cough syndrome (UACS), formerly termed postnasal drip syndrome, is commonly caused by chronic rhinosinusitis and rhinitis (allergic and irritant-induced). Improvement or resolution of cough in response to treatment is a key factor in confirming the diagnosis.

Symptoms: cough, nasal congestion, postnasal drip, frequent need to clear the throat

Signs: mucus in the oropharynx, cobblestone appearance of the oropharyngeal mucosa

Diagnostic evaluation: history, physical, and response to empiric treatment

Treatment: See Table 3.

Specific signs and symptoms of the 2 main causes of UACS (chronic rhino-sinusitis and rhinitis) are described on page 50.

Table 2. Potentially WTC-Associated Conditions

Inhalation or ingestion of WTC dust and fumes affected the mucous membranes of the nose, sinuses, pharynx, gastrointestinal (GI) tract, and respiratory tract.

The symptoms and signs of these conditions include:

- Sinus, nasal, and postnasal congestion
- Heartburn, hoarseness, and throat irritation
- Shortness of breath and wheezing
- Chronic cough

Some clinicians have described a syndrome consisting of a triad that is typified by:

- Upper airway cough syndrome (postnasal drip syndrome)
- Asthma/reactive airways dysfunction syndrome (RADS)
- Gastroesophageal reflux disease (GERD)/laryngopharyngeal reflux disease (LPRD)

Table 3. Treatment of upper airway cough syndrome (UACS) (including chronic rhino-sinusitis, and rhinitis*)

- Daily nasal saline spray or irrigation/lavage with or without both antihistamines (eg, loratidine) and oral decongestants (eg, phenylephrine,†) for 5 to 7 days‡
- Topical decongestants (eg, oxymetazoline†) for a maximum of 3 days if severe mucosal swelling is noted
- Nasal steroids (eg, budesonide†) if nasal and throat symptoms persist or increase after therapy with lavage and decongestants alone
 - Nasal steroid therapy must be continued for at least 2 weeks before any clinical improvement will be noted.
 - If symptoms improve, therapy should be continued for 2 to 3 months.
- Be alert to bacterial superinfection of the sinuses if the patient experiences fever and/or chills, persistent purulent nasal discharge with maxillary, tooth, or unilateral facial pain, sinus tenderness, or progressively worsening symptoms. Sinus infection should be treated with antibiotics.
- Consider sinus CT scan and ENT consultation if symptoms are severe and persistent after 3 months of treatment.

* Clinical practice guidelines have been published recently for upper airway cough syndrome (UACS), previously called postnasal drip syndrome (PNDS),²⁰ and for chronic rhino-sinusitis.²¹

† Mention of this medication does not imply a preference of this medication over other medications in the same class or category.

‡ A meta-analysis indicates that an antihistamine-decongestant combination is superior to antihistamine alone to reduce symptoms.²²

Table 4. Treatment of asthma/reactive airways dysfunction syndrome (RADS)

- Basic therapy for mild persistent asthma consists of a combination of a daily inhaled corticosteroid (eg, budesonide*) combined with a short-acting inhaled bronchodilator (eg, albuterol*) as needed for the relief of symptoms. Closely monitored treatment for at least 3 months may be necessary to show clinical improvement.
- For patients with more frequent symptoms, continue inhaled steroids and consider adding long-acting inhaled beta agonists (eg, salmeterol*) or leukotriene modifiers (eg, montelukast sodium*) under careful monitoring.
- For assistance with treatment management, follow the step-wise treatment guidelines based on symptom severity developed by the National Heart, Lung and Blood Institute: www.nhlbi.nih.gov/guidelines/asthma/execsumm.pdf.^{23,24}
- Referral to a pulmonologist is recommended for patients with refractory symptoms despite adherence to therapy.

* Mention of this medication does not imply a preference of this medication over other medications in the same class or category.

Chronic rhino-sinusitis

Symptoms: nasal congestion with clear to purulent discharge, postnasal drip, cough, facial pressure/pain, nosebleeds, reduced or altered sense of smell, fatigue, maxillary dental pain, ear pressure/fullness

Signs: inflammation of the nasal mucosa and paranasal sinuses for more than 3 months

Rhinitis (allergic and irritant-induced)

Symptoms: cough; sneezing; postnasal drip; reduced or altered sense of smell; fatigue; lacrimation; itchy eyes, nose, and/or throat

Signs: allergic “shiners” (dark circles under eyes); nasal crease (across lower half of nasal bridge); pale, swollen or boggy nasal mucosa; thin, watery, nasal secretions; cobblestoning of posterior pharynx

Asthma/reactive airways dysfunction syndrome (RADS)

Some people exposed to the WTC disaster area have developed irritant-induced asthma or reactive airways dysfunction syndrome (RADS).

Symptoms: shortness of breath; chest tightness; wheezing; cough; phlegm; possible triggering of symptoms by upper respiratory infections, seasonal allergies, exercise, fragrances, or extremes of temperature or humidity; recurrent episodes of respiratory infections requiring antibiotic treatment

Signs: pulmonary examination may be normal or may show tachypnea, wheezing, prolonged expiratory phase of respiration, hyperresonance to chest percussion, use of accessory muscles

Diagnostic evaluation: history, physical, CXR, spirometry, response to empiric treatment

Treatment: See Table 4.

Gastroesophageal reflux disease (GERD)

Laryngopharyngeal reflux disease (LPRD)

GERD and LPRD are closely related disorders. GERD results from the reflux of gastric contents into the esophagus. LPRD results from the reflux of gastric contents into the larynx/pharynx and is an often unrecognized cause of laryngeal inflammation.

