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Workers' Compensation Board

January 13, 2022

New York Workers' Compensation Medical Treatment Guidelines for Occupational/ Work Related Asthma Training Module

A Training Module Developed by the Medical Director's Office

Occupational/Work-Related Asthma Training Module

Medical Care

- Medical care and treatment required as a result of a work-related injury should be focused on restoring the patient's functional ability to perform their daily and work activities with a focus on return to work, while striving to restore the patient's health to its pre-injury status in so far as is feasible.
- Any medical provider rendering services to a workers' compensation patient must utilize the Workers' Compensation Board's *New York Medical Treatment Guidelines (MTGs)* as provided for with respect to all work-related injuries and/or illnesses.

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- Positive results are defined primarily as functional gains that can be objectively measured. Objective functional gains include, but are not limited to, positional tolerances, range of motion, strength, endurance, activities of daily living (ADL), cognition, psychological behavior, and efficiency/velocity measures that can be quantified. Subjective reports of pain and function may be considered and given relative weight when the pain has anatomic and physiologic correlation in proportion to the injury.

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- If a given treatment or modality is not producing positive results within a well-defined time frame, the provider should either modify or discontinue the treatment regime. The provider should evaluate the efficacy of the treatment or modality two to three weeks after the initial visit and three to four weeks thereafter. These time frames may be slightly longer in the context of conditions that are inherently mental health issues, and shorter for other non-musculoskeletal medical conditions (e.g., pulmonary, dermatologic etc.). Recognition that treatment failure is at times attributable to an incorrect diagnosis, a failure to respond should prompt the clinician to reconsider the diagnosis in the event of an unexpected poor response to an otherwise rational intervention.

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- Education of the patient and family, as well as the employer, insurer, policy makers and the community, should be a primary emphasis in the treatment of a work-related injury or illness. Practitioners should develop and implement effective educational strategies and skills. An education-based paradigm should always start with communication providing reassuring information to the patient. No treatment plan is complete without addressing issues of individual and/or group patient education as a means of facilitating self-management of symptoms and prevention of future injury.

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- **Acuity**
  - Acute, subacute and chronic are generally defined as time frames for disease stages:
    - Acute – Less than one month
    - Subacute – One to three months, and
    - Chronic – Longer than three months

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Time Frames

- Diagnostic time frames for conducting diagnostic testing commence on the date of injury.
- Treatment time frames for specific interventions commence once treatments have been initiated, not on the date of injury.
- Clinical judgment may substantiate the need to accelerate or decelerate the time frames discussed in this training module.
- Specific durations of treatments and number of treatment visits (e.g., physical therapy/occupational therapy (PT/OT)) are beyond the scope of this training module and the provider should refer to the recommendations in the *MTGs*.

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Delayed Recovery

- For those patients who fail to make expected progress 6-12 weeks after an injury and whose subjective symptoms do not correlate with objective signs and tests, reexamination in order to confirm the accuracy of the diagnosis and reevaluation of the treatment program should be performed. When addressing a clinical issue that is not inherently a mental health issue, assessment for potential barriers to recovery (yellow flags/psychological issues) should be ongoing throughout the care of the patient. At 6-12 weeks, alternate treatment programs, including formal psychological or psychosocial evaluation should be considered. Clinicians must be vigilant for any pre-existing mental health issues or subsequent, consequential mental health issues that may be impacting recovery.

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Delayed Recovery

- For issues that are clearly and inherently mental health issues from the outset (i.e., when it is evident that there is an underlying, work-related, mental health disorder as part of the claim at issue), referral to a mental health provider can and should occur much sooner. Referrals to mental health providers for the evaluation and management of delayed recovery do not indicate or require the establishment of a psychiatric or psychological condition. The evaluation and management of delayed recovery does not require the establishment of a psychiatric or psychological claim.

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Active Interventions

- Active interventions emphasizing patient responsibility, such as therapeutic exercise and/or functional treatment, are generally emphasized over passive modalities, especially as treatment progresses. Generally, passive and palliative interventions are viewed as a means to facilitate progress in an active rehabilitation program with concomitant attainment of objective functional gains.