GERD Symptoms: substernal/epigastric burning, acid regurgitation, dyspepsia, cough made worse with meals or at night

LPRD Symptoms: hoarseness or other vocal changes, sore throat, cough, sensation of having a lump in the throat

GERD Signs: may be absent if mild disease, may note erythema/esophagitis on endoscopy if symptoms are severe or persistent

LPRD Signs: may be absent on regular physical exam, may note erythema/edema of larynx on laryngoscopy

Diagnostic evaluation: history, physical, and response to empiric treatment

Treatment: See Table 5.

Chronic Cough

Patients may present with symptoms not clearly distinctive of the 3 syndromes described above and may present with chronic cough alone.²⁵ Evaluation of a WTC-exposed individual with chronic cough is addressed in Figure 1 (see *infold*). Take a careful history, including all symptoms. Initiate smoking cessation, discontinue ACE inhibitor, and avoid environmental or occupational triggers — all can be irritants — before proceeding through the algorithm (**Figure 1**, see *infold*).

Perform a targeted physical examination. Next, determine whether the individual’s symptoms and exam suggest a specific diagnosis (ie, UACS, asthma, or GERD – all discussed above). If symptoms/signs are consistent with UACS or GERD, attempt empiric treatment for the suspected underlying disorder. When symptoms/signs are consistent with asthma/RADS, or cough alone is present, pursue a full work-up beginning with a chest x-ray. Evaluate and treat abnormalities identified on chest x-ray before continuing with the

TOBACCO USE

The risk and severity of many WTC-related diseases are heightened by tobacco use. Exposure to secondhand smoke may also exacerbate WTC-related diseases. All WTC-exposed people and their family members who use tobacco should be advised to quit, and all who attempt to quit should be provided with medications to help them quit. Smokers can access the Smokers’ Quitline by calling 311. Information on the treatment of nicotine addiction is available at: www.nyc.gov/html/doh/downloads/pdf/chi/chi21-6.pdf

algorithm. Order spirometry if chest x-ray is normal (or findings are determined to be unrelated to current symptoms). Attempt empiric treatment of asthma/RADS for individuals with obstructive or normal patterns on spirometry.

Patients may require further work-up including, but not limited to, high resolution chest CT (inspiratory and expiratory views) and full pulmonary function testing. Refer to a pulmonologist as needed. Management should focus on diagnosing and treating the specific etiology of the cough, but symptomatic treatment (ie, cough suppression) may also be helpful provided that a full evaluation is underway.

Other Possibly Associated Pulmonary Conditions

Consult a WTC Medical Monitoring and Treatment Center (**Resources**) for further information about these and other medical problems currently under evaluation:

- Interstitial lung diseases
- Chronic bronchitis/non-asthmatic eosinophilic bronchitis
- Rare reports of pulmonary eosinophilic infiltrates,²⁶ granulomatous pneumonitis,²⁷ and bronchiolitis obliterans²⁸
- Other lung diseases

Patients may also present with other as yet unexplained conditions that require additional diagnostic evaluation.

Although the dust cloud contained heavy metals, there is no recognized need to perform blood or urine testing for heavy metals in the absence of specific indicative symptoms.

As depicted in Figure 1 (see *in fold*), patients may require evaluation and treatment from specialists or a WTC medical monitoring and treatment program. These programs do not provide general primary care services and therefore complement rather than supplant the role of the primary care physician. A list of these programs is provided in the WTC Health Registry Resource Guide (**Resources**).

Preventive health measures recommended for persons with a history of WTC-related illness

- Tobacco cessation and elimination of exposure to second-hand smoke is essential to control UACS, asthma/RADS, and GERD/LPRD.
- Counsel the patient to avoid, to the greatest extent possible, occupational or recreational exposures that are known to exacerbate illness.
- Annual influenza vaccination is advised to reduce the risk of complications of influenza infection.
- Pneumococcal vaccination is recommended for those with pulmonary disease.
- Diet modification and weight control are integral to the control of GERD.
- Screening for depression and substance abuse is recommended during routine visits. If patients screen positive, appropriate counseling and referral should be provided.

TABLE 5. Treatment of Gastroesophageal Reflux Disease (GERD) and Laryngopharyngeal Reflux Disease (LPRD)*

If the patient's history is typical for uncomplicated GERD/LPRD, an initial trial of empiric therapy is appropriate. Empiric therapy includes lifestyle modifications and acid suppression.

- Proton pump inhibitors (PPIs) (eg, omeprazole†) provide symptomatic relief and healing of esophagitis in the highest percentage of patients. Treatment consists of a PPI for 4–8 weeks, followed by on-demand or maintenance PPI. In some cases with partial response or acid breakthrough, BID doses may be necessary with the second dose given before the evening meal.²⁹
- Histamine-2 receptor antagonists (eg, ranitidine†) may also be used and are an effective treatment in many patients with less severe GERD/LPRD or as an adjunct with difficult to control GERD, particularly when taken at times known to trigger GERD symptoms (eg, before exercise or heavy meal, before bedtime). In most cases, response to PPI is superior to response to histamine-2 receptor antagonists treatment.
- Prokinetic agents (eg, metoclopramide†) may be used to augment treatment.³⁰
- Always evaluate the adequacy of and adherence to the treatment regimen before changing it.
- Reflux disease should be treated aggressively to improve quality of life and because of its association with gastrointestinal disease (dysphagia, peptic stricture, Barrett's esophagus, and esophageal cancer) and with respiratory disease (laryngitis, sinusitis, asthma, and chronic cough).
- If empiric therapy is unsuccessful or symptoms suggest complicated disease, consider referral to a gastroenterologist.

*A clinical practice guideline for evaluation and treatment of chronic cough due to GERD³¹ and updated clinical guidelines for the treatment of GERD¹⁹ have recently been published.

†Mention of this medication does not imply a preference of this medication over other medications in the same class or category.

Disease Reporting

Health care professionals are legally mandated to report the diagnosis of occupational respiratory diseases, including those resulting from exposures at the WTC site. To obtain occupational lung disease reporting forms, please contact the New York State Occupational Lung Disease Registry (**Resources**).

Substances released by the collapse of the towers could potentially cause cancers, which generally have a long latency period. New York State Public Health law requires physicians — along with all other health care providers and entities — to report every case of cancer they diagnose or treat to the New York State Department of Health (NYSDOH). To obtain cancer reporting forms, please contact the New York State Cancer Registry (NYSCR) (**Resources**). Accurate, timely, and complete reporting is essential to monitoring and understanding the extent of WTC-related disease.

MENTAL HEALTH CONDITIONS

People who were injured in the collapse of buildings, who witnessed the injury or death of others during the attack, or who were involved in rescue and recovery efforts, experienced considerable psychological stress and direct trauma. Indirect trauma may also have resulted from the loss of a loved one or from constant exposure to graphic media coverage of the attacks. WTC-related physical illness or economic hardship may also have caused psychological stress. For most individuals, acute stress symptoms abated quickly, within a month, but some developed disorders such as post-traumatic stress disorder (PTSD), depression, generalized anxiety disorder (GAD), or a substance use disorder.^{15,32}

Primary care providers can serve an important role in the identification, evaluation, treatment, and referral of trauma-related mental health disorders.^{15,33}

- Be alert to risk factors and signs that may indicate one of these disorders.
- Establish a trauma history and screen for mental health disorder risk factors (**Table 6**).
- Assess for symptoms of PTSD (**Table 7**), depression (**Table 8**), GAD (**Table 10**), and substance use disorders (**Table 11**).
- Educate patients about normal stress reactions.
- Diagnose/manage these conditions consistent with treatment guidelines.^{34,35}

Primary care providers can either make a diagnosis based on their assessment and treat accordingly, or refer patients to a mental health professional for evaluation and treatment.

Post-Traumatic Stress Disorder

PTSD may develop in individuals exposed to traumatic event(s) where the threat of serious injury or death occurs and the individual's response involves intense fear, helplessness, or horror. PTSD is characterized by all of the following symptoms that either arise immediately or after a lag time, and cause significant distress or impaired functioning:^{36,37}

- **Re-living** of the traumatic event in the form of nightmares and flashbacks, and
- **Avoidance** of reminders of the event, such as places, activities, and people, or feeling emotionally detached or numb, and
- **Hyperarousal** such as insomnia, irritability, hypervigilance, or an exaggerated startle reaction

Differential Diagnosis

Diagnosing PTSD may be difficult because people with PTSD often suffer from other psychiatric disorders and may also initially report physical complaints (**Table 7**).

Symptoms of these disorders and their physical manifestations may complicate the recognition of PTSD and may also increase the risk of suicidal behavior often associated with these disorders.³⁶⁻³⁸

Depression

Depression is a disabling condition that affects many aspects of a person's life and overall functioning. People who directly witnessed the WTC attacks and those who participated in the rescue and recovery efforts may be at increased risk for developing depression, with or without PTSD.³⁹

Depression is characterized by feelings of extreme sadness, anhedonia, guilt, helplessness, hopelessness, insomnia, inability to concentrate, loss of appetite, and thoughts of suicide and/or death. It may occur only once, but is more commonly a recurring condition.⁴⁰⁻⁴³

Table 6: Factors That Increase the Likelihood of Developing Mental Health Disorders Related to the WTC Disaster

WTC-Specific

- Personally witnessing events on 9/11 that induced horror, including:
 - Airplanes hitting the towers
 - Buildings collapsing
 - Friends, relatives or colleagues getting injured or killed
 - People falling or jumping from the towers
- Exposure to the dust cloud
- Sustaining an injury
- Experiencing a panic attack at the time of the WTC disaster

General

- Previous exposure to trauma
- Personal history of a psychiatric or medical disorder
- Family history of psychiatric disorder
- Young age
- Female gender
- Lack of social support
- Financial difficulties

A physician can simply and quickly screen for depression by using a 2-question tool, the Patient Health Questionnaire-2 (PHQ-2) (Table 8).⁴⁴ If the patient responds “yes” to either question, consider using the Patient Health Questionnaire 9 (PHQ-9) (Table 8). This 9-item questionnaire can reliably detect and quantify the severity of depression, and can be used to help monitor response to treatment (Table 8).⁴⁵ If the response to question 9 on the PHQ-9 is positive, evaluate the patient’s suicide risk (Table 9).

The comprehensive management of depression includes pharmacological intervention and non-pharmacological treatment such as patient education, counseling, self management, referral if required, and ongoing monitoring. Increased physical activity can prevent and reduce symptoms of depression.⁴⁶ Patients should be monitored frequently for treatment effectiveness, suicidality, and adverse effects common with antidepressant medication. When psychosis, suicidal ideation, or severe functional impairment are present, medication will be needed and hospitalization may be required.

Generalized Anxiety Disorder (GAD)

Generalized Anxiety Disorder (GAD) is characterized by persistent, excessive, and uncontrollable worry and anxiety about daily life and routine activities.^{47,48} Diagnosis is based on all of the following⁴⁹:

- Excessive and uncontrolled anxiety and worry more days than not for at least 6 months

- At least 3 of the following symptoms:

Restlessness	Irritability
Sleep disturbance	Fatigue
Difficulty concentrating	Muscle tension
- Anxiety, worry, or physical symptoms that cause clinically significant distress or functional impairment
- Symptoms that are not the result of substance or medication use or abuse, or a general medical condition

Other symptoms of GAD include muscle aches, trembling, jumpiness, headache, difficulty swallowing, gastrointestinal discomfort, diarrhea, sweating, hot flashes, and feeling light-headed and breathless (Table 10).