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Diagnostic Imaging and Testing Procedures

- Clinical information obtained by history taking and physical examination should be the basis for selection of imaging procedures and interpretation of results.
- It may be of value to repeat diagnostic procedures (e.g., imaging studies) during the course of care to reassess or stage the pathology when there is progression of symptoms or findings, prior to surgical interventions and therapeutic injections when clinically indicated, and post-operatively to follow the healing process.

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Surgical Interventions

- Consideration of surgery should be within the context of expected functional outcome. The concept of "cure" with respect to surgical treatment by itself is generally a misnomer. All operative interventions must be based upon positive correlation of clinical findings, clinical course, imaging, and other diagnostic tests.

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Surgical Interventions

- For surgery to be performed to treat pain, there must be clear correlation between the pain symptoms and objective evidence of its cause. In all cases, shared decision making with the patient is advised.

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Pre-Authorization

- All diagnostic imaging, testing procedures, non-surgical and surgical therapeutic procedures within the criteria of the *MTGs* and based on a correct application of the *MTGs* are considered authorized, with the exception of the procedures listed in section 324.3(1)(a) of Title 12 NYCRR.

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Pre-Authorization

- Second or subsequent procedures (the repeat performance of a surgical procedure due to failure of, or incomplete success from, the same surgical procedure performed earlier, if the *MTGs* do not specifically address multiple procedures) also require pre-authorization.

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Personality/Psychological/Psychosocial Evaluations

- In select patients, mental health evaluations are essential to make, secure or confirm a diagnosis. Of course, the extent and duration of evaluations and/or interventions by mental health professionals may vary, particularly based on whether: the underlying clinical issue in the claim is inherently a mental health issue; there is a mental health issue that is secondary or consequential to the medical injury or illness that is at issue in the claim in question; or there is a pre-existing, unrelated mental health issue that has been made worse by, and/or is impeding the recovery from the medical injury or illness that is at issue in the claim in question.

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Personality/Psychological/Psychosocial Evaluations

- When assessing for a pre-existing, unrelated mental health issue that has been made worse by and/or is impeding the recovery from a work-related, medical injury or illness, then a one-time visit for initial psychiatric/psychological encounter should be sufficient, as care would normally be continued by the prior treating provider.
- If psychometric testing is indicated by findings in the initial encounter, time for such testing should not exceed an additional three hours of professional time.

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- **Personality/Psychological/Psychosocial Evaluations**
  - For conditions in which a mental health issue is a central part of the initial claim, or in which there is a mental health issue that is secondary or consequential to the work-related, medical injury or illness, that is part of the claim in question, then more extensive diagnostic and therapeutic interventions may be clinically indicated and are discussed in detail in the *MTGs* for such mental health conditions.

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Functional Capacity Evaluation (FCE)

- Functional capacity evaluation is a comprehensive or more restricted evaluation of the various aspects of function as they relate to the patient's ability to return to work.
  - In most cases, the question of whether a patient can return to work can be answered without an FCE.
  - An FCE may be considered at time of maximum medical improvement (MMI), following reasonable prior attempts to return to full duty throughout course of treatment, when the treating physician is unable to make a clear determination on work status on case closure. An FCE is not indicated early during a treatment regime for any reason including one to support a therapeutic plan.

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Functional Capacity Evaluation (FCE)

- When an FCE is being used to determine return to a specific job site, the treating provider is responsible for understanding and considering the job duties. FCEs cannot be used in isolation to determine work restrictions. The authorized treating provider must interpret the FCE in light of the individual patient's presentation and medical and personal perceptions. FCEs should not be used as the sole criteria to diagnose malingering.

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- **Functional Capacity Evaluation (FCE)**
  - An FCE may be considered at time of MMI, following reasonable prior attempts to return to full duty throughout the course of treatment, when the treating provider is unable to make a clear determination on work status on case closure.

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Return To Work

- For purposes of the *MTGs*, return to work is defined as any work or duty that the patient is able to perform safely. It may not be the patient's regular work. Ascertaining a return-to-work status is part of medical care and should be included in the treatment and rehabilitation plan. It is normally addressed at every outpatient visit.

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Return To Work

- A description of the patient's status and task limitations is part of any treatment plan and should provide the basis for restriction of work activities when warranted. Early return to work should be a prime goal in treating occupational injuries. The emphasis within the *MTGs* is to move patients along a continuum of care and return to work, since the likelihood of returning an injured worker to work drops progressively the longer the worker has been out of work.

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Return To Work

- When returning to work at the patient's previous job task/setting is not feasible given the clinically determined restrictions on the patient's activities, inquiry should be made about modified duty work settings.

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- The NY WC MTG for Occupational/Work Related Asthma address common and potentially work-related asthma injuries. It encompasses assessment (including identification of indicators of potentially-serious injury or disease); diagnosis; diagnostic studies for identification of clinical pathology; work-relatedness; and management, including modified duty and activity, return to work, and an approach to delayed recovery.

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History Taking and Physical Examination

- History taking and physical examination establish the foundation/basis for and dictate subsequent stages of diagnostic and therapeutic procedures. When findings of clinical evaluations and those of other diagnostic procedures are not consistent with each other, the objective clinical findings should have preference.

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History of Present Injury

- **Mechanism of injury**: This includes details of symptom onset and progression, and symptoms that may arise from postural or functional accommodation to asthma
- **Relationship to work**: This includes a statement of the probability that the illness or injury is work-related;
- **Prior occupational and non-occupational injuries**: To the same area including specific prior treatment;
- **Functional abilities**: Ability to perform job duties and activities of daily living; and
- **Additional factors**: Exacerbating and alleviating factors for symptoms.

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Past History

- Past medical history includes, but is not limited to, neoplasm, gout, arthritis, and diabetes;
- Review of systems includes, but is not limited to, symptoms of rheumatologic, neurologic, endocrine, neoplastic, and other systemic diseases;
- Smoking history;
- Vocational and recreational pursuits;
- Prior imaging studies; and
- Past surgical history.

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Physical Examination

- Physical examination should include accepted tests and exam techniques applicable to the joint or area being examined, including:
  - Visual inspection; palpation; strength; neurologic assessment.

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Assessing Red Flags

- Certain findings red flags—suspicions of potentially serious medical conditions. In occupational/work related asthma, these findings or indicators may include: infection or inflammation, tumor, neurological or vascular compromise including. Further evaluation/consultation or urgent/emergency intervention may be indicated, and the NY WC MTG for Occupational/Work Related Asthma incorporates changes in clinical management triggered by the presence of these red flags.

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Diagnostic Testing and Procedures

- One diagnostic imaging procedure may provide the same or distinctive information as obtained by other procedures. Therefore, prudent choice of procedure(s) for a single diagnostic procedure, a complementary procedure in combination with other procedures(s), or a proper sequential order in multiple procedures will ensure maximum diagnostic accuracy, minimize adverse effect to patients and promote cost effectiveness by avoiding duplication or redundancy.

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Diagnostic Testing and Procedures

- When a diagnostic procedure, in conjunction with clinical information, provides sufficient information to establish an accurate diagnosis, a second diagnostic procedure will be redundant if it is performed only for diagnostic purposes. At the same time, a subsequent diagnostic procedure can be a complementary diagnostic procedure if the first or preceding procedures, in conjunction with clinical information, cannot provide an accurate diagnosis.

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Diagnostic Testing and Procedures

- It is recognized that repeat imaging studies and other tests may be warranted by the clinical course and to follow the progress of treatment in some cases. It may be of value to repeat diagnostic procedures (e.g. imaging studies) during the course of care to reassess or stage the pathology when there is progression of symptoms or findings, prior to surgical interventions and therapeutic injections when warranted, and post-operatively to follow the healing process.

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Work-Related Asthma

- Work-related asthma (WRA) presents with symptoms of asthma that begin or become worse at work, usually in the context of exposure to a new chemical or environmental change. WRA includes both occupational asthma (OA,) and work- exacerbated asthma (WEA).

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Occupational Asthma

- OA includes sensitizer-induced asthma, resulting from sensitization to an antigen in the workplace, and irritant-induced asthma, resulting from reactive airways disease, which has been provoked by workplace exposures to irritants. Each has the potential for considerable acute morbidity, long-term disability, and adverse social and economic impacts.