Patients suffering from GAD may also:

- Feel chronically tense, anxious, and/or be disproportionately consumed with worry^{48,50};
- Expect the worst on a consistent basis;
- Experience physical symptoms of anxiety⁵¹;
- Experience chronic anxiety symptoms with short-term exacerbations^{48,50};
- Experience anxiety to a degree that it adversely affects daily functioning.^{47,48}

The short-term goals for treatment should be to rapidly reduce somatic symptoms and overwhelming anxiety; long-term goals include full recovery, preventing relapses, and treating any comorbid disorder.⁵²

Table 7. Post-Traumatic Stress Disorder (PTSD) Screening and Treatment

Screening

Consider a diagnosis of PTSD for patients who answer yes to 3 of the following 4 questions.⁵³

In your life have you ever had any experience that was so frightening, horrible, or upsetting that in the past month you:

- Have had nightmares about it or thought about it when you did not want to?
- Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?
- Were constantly on guard, watchful, or easily startled?
- Felt numb or detached from others, activities, or your surroundings?

Treatment^{36,37}

Treat PTSD with psychotherapy, pharmacotherapy, or a combination of the two.

Psychotherapy^{36,37}

- Exposure therapy: to reduce the arousal and distress associated with memories of trauma
- Cognitive behavioral therapy: to identify and change harmful thoughts and modify unwanted behavior related to trauma
- Anxiety management (Table 9)

Pharmacotherapy^{34,36}

The FDA has approved 2 selective serotonin reuptake inhibitors (SSRIs) to treat PTSD:

- Sertraline (Zoloft[®])
- Paroxetine (Paxil[®])

If neither of these antidepressants is effective after approximately 8 weeks, consider changing therapy to other antidepressants:

- Venlafaxine (Effexor[®])
- Mirtazepine (Remeron[®])
- Duloxetine (Cymbalta[®])
- Bupropion (Wellbutrin[®])

Other psychotropic medications may have a role, especially in combination with antidepressants. These can include mood stabilizers such as valproic acid (for severe mood lability and general PTSD symptoms), and anti-adrenergic medications such as clonidine (for hyperreactivity, nightmares, and panic symptoms).

Because PTSD is often accompanied by other psychiatric disorders, it may be advisable to consult a psychiatrist for patients with complex psychopharmacological needs.

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Table 8: Depression Screening and Treatment

Screening

Observe, listen, and ask questions about the patient’s mood, level of functioning, energy, motivation, and any work-related or social problems.

Begin with the **Patient Health Questionnaire 2 (PHQ-2)**⁴⁴:

During the past 2 weeks, have you experienced

1. Little interest or pleasure in doing things?
2. Feelings of hopelessness?

If either of the 2 PHQ-2 questions is positive, administer Patient Health Questionnaire 9 (PHQ-9).

Patient Health Questionnaire 9 (PHQ-9)^{42,45}

Over the past 2 weeks, how often have you been bothered by any of the following problems (circle to indicate your answer)?

	Not at all	Several days	More than half the days	Nearly every day	
1. Little interest or pleasure in doing things	0	1	2	3	
2. Feeling down, depressed, or hopeless	0	1	2	3	
3. Trouble falling asleep or staying asleep, or sleeping too much	0	1	2	3	
4. Feeling tired or having little energy	0	1	2	3	
5. Poor appetite or overeating	0	1	2	3	
6. Feeling bad about yourself – or that you are a failure or have let yourself and your family down.	0	1	2	3	
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3	
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	0	1	2	3	
9. Thoughts that you would be better off dead, or of hurting yourself in some way.*	0	1	2	3	
		+ _____	+ _____	+ _____	= _____
				TOTAL	

PHQ-9 Scoring card for Severity Determination^{42,45}

For health care professional use only

Add all numbers on the PHQ-9 circled by the patient.

Not at all = 0, Several days = 1, More than half the days = 2, Nearly every day = 3.

Interpretation of the Total Score

1–4 Minimal depression, 5–9 Mild depression, 10–14 Moderate depression, 15–19 Moderately severe depression, 20–27 Severe depression

* If the response to question 9 on the PHQ-9 is positive, evaluate the patient’s suicide risk (Table 9).

TREATMENT (Table 8 continued)**Psychotherapy**

Psychotherapy is effective for the treatment of depression alone or in combination with medication, and is particularly indicated for patients with milder depression who do not wish to take medication.

Exercise

Aerobic exercise is an effective treatment for mild to moderate depression and is also effective as an adjunct to other treatment modalities for moderate to severe depression.⁴⁶

Pharmacotherapy

SSRIs or other new agents are generally the drugs of first choice in preference to the older, but effective group of tricyclic antidepressants. In contrast to SSRIs and the other new agents, the tricyclic antidepressants can have uncomfortable and dangerous adverse effects and can be lethal in overdose. Possible adverse effects of the SSRIs (and of venlafaxine, duloxetine, and bupropion), especially during the first days of treatment, include feeling jittery, increased anxiety, headache, insomnia, sedation, and sexual problems. Bupropion has a lower incidence of sexual side effects than the other medications listed. Possible side effects of mirtazepine include sedation and weight gain. Monoamine oxidase inhibitors are now rarely prescribed due to adverse reactions and drug/dietary interactions.

SSRIs

Escitalopram (Lexapro[®])
 Citalopram (Celexa[®])
 Fluoxetine (Prozac[®], Prozac[®] Weekly[™])
 Duloxetine (Cymbalta[®])
 Paroxetine (Paxil[®], Paxil CR[®])
 Sertraline (Zoloff[®])

Other New Agents

Bupropion (Wellbutrin[®], Wellbutrin SL[®])
 Mirtazapine (Remeron[®], RemeronSolTab[®])
 Venlafaxine (Effexor[®], Effexor XR[®])

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Table 9: Assess For Suicide Risk

If the response to question 9 on the PHQ-9 is positive, you must evaluate the patient's risk for suicide by assessing their thoughts and plans. Detecting suicidal ideation can be life-saving. Asking patients about suicidal thoughts or plans will *not* initiate suicidal thoughts, planning, or action.