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Occupational Asthma

- OA is defined as new onset asthma in the workplace and can be caused by exposure to either a workplace sensitizer or an irritant. OA is further classified into OA with latency and OA without latency.

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Occupational Asthma with Latency

- OA with latency is seen in all instances of immunologically (sensitizer) mediated asthma.
- Sensitizers are agents that initiate an allergic (immunologic) response.
- The latency period, which represents the time between the first exposure and the development of symptoms, can vary from weeks to years. It reflects the time for induction of an immunological response to the workplace allergen.

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Occupational Asthma with Latency

- There is typically a latency period of at least a few months between first exposure and becoming sensitized, leading to asthma symptoms during re-exposure.
- Sensitizers are divided into high molecular and low molecular weight chemicals.

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Occupational Asthma with Latency

- This distinction helps define typical mechanism of asthma, symptoms and latency.
- Prolonged exposure to low-level irritants can also result in OA with latency.

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Occupational Asthma without Latency

- Irritant exposure (gases, fumes, vapors and aerosols) is an inflammatory, not an allergic response.
- OA without latency can occur after exposure to irritant gas, fumes, or chemicals, such as nitrogen oxide, ammonia, and chloride.

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Work-Exacerbated Asthma

- WEA occurs in individuals with existing/concurrent asthma that worsens because of specific workplace exposures to irritants such as gases, fumes, vapors, aerosols, allergens, physical conditions.

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Signs and Symptoms of Work-Related Asthma

- Asthma is primarily a disease of airway inflammation and reactivity.
- The cardinal symptoms of asthma are:
  - Episodic shortness of breath, wheezing, and cough.
- Compared to the predominant symptoms of bronchitis, which are:
  - Cough and sputum production.

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Diagnosis of Work-Related Asthma

- Specialized pulmonary history and diagnostic history is required for a diagnosis work-related asthma.
- The American College of Chest Physicians published the following criteria in 1995 for establishing a diagnosis of WRA, all of which are required:

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Diagnosis of Work-Related Asthma

- A history compatible with work-related asthma,
- Presence of airflow limitation and its reversibility,
- In the absences of airflow limitation, the presence of nonspecific airway hyperresponsiveness, and
- Demonstration of work-relatedness of asthma by objective means.

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Diagnosis of Work-Related Asthma

- For further information on the criteria see https://doi.org/10.1378/chest.108.4.1084

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History Taking and Physical Examination

- Occupational exposure history, presentation, and diagnostic screening test results form the foundation for diagnosis and treatment plans.

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History of Present Illness

- The history of present illness should document:
  - Occupational and non-occupational pulmonary exposures.
  - Occupation: Current/past and types of work activities (e.g., bakers and food processors, dock workers, veterinarians and laboratory workers, chemical, jewelry and alloy production workers).
  - Time spent at each job, including jobs held years to decades in the past.

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History of Present Illness

- The history of present illness should document exposures to:
  - Dusts: Grains, flours and wood.
  - Metals: Platinum salts, aluminum.
  - Chemicals or substances exposure: Gases, fumes, vapors (especially ammonia, isocyanates, solvents), smoke and aerosols.
  - History of exposure should include non-occupational exposures to these agents with a description of exposure, duration of exposure, and intensity of exposure.

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History of Present Illness

- The history of present illness should document:
  - Intensity of exposure: Ideally with environmental measurements (industrial hygiene data) or at least a qualitative description of intensity of exposure, e.g., daily, weekly, monthly, yearly, etc.
  - Questions detailing the individual's responsibilities and exposure (e.g., did you work in the office, etc.).

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History of Present Illness

- Should note:
  - Aggravation and alleviation of symptoms in relationship to work environment.
  - Changes in work environment.
  - Changes in symptoms in relation to days worked and not worked (especially improvements on weekends or holidays when not at work) and progression of symptoms.
  - Seasonal pattern to the symptoms.

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History of Present Illness

- The history of present illness should document:
  - If symptoms began after a one-time, high-level workplace inhalation exposure to an irritant gas, fume, smoke, vapor or aerosol.
  - Pulmonary imaging and testing. Previous treatments.
  - Relationship to work: This includes a statement of the probability that the illness or injury is work-related.
  - Workplace history of room size, ventilation and current and past use of any personal protective equipment (PPE).

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History of Present Illness

- Including but not limited to:
  - Prior pulmonary exposures and treatments (include childhood asthma, prone to bronchitis, hay fever, eczema and pneumonia).
  - Detailed smoking history (including marijuana, vaping, etc.).
  - Detailed medication history including use of pulmonary medications, angiotensin converting enzyme inhibitor and beta-blockers.
  - Vocational and recreational pursuits.

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Physical Exam

- An occupational pulmonary physical examination should include the following elements:
  - Vital signs, including measured respiratory rate, O2 saturation.
  - Overall functional abilities, including ease of movement, walking and changing positions, dressing and undressing while assessing signs and symptoms of dyspnea.
  - Assessment of respiratory status (e.g., rate, depth, use of accessory muscles, nasal flaring).

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Physical Exam

- Inspection for stigmata of pulmonary disease as well as potential etiologies including:
  - Mucous membrane abnormalities
  - Nasal polyps/swelling/discharge
  - Clubbing
  - Anterior-posterior chest diameter
- Palpation for:
  - Chest wall abnormalities
  - Adenopathy and neck masses
- Percussion for resonance to identify:
  - Aeration
  - Diaphragm level
  - Suggestion for fluid interface or consolidation

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Physical Exam

- Auscultation for:
  - Inspiration to expiration ratio.
  - Adventitious breath sounds (crackles, wheeze, rales, rhonchi).
  - Pleural rubs, as well as timing, location and persistence of lung findings.
- Cardiac examination with attention to findings of cor pulmonale and heart failure.
- Dermal examination for signs of disease (i.e., erythema nodosum (Sarcoidosis)).
- Cardiac examination with attention to findings of cor pulmonale and heart failure.

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Exposure Assessment

- Typically includes the Material Safety Data Sheet as the initial source of information.

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Exposure Assessment

- Should include:
  - All known exposures in any environment to any chemicals or substances including gas, fumes, vapors, dusts, and aerosols, particularly known or suspected asthmagens.
  - Workplace history of room size, ventilation, current and past use of personal protective equipment, other co-worker reports, exhaust hoods, remodeling, recent change in processes, and industrial hygiene reports (if available).

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Exposure Assessment

- Environmental history:
  - Exposures outside the workplace are also important to evaluate and document. Patients should be queried regarding primary place of residence, its age, location, type, remodeling history, heating, ventilation, flooring, and past water damage. Hobbies such as automobile repair, woodworking, photography, ceramics, and gardening may expose individuals to agents that can cause or exacerbate asthma.

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Diagnostic Testing

- Spirometry in Work-Related Asthma
  - Spirometry testing is an essential component in the evaluation and management of persons with possible WRA. Spirometry with or without bronchodilator administration has four distinct potential roles when WRA is a concern.

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Diagnostic Testing

- Spirometry in Work-Related Asthma
  - Determining whether asthma is present.
  - Exclude other “asthma-like” conditions.
  - If asthma is present, helping inform the conclusion about whether the asthma is work related.
  - Monitoring response to therapy (and possible return to work).

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Diagnostic Testing

- Spirometry
  - **Recommended** – As an initial evaluation method for diagnosing WRA.
  - Spirometry can be done alone or with pre- and post-bronchodilator testing.
  - Spirometry with bronchodilator is an essential test for the evaluation of pulmonary function and would be performed in most cases.

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Diagnostic Testing

- Spirometry
  - Spirometry with or without bronchodilator cannot differentiate occupational asthma from non-occupational asthma, and must be interpreted with additional information from the history or supplemental testing.
  - Failure to demonstrate reversible airway obstruction on a single test day does not exclude the diagnosis of asthma or of airways reactivity in general.

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Diagnostic Testing

- Spirometry
  - For a full discussion on the use of spirometry in occupational/work-related asthma see the NY WC MTG.
  - Note: The American Thoracic Society and European Respiratory Society (ATS/ERS) have published statements on how to conduct and interpret spirometry. OSHA has also recently issued guidance on best practices for occupational spirometry testing.