Assess for suicidal thoughts and plans:

"Have you ever felt that life is not worth living?"
 "Did you ever wish you could go to sleep and just not wake up?"
 "Are you imagining that others would be better off without you?"
 "Are you having thoughts about killing yourself?"

Assess for suicide risks including:

- Prior suicide attempts (best indicator of future attempts)
- Psychiatric comorbidity and substance use disorders
- Access to firearms
- Living alone
- Poor social support
- Male and elderly
- Recent loss or separation
- Hopelessness

If the patient is actively thinking of suicide, has made an attempt in the past, or has a plan for another attempt, arrange for mental health consultation as soon as possible, or call 911 for emergency intervention.^{42,43}

Substance Use Disorders

Exposure to stress and trauma may increase the risk of developing substance use disorders or cause relapse. Substance use disorders involve extended overuse of a substance marked by persistent cravings, increased tolerance, and withdrawal symptoms. Use characteristically continues despite resulting serious, persistent, and recurring psychological, physical, and social problems.⁵⁴⁻⁵⁷ During the weeks and months following the WTC attack, there was an increase in cigarette and marijuana use⁵⁸ in NYC adults and a correlation between exposure to the attacks and alcohol dependence.⁵⁹

Substance abuse

Substance abuse is a pattern of use that leads to clinically significant impairment or distress but without the physical dependence or loss of control over intake that characterize addiction. It is manifested by *1 or more* of the following in the same 12-month period:

- Failure to fulfill obligations at work, school, or home as a result of the abuse
- Use in physically hazardous situations (such as driving)
- Recurrent legal problems as a consequence of the abuse
- Continued use despite persistent or recurring social problems

Substance dependence (addiction)

Dependence involves a preoccupation with a substance and diminished control over its consumption. The hallmarks of dependence are *tolerance* and *withdrawal*, and dependence is

manifested by 3 or more of the following in a 12-month period:

- Symptoms of tolerance—using increased amount with the same or diminished effect
- Symptoms of withdrawal after stopping substance use
- Desire and unsuccessful attempts to cut down or control use
- A great deal of time spent engaged in activities needed to obtain the substance
- Neglect or abandonment of work, social, or recreational activities as a result of the use
- Continued use despite health problems and negative social consequences



Table 10: Generalized Anxiety Disorder (GAD) Screening and Treatment

Screening⁵²

Assess symptoms of GAD, level of functional impairment, and the presence of comorbid psychiatric conditions. The newly developed GAD-7 assessment tool can help confirm the diagnosis of GAD.

GAD-7

Over the past 2 weeks, how often have you been bothered by the following problems?

1. Feeling nervous, anxious, or on edge
2. Not being able to stop or to control worrying
3. Worrying too much about different things
4. Trouble relaxing
5. Being so restless that it is hard to sit still
6. Becoming easily annoyed or irritable
7. Feeling afraid as if something awful might happen

	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or to control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3
Total Score _____ = Add Columns	_____	+ _____	+ _____	+ _____

GAD-7 Severity Determination

Add all scores checked by the patient: ≥ 5–9 Mild anxiety ≥ 10–14 Moderate anxiety ≥ 15 Severe anxiety

Treatment

Rule out other possible causes for the symptoms before beginning any form of treatment for GAD.

- Organic causes for anxiety include undiagnosed medical disorders such as hyperthyroidism, arrhythmias, chronic obstructive pulmonary disorders, coronary insufficiency, and pheochromocytoma.
- Medications, as well as drugs such as alcohol, caffeine, nicotine, and cocaine (whether during intoxication or withdrawal), can cause or exacerbate anxiety symptoms.

Psychotherapy^{47,50,60}

Most effective when used in combination with pharmacotherapy, but can be used as the initial treatment for patients with mild GAD.

- Behavioral therapy: to modify the patient’s behavior
- Cognitive therapy: to change unproductive and harmful thought patterns
- Cognitive-behavioral therapy: combination of behavioral therapy and cognitive therapy

- Relaxation therapy: to develop techniques to effectively deal with stress

Pharmacotherapy^{47,50,52,60}

The aim of pharmacotherapy is the management of the anxiety symptoms.

- Antidepressants are effective for GAD (see Pharmacotherapy in Table 8). Escitalopram (Lexapro®), paroxetine (Paxil®), and venlafaxine (Effexor®) are approved by the FDA for the treatment of GAD.
- If needed, anxiolytics (benzodiazepines)* for prompt relief of symptoms:
 - Alprazolam (Xanax®)
 - Clonazepam (Klonopin®)
 - Diazepam (Valium®)
 - Oxazepam (Serax®)
 - Chlordiazepoxide (Librium®)
 - Chlorazepate (Tranxene®)
 - Lorazepam (Ativan®)

*Benzodiazepines have the potential for abuse and dependence when used for more than several weeks.

Use of brand names is for informational purposes only and does not imply endorsement by the New York City Department of Health and Mental Hygiene.

Table 11. Substance Use Screening and Treatment**Screening⁶¹**

Ask the patient about current and past nicotine, alcohol, or other substance use.

CAGE-AID (Adapted to Include Drugs) Test⁶²**Have you ever:**

- Thought you should... **C**ut down your drinking or drug use?
- Become... **A**nnoyed when people criticized your drinking or drug use?
- Felt bad or... **G**uilty about your drinking or drug use?
- Taken an... **E**ye-opener drink or used a drug to feel better in the morning?