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Diagnostic Testing

- Peak Expiratory Flow (Rate)
  - Peak expiratory flow rate (PEFR) is defined as the maximum flow achieved during expiration, delivered with maximal force, starting from the level of maximum inspiration and using simple portable meters. Serial PEFR measures the circadian rhythm, which has lower values in the early hours of the morning and maximal in the afternoon. The differences are more pronounced in individuals with bronchial asthma. PEFR must be performed by the patient outside of a medical setting to be useful in evaluation of occupational asthma. PEFR can be easily obtained both at and away from work to document presence or absence of changes in flow that are potentially related to the work-place environment or exposures.

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Diagnostic Testing

- Peak Expiratory Flow
  - **Recommended** – Serial measures for confirming a diagnosis of work-related asthma, in patients already diagnosed with asthma by other methods. The patient should be trained on the proper use of the meter and the importance of accurate recordings.

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Diagnostic Testing

- Peak Expiratory Flow
  - Serial PEFR (at and away from work) is recommended as an initial method for investigating suspected OA and WRA. It is desirable to initiate serial PEFR early in the evaluation of WRA when patients are more likely to still be exposed to a putative cause of asthma. Serial peak expiratory flow measures may add information on airway resistance both at work and at home and are thus recommended.

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Diagnostic Testing

- Non-Specific Bronchial Provocation Test
  - Bronchoprovocation with methacholine, histamine, cold air, or exercise challenge is used to establish the diagnosis of asthma, particularly when asthma is suspected and spirometry is normal or near normal.
  - Methacholine and histamine challenges are the most commonly available tests. Methacholine is preferred to histamine because it is associated with fewer side effects.

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Diagnostic Testing

- Non-Specific Bronchial Provocation Test
  - **Recommended** – For use (e.g., methacholine) in diagnosing asthma if the clinical history is compelling and other tests (spirometry and bronchodilator responsiveness) are unhelpful.
  - **Recommended** – For use (e.g., methacholine) in diagnosing WRA as other steps are required to establish the work-relatedness of the asthma.

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Diagnostic Testing

- Non-Specific Bronchial Provocation Test
  - Criteria and Standards for Use – Bronchial challenge testing should be done according to the 1999 ATS statement and the 1993 European Respiratory Society statement (updated 2008) https://journal.chestnet.org/article/S0012-3692(08)60285-8/abstract

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Diagnostic Testing

- Mannitol Bronchial Provocation Test
  - **Not Recommended** – For use in diagnosing WRA; other steps are required to establish the work-relatedness of the asthma.

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Diagnostic Testing

- Specific Immunological Testing
  - Specific immunological testing to suspected allergens is commonly used to aid in the diagnosis of allergic rhinitis and OA. These tests are performed to evaluate type I (IgE) hypersensitivity reactions to specific allergens, and can be useful in the diagnosis of certain cases of OA caused by immune or allergic mechanisms, in contrast to irritant-induced asthma.

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Diagnostic Testing

- Specific Immunological Testing
  - However, the presence of specific antibodies is an indicator of an immune response, and does not necessarily have a causal relationship with occupational asthmatic symptoms. Hence, demonstration of sensitization to an occupational agent by specific IgE and/or skin testing alone, without demonstrating the work-relatedness of the asthma, is insufficient to establish a diagnosis of OA.

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Diagnostic Testing

- Skin Prick Testing
  - Detection of IgE to a specific allergen is accomplished by skin prick testing (SPT), and serum IgE testing when kits are available for the specific allergen.

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- The sensitizing agents known to induce OA are traditionally divided into high molecular weight (HMW) and low molecular weight (LWM) antigens.

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- **Examples of HMW asthmagens include:**
  - Proteins of biological origin, such as laboratory animals.
  - Enzymes used in the detergent or food industries.
  - Grain proteins found in bakeries.
  - Natural rubber latex proteins.

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- **HMW asthmagens (continued)**
  - Such proteins are considered complete allergens, capable of causing the elaboration of specific IgE antibodies.
  - IgE specific immunological testing for high molecular weight specific antigens
  - **Recommended** – For workers with symptoms consistent with OA to certain high molecular weight specific allergens and when standardized antigens and assay protocols exist.

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- **IgG Specific Immunological Testing for High Molecular Weight Specific Antigens**
  - **Not Recommended** – As a diagnostic tool for select workers with symptoms consistent with occupational asthma to high molecular weight specific allergens.

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Low molecular weight (LMW) Agents

- Low molecular weight (LMW) agents become allergenic only after binding with one or more autologous serum, epithelial, or tissue proteins.
- Examples of common LMW agents include:
  - Diisocyanates
  - Colophony fume, liberated from cored solder in the electronics industry
  - Complex platinum salts; and
  - The family of acid anhydrides, which are common constituents in the manufacturing of resins.

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IgE Specific Immunological Testing for Low Molecular Weight Specific Antigens

- **Not Recommended** – For workers with symptoms consistent with OA to LMW specific allergens.
- The majority of LMW antigens do not have commercial assays that have been validated for specific antibody testing.

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Diagnostic Testing

- Skin Prick Testing
  - Skin tests are used, in addition to a directed history and physical exam, to exclude or confirm sensitization in IgE-mediated diseases, including asthma.
  - Skin prick tests are available for both high and low molecular weight allergens and are recommended for select workers.

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Diagnostic Testing

- Skin Prick Testing
  - **Not Recommended** – When specific allergens have not been evaluated in quality studies with reported specificity and sensitivity, skin prick testing for these allergens cannot be recommended.
  - **Not Recommended** – If suspected cause is non-allergenic.

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Diagnostic Testing

- Specific Inhalation Challenge
  - **Recommended** – For use in diagnosing WRA with latency for highly select cases, where the diagnosis of OA is highly suspected, but has not been established by less invasive means. This testing should only be performed in appropriately equipped facilities, with direct medical supervision throughout the testing. Note: These tests may have serious complications that include fatalities.

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Diagnostic Testing

- Nitric Oxide (Fractional Exhaled Nitric Oxide (FENO))
  - This test has very specific parameters for use that are beyond the scope of this training. The full NY WC MTG should be consulted regarding the use of this test.

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Management of Occupational Asthma

- The goal of OA treatment is to minimize asthma exacerbations by reducing work exposures (e.g., by limiting sources of exposure, improving ventilation) and optimizing standard medical management with non-work environmental control measures and pharmacologic treatment. The patient may be able to stay at the same job with reduced exposures, depending on the severity of asthma and extent of exacerbating factors at work, but a job change to a workplace with fewer triggers may be necessary if this approach fails to adequately prevent work-related exacerbation of symptoms.

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Management of Occupational Asthma

- The medical management of OA includes measures aimed at early diagnosis and early avoidance of further exposure, either by relocation of the worker or substitution of the hazard, as these offer the best chance of avoiding further jeopardizing of the asthmatic condition.
- The pharmacologic management of occupational asthma is similar to that used for other forms of asthma and should follow well-recognized and published medical guidelines. Patients with sensitizer-induced OA should be removed from further exposure to the causative agent in addition to providing other asthma management.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- If medical removal of an injured worker is not possible, exposure should be minimized to as low as possible by means of worker relocation. Relocated workers should have increased medical surveillance to demonstrate the absence of worsening of disease. Workers with OA may still deteriorate even with low exposure to the causative agent. Worsening of the disease in these circumstances should prompt recommendation for removal from exposure. In patients with irritant-induced OA, a trial of minimizing exposure by means of use of respiratory protective equipment could be indicated as initial management, in addition to providing asthma medication.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- Again, increased medical surveillance is recommended and, if worsening of the disease is demonstrated, a recommendation for removal of exposure is encouraged. In these cases, relocation to a different job and a different environment could be considered. Determining the most effective treatment for OA requires having precise information on the effect of different management options.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- Persistence of Exposure
  - **Recommended** – Informing that persistence of exposure to the causal agent is likely to result in a deterioration of asthma symptoms and airway obstruction.
- Avoidance of Exposure
  - **Recommended** – Informing that complete avoidance of exposure is associated with the highest probability of improvement, but may not lead to a complete recovery from asthma.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- Medical Removal
- Once a diagnosis of OA is confirmed, the patient should be advised that the prognosis is improved by early and complete removal from exposure even though symptoms and functional impairment associated with OA may persist for many years after avoidance of further exposure to the causative agent.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- **Recommended** – Removal from exposure.
  - Rationale – Available evidence indicates that many asthma cases will worsen in continued exposure.
- **Recommended** – Exposure reduction to the lowest levels possible, including the use of personal protective equipment.
- **Recommended** – Careful medical monitoring must be performed to ensure early identification of worsening asthma. Progression of the asthmatic condition should prompt total removal from exposure.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- Respiratory Protective Devices
  - **Not Recommended** – Considered the last level of protection from noxious exposures; especially in the long term and in patients with severe asthma.
  - **Not Recommended** – As a stand-alone intervention, however, may be used for mild cases in lower exposure settings, on short-term basis in conjunction with other efforts to reduce or eliminate exposure and with pharmacologic therapy, especially in irritant induced OA.