YES to 1 or 2 questions = Possible alcohol/drug use problem

YES to 3 or 4 questions = Probable alcohol/drug dependence

Brief Intervention^{61,62}

All patients with possible or probable alcohol or substance abuse should be provided with Brief Intervention. Brief Intervention is a 5-step counseling technique that primary care practitioners can use to help their patients reduce unhealthy drinking.

1. Evaluate the patient's drinking pattern—healthy or unhealthy drinking?
2. Advise patients who have unhealthy drinking habits.
3. Set mutually acceptable goals.
4. Offer advice, information, and treatment referrals and prescribe medication if indicated.
5. Provide regular follow-up and support.

The patient and primary care provider acknowledge the problem and set mutually acceptable goals. The primary care provider offers advice, treatment, referrals (as needed), support, and follow-up (**Resources**).

Treatment^{57,61}

Primary care providers play an important role in creating a treatment plan and supporting the patient in locating the appropriate program, support service, or network. Comprehensive care is critical, including addressing medical needs, monitoring progress, referring or consulting specialists, motivating the patient to change his/her lifestyle, maintaining remission and reducing the risk of relapse.

Detoxification

- May be the first step of treatment, usually lasting several days.
- May include medications to address withdrawal symptoms, appropriate for the substance abused.

Medical treatment

Treat related medical and/or mental health disorders.

Psychotherapy

Prescribe group and/or individual counseling.

Pharmacotherapy for:

- **Alcohol dependence:** Medications to maintain abstinence and to reduce chance of relapse:
 - Naltrexone (ReVia®)
 - Injectable naltrexone (long-acting) (Vivitrol®)
 - Acamprosate (Campral®)
 - Disulfiram (Antabuse®)
- **Opioid dependence:** buprenorphine, methadone, naltrexone for maintenance treatment.

Use of brand names is for informational purposes only and does not imply endorsement by the New York City Department of Health and Mental Hygiene.

Screen patients for problem drinking and substance use with the CAGE-Adapted to Include Drugs (CAGE-AID) test (Table 11).

For patients with unhealthy drinking levels or drug abuse, clinicians should use the Brief Intervention technique:

- **Provide clear, personalized advice about cutting down or abstaining.**
 - Listen reflectively – summarize and repeat what your patient says. Show concern and avoid confrontation – be on your patient's side. When possible, link alcohol/drug use to a specific medical condition.
- **Set mutually acceptable goals – involve your patient.**
 - Patients may be unwilling to abstain from drinking/drug use completely, but may agree to reduce consumption.
- **Offer practical advice, information, and treatment referrals.**
 - Help patients identify drinking/drug use triggers and

practical ways to cope. Common triggers include job stress, money worries, chronic illness, family problems, depression, anxiety, and social isolation.

- **Prescribe medication if indicated.**
 - Three medications – naltrexone, acamprosate, and disulfiram – have been approved for the treatment of alcohol dependence. Buprenorphine, methadone, and naltrexone are effective treatments for opioid dependence.
- **Provide regular follow-up to support efforts to reduce or stop drinking or abusing drugs.**
 - Three or 4 follow-up visits (or a combination of visits and phone support) increase effectiveness of brief intervention.⁶³ Brief counseling may be further reinforced by visits with or phone calls from health educators, nurse practitioners, physician assistants, alcohol counselors, and others.

Patients with substance use disorders require ongoing care: monitoring, intervention, relapse-prevention, and referrals to

improve treatment outcome. Relapse is common. Exposure to stress increases cravings and therefore the likelihood of a relapse.⁶⁴ Treatment planning should support the patient by addressing acute medical needs, monitoring progress, consulting specialists or referring the patient to specialists, and motivating the patient to make lifestyle changes.

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SUMMARY

Five years after the terrorist attacks, New Yorkers and others throughout the country still experience WTC-associated physical and mental illness. All providers can play an important role in evaluating and treating these illnesses. Primary care providers can address mental health problems when evaluating patients for respiratory ailments and other health problems.

These guidelines supply information to suspect, diagnose, treat, and, if necessary, refer patients for additional evaluation and treatment. However, the guidelines do not consider all WTC-associated illnesses, and providers should monitor the literature as more information on WTC-associated disease becomes available. ♦



WTC Registry Resource Guide: www.nyc.gov/html/doh/html/wtc/wtc-resource.pdf

References Available Online: www.nyc.gov/html/doh/downloads/pdf/chi/chi25-7-ref.pdf



City Health Information

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MANAGEMENT OF WTC-ASSOCIATED ILLNESSES

Physical and mental health problems in people exposed to the disaster are often interrelated and require coordinated evaluation and treatment.

FIGURE 1

The algorithm provides guidance for diagnosis, treatment, management, and potential points of referral to a World Trade Center monitoring or treatment program, or to another specialist (eg, otolaryngologist, pulmonologist, cardiologist, radiologist, or gastroenterologist). Often, two or more conditions coexist and these conditions must be treated simultaneously to improve or resolve the cough.¹⁸