Occupational/Work-Related Asthma Training Module

Management of Occupational Asthma

- Respiratory Protective Devices
  - **Not Recommended** – For severe or moderately severe asthma in worksites with medium or high exposures.
    - Appropriate medical monitoring is required keeping in mind that progression of the asthmatic condition should prompt a recommendation for avoidance of exposure. Evaluating the ability of the worker to wear a respirator as per OSHA 1919.134 standard and selection of appropriate respirator are essential.

Occupational/Work-Related Asthma Training Module

Pharmacological Treatment of Work-Related Asthma

- Treatment does not differ from the treatment of non-work-related asthma
  - **Recommended** – Should follow accepted standards for the treatment of non-work-related asthma.
- Anti-asthma medications alone
  - **Not Recommended** – As a reasonable alternative to environmental interventions such as exposure reduction or medical removal, but may be indicated in conjunction with such interventions.

Occupational/Work-Related Asthma Training Module

Pharmacological Treatment of Work-Related Asthma

- Immunotherapy to Manage Sensitizer Induced Asthma
  - **Recommended** – For consideration in settings where occupational asthma due to a specific HMW allergen has been established, when only one or a few allergens have been linked clinically to disease, when there is a standardized commercial allergen extract available for treatment, good control with pharmacotherapy cannot be established and the causative agent cannot be completely avoided for economic, professional or other reasons.
  - **Not Recommended** – Immunotherapy to manage irritant-induced asthma.

Occupational/Work-Related Asthma Training Module

Pharmacological Treatment of Work-Related Asthma

- Immunotherapy to manage irritant-induced asthma
  - **Not Recommended** – Biologicals, a new class of asthma agents, especially the monoclonal antibodies, antiIgE, anti-eosinophils and anti-mediator medications.
  - **Recommended** – In specific situations with increased levels of IgE, or eosinophils for use by specialists with experience in the use of these medications.

Occupational/Work-Related Asthma Training Module

Treatments

- Manage and minimize potential complications of asthma
  - Immunization
    - Recommended – Pneumococcal pneumonia and influenza vaccinations.

Occupational/Work-Related Asthma Training Module

Treatments

- Manage and minimize potential complications of asthma
  - Additional recommendations:
    - Monitor for acute flare-up.
    - Aggressive management of respiratory infections.
    - Specific management of allergic/irritant co-morbidities of the upper respiratory tract (rhinitis, sinusitis, GERD).

Occupational/Work-Related Asthma Training Module

Prognosis

- The long-term consequences of OA are variable and require prolonged follow up. Symptoms and functional impairment associated with OA may persist for many years even after avoidance of further exposure to the causative agent. OA may become a chronic condition, similar to non-OA, and may require similar prolonged medical management. Patients with confirmed or possible OA should be closely followed up with respiratory questionnaires and spirometry testing while risks of continuing exposure remain. Patients with confirmed OA who have left work, or who have no ongoing asthmagen exposure risk, should be regularly followed up as clinically indicated.

Occupational/Work-Related Asthma Training Module

- For additional questions, please email **MTGTrainings@wcb.ny.gov**.

Thank You