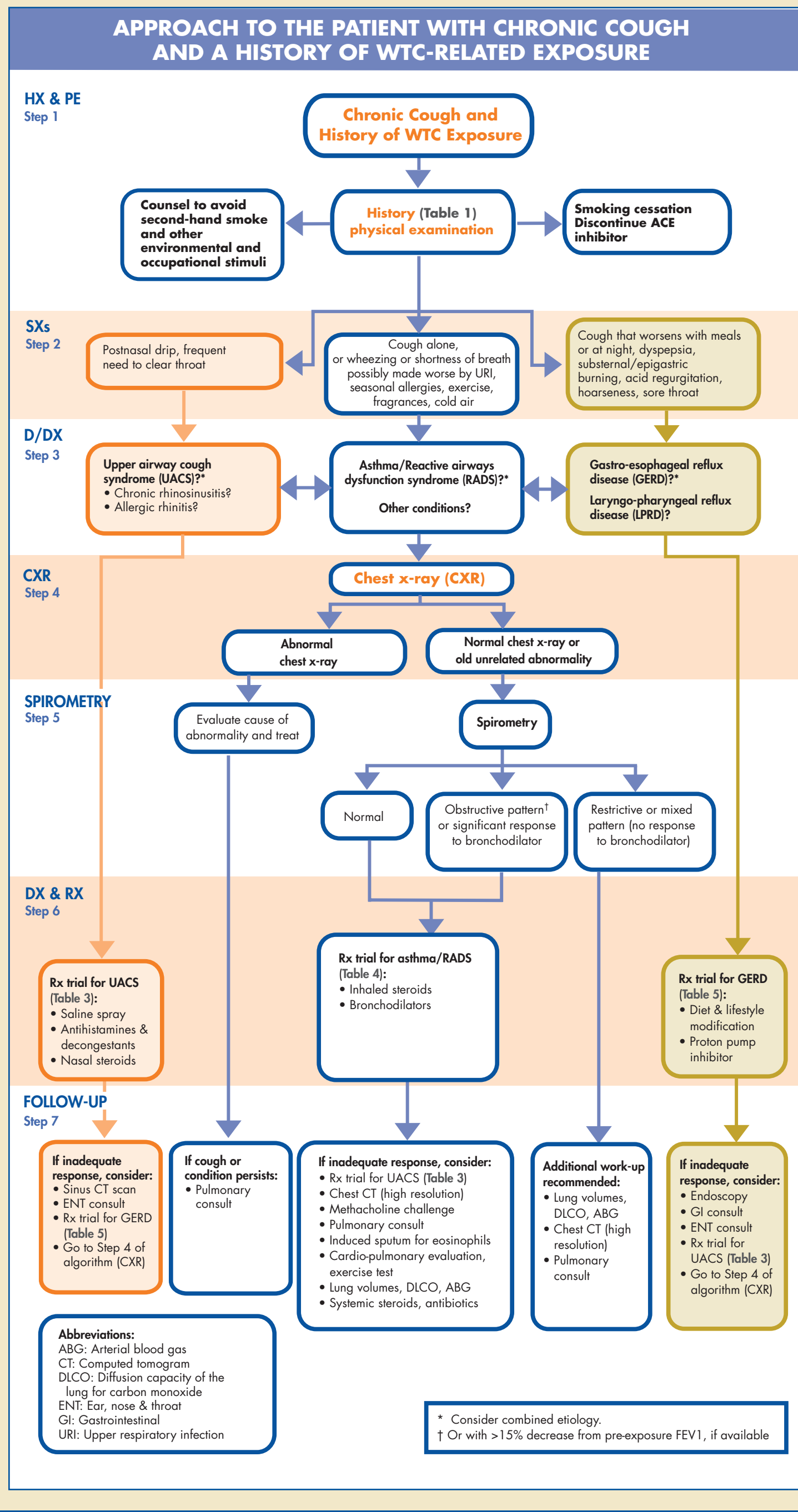
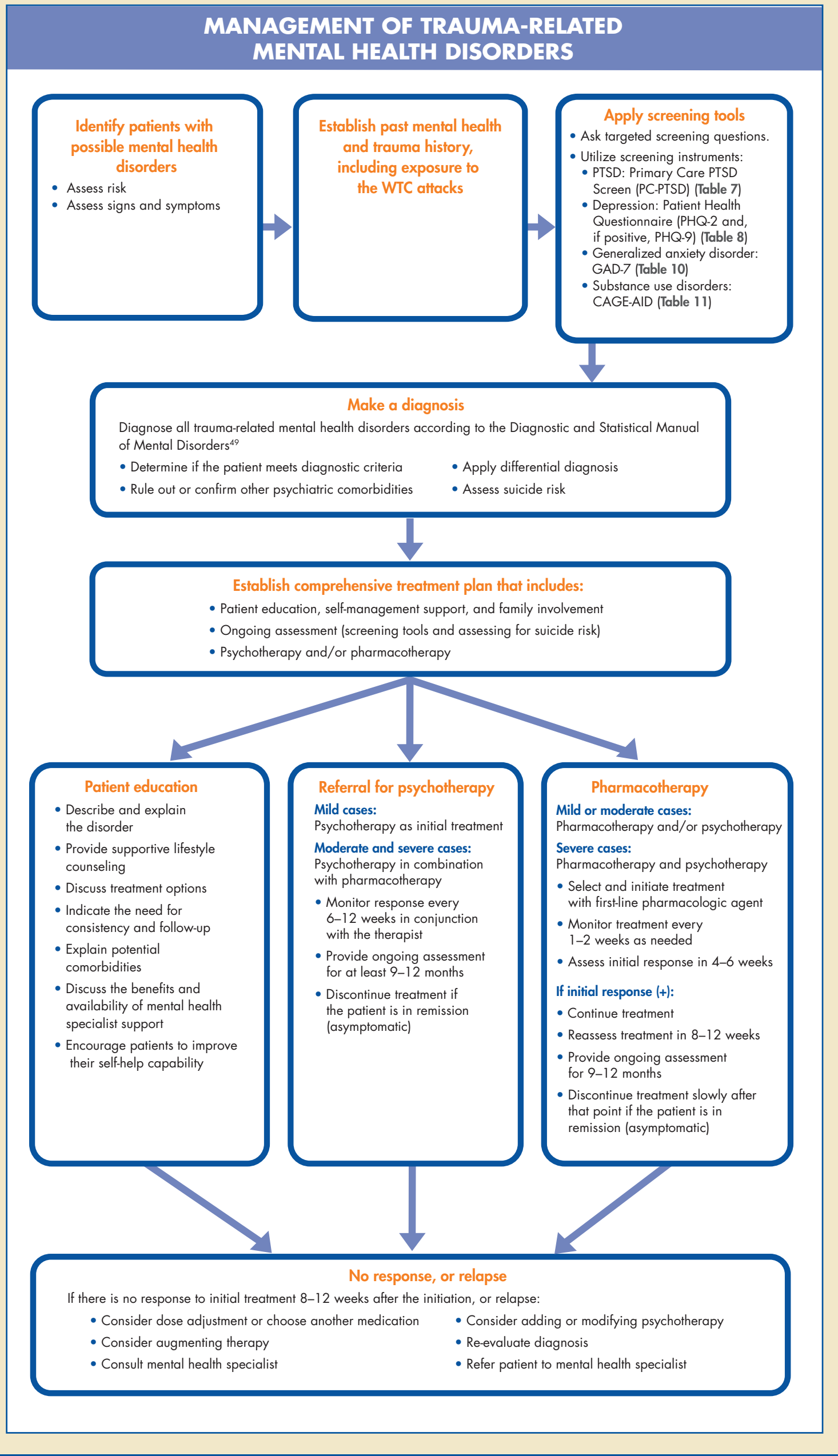


FIGURE 2

The algorithm provides a guide for primary care practitioners to establish a management plan for identifying, screening, diagnosing, treating, and referring patients with mental health disorders related to the WTC disaster and other trauma exposures. Primary care providers should consult a mental health specialist as needed for diagnosing, devising, and implementing a treatment plan. Referral to a specialist should be considered when:

- The patient prefers it.
- Special treatment is required.
- The patient has other psychiatric conditions or severe psychosocial problems.
- The diagnosis is unclear or the symptoms are severe.
- There is no significant improvement or there has been a relapse.
- Patient has suicidal/homicidal thoughts or behavior.
- There is little or no improvement after treatment.



MEDICAL RESOURCES

MEDICAL MONITORING AND TREATMENT PROGRAMS (offering free or need-based services)

For rescue, recovery, and clean-up workers, and volunteers:
WTC Medical Monitoring and Treatment Program
 This program is a consortium of providers, including: Bellevue Hospital, Mt. Sinai Medical Center, Nassau County University Medical Center, Queens College Ground Zero Health Watch, SUNY-Stony Brook, UMDNJ-Robert Wood Johnson University Hospital, and other providers nationwide. (888) 702-0630, (212) 241-1554
www.wtcexams.org

For FDNY rescue and recovery workers:
FDNY WTC Medical Monitoring and Treatment Program
 (718) 999-1858
 Email: wimed@fdny.nyc.gov or go to: www.nyc.gov/html/fdny/html/emp_resources/health_connections/2005/dec05.shtml

For residents, clean-up, and other workers:
Bellevue Hospital WTC Health Impacts Treatment Program
 via Beyond Ground Zero Network at (212) 358-0295

For residents and workers (medical screening examinations only):
Charles B. Wang Community Health Center, Inc.
 (212) 966-0461 for general information
 (212) 379-6996 for an appointment
www.cbwchc.org

For federal employees (medical screening examinations only):
WTC Federal Responder Medical Screening Program
 (866) 214-2040
<https://wtcophep.rti.org>

PEDIATRICS

For pediatric (but not WTC-specific) guidelines:
American Academy of Pediatrics
www.aap.org/topics.html

WORKERS COMPENSATION

For workers compensation information:

- To report a work-related illness, call: (888) 800-0029 or go to: www.wcb.state.ny.us
- For information on the change in New York State legislation that extends the filing deadline, go to: www.ny.gov/governor/press/06/0814061.html

REGISTRIES

NY State Cancer Registry
 The New York State Department of Health is phasing in physician reporting of cancers diagnosed and/or treated in ambulatory settings (eg, melanoma or prostate cancer). For cancer reporting forms, call: (518) 474-2255.

NY State Occupational Lung Disease Registry
 For occupational lung disease reporting forms, call: (866) 807-2130 or go to: www.health.state.ny.us/nysdoh/lung/lung.htm

WTC-REGISTRY RESOURCE GUIDE

For updated resources available, go to: www.nyc.gov/html/doh/html/wtc/wtc-resource.pdf (Includes information about accessing WTC experts for physician consultation)

MENTAL HEALTH RESOURCES

LIFENET

• NYC DOHMH 24-hour, 7-days-a-week crisis hotline and information and referral network
 English: (800) LIFENET/(800) 543-3638
 Spanish: (877) AYUDESE/(877) 298-3373
 Chinese (Asian LifeNet): (877) 990-8585
 Other languages: (800) LIFENET/(800) 543-3638
 TTY hard of hearing: (212) 982-5284
www.mhooftmhc.org/2lifenet.html

9/11 Mental Health and Substance Abuse Program

• Financial assistance for mental health or substance abuse programs
 (800) LIFENET
www.9-11mentalhealth.org

American Psychiatric Association, APA Answer Center

• Referral to a local psychiatrist
 (888) 35-PSYCH
www.healthyminds.org/locatepsychiatrist.cfm

American Psychological Association

• Telephone and online psychologist locator service
 (800) 964-2000
www.apahelpcenter.org

New York State Office of Alcoholism and Substance Abuse Services (OASAS)

(800) 522-5353
www.oasas.state.ny.us

Substance Abuse and Mental Health Services Administration

• National Drug and Alcohol Treatment Referral Routing Service
 (800) 662-HELP/(800) 662-4357
www.findtreatment.samhsa.gov

Alcoholics Anonymous (AA) World Services, Inc.

(212) 870-3400
www.aa.org

National Institute on Alcohol Abuse and Alcoholism (NIAAA)

(301) 443-3860
www.niaaa.nih.gov