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OCCUPATIONAL AND
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General Approach to Initial Assessment and Documentation

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The American Occupational Therapy Association, Inc.

American Physical Therapy Association

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General Approach to Initial Assessment and Documentation Guideline

A focused medical and work history and a physical examination are required to assess patients who have an apparently work-related disorder. In some cases, a more complete medical history and physical examination may be indicated at the initial appointment if the mechanism or nature of the complaint is unclear.

One of the first foci of the initial medical history and examination is to evaluate the patient for any serious underlying conditions, including sources of referred symptoms from other parts of the body. In this assessment, certain patient responses and findings may raise the suspicion of serious underlying medical conditions termed “red flags.” The absence of red flags generally rules out the need for special studies, immediate consultation, referral, or inpatient care during approximately the first 4 weeks of appropriate treatment when spontaneous recovery is usually expected.

The content of the initial evaluation often includes:

- A focused medical history, occupational history, and physical examination;
- Understanding the demands of the job in question, including apparent relationships for chronic or unclear exposure-response relationships;
- A preliminary characterization of the frequency, intensity, and duration of symptoms as well as purported exposure(s) for occupational diseases;
- An assessment of whether the patient is able to perform essential job functions and thus return to the usual job, requires work limitation(s), or rarely, is unable to work; and
- Understanding and documenting the patient’s impairing medical condition, if necessary.

The content of initial evaluations for chronic or complex patients is generally similar, but involves considerably greater depth. Therefore, the following additional elements are often required:

- Understanding and documenting the patient’s impairing medical condition;
- Considering use of a functional capacity evaluation (FCE) to translate medical impairment into functional limitations and to determine work capability;
- Evaluating psychosocial factors; and
- Considering the need for rehabilitation.

A discussion or formal consultation with the patient’s treating physician is generally necessary when an apparent difference of opinion arises regarding the diagnosis, exposures, functional capacities, etc., after obtaining the patient’s written permission. When acting as an independent evaluator, a secondary consultation may be necessary in select cases to assist with confirmation of the patient’s diagnosis, functional capacities, etc.

Diagnostic Labeling

The diagnosis(es) applied by the physician should be as precise as possible to facilitate communication with the patient, employer, consultants, other practitioners, and case managers. However, when a precise diagnosis cannot be made, descriptive diagnoses, such as “wrist pain” or “low back pain,” should be applied. In most cases of spine pain, there generally is no more descriptive label scientifically justifiable through the clinical course of the disorder. Use of descriptive diagnoses is also preferable to assigning an incorrect diagnostic label that may later need to be modified based on the results of additional evaluation or diagnostic testing.

Phrases that attempt to link symptoms to work activity should nearly always be avoided, especially terms such as, “cumulative trauma disorder,” “work-related musculoskeletal disorder,” “repetitive-motion disorder,” “overuse syndrome,” etc. These terms have largely been discarded for the following reasons:

- Such diagnostic labels link a purported exposure with a nonspecific multifactorial disease. This attribution is no more appropriate than a “diabetic heart attack.”
- These diseases may occur without any physical exposure.
- Such terms also connote that repetition is the prime risk factor for intervention and ignores the role of force which most quality data support as most important.⁽¹⁻⁵⁾
- Performance of unaccustomed activities appears to be a risk factor, but these non-specific terms imply the opposite.
- Musculoskeletal disorders may occur as the result of one rather than repeated exertions.
- Non-specific diagnostic labels do not help communicate to interested parties which body part is injured.
- These non-specific terms mistakenly lead patients and others into believing that the treatment is to not use the body part at all.
- The use of non-specific terms do not facilitate and may actively impair safety personnel actions and prevention activities, including targeted ergonomic interventions.

Medical History

For most occupational disorders, the medical history is of critical importance in providing the majority of relevant information for accurate diagnosis and treatment. In the occupational setting, most information is obtained from the patient, especially for initial evaluations, which necessitates the taking of a good medical history. The primary exceptions are when objective evidence is available, such as quantification of exposures (see Work-relatedness chapter).

In addition to identifying and categorizing presenting symptoms and collecting information about the mechanism of injury, apparent work-relatedness, and detecting serious conditions, the medical history also establishes rapport between patient and physician. Asking open-ended questions is a useful way to begin the inquiry. The first question to ask is “How may I help you today” or “What may I do for you today,” to ensure that the patient’s chief complaint

is addressed. (This may or may not be the relevant reason for the patient's visit; however, it is the chief complaint in the patient's mind and should be attended to even if it is non-occupationally related and the answer is to see the primary care provider.)

The patient's description of the mechanism of injury or illness (so far as is known), exposure to known risk factors, presenting symptoms, duration of symptoms, exacerbating factors, and history of previous episodes help to define the problem. This description also provides insight into the patient's concerns and expectations, as well as the work, socioeconomic, and psychosocial issues that may affect the patient's response to treatment, functional status, and return to work.

The medical history includes the patient's estimate of activity tolerance given his or her symptoms, particularly compared to pre-injury levels. Perceived activity intolerance contributes to the clinical assessment of the presenting problem, guides treatment and self-care, provides the basis for case management, and establishes a baseline for evaluating progress. The medical history also should determine whether the present injury or illness is correlated now or in the past with certain vocational or avocational activity(ies).

It is often revealing to inquire about illnesses not considered traditional occupational ailments, such as migraine headaches, sleep apnea, sleep hygiene, allergic disorders, infectious diseases, and depression. These ailments can subtly and dramatically affect work performance. For example, recent epidemiologic studies have found a relatively high prevalence of unrecognized, untreated depression that significantly affects work.

Inquiries focused on the patient's past medical history usually include medical illnesses, surgeries, hospitalizations, accidents, prior injuries, medications, allergies, family history, social history, and review of symptoms. These factors are often contributory, may be causal, and may aid diagnosing. These factors provide the opportunity for counseling when appropriate. For instance, it is often useful to inquire about specific medical disorders that may also cause the same symptoms, e.g., diabetes mellitus or thyroid disease in the case of carpal tunnel syndrome or family history of the disorder. Prior work injuries or similar injuries to the presenting chief complaint are also relevant. Social habits such as smoking, alcohol consumption, and/or hobbies are frequently contributory to many disorders.

Presenting Symptoms and Related Information

Identification of Body Part(s) Involved

The most important aspect of evaluating a painful condition is to ask the patient to identify the body part(s) involved and the specific location of the pain. The majority of conditions can be probabilistically diagnosed when a patient raises a hand or finger to signal the location of the problem. The physician should document the logic used to arrive at a provisional diagnosis for the benefit of non-physicians, such as claims managers and vocational rehabilitation counselors, who review the medical records.

Included in the focused occupational history should be the following information about presenting symptoms:

- Date and time of onset
- Nature of onset (very gradual, increasing, acute)
- Mechanism – how the patient thinks it happened
- Change of circumstances at work or at home, if any (why now?)
- For acute trauma – the four Ws:
 - Where: Location of the accident
 - When: Time and date
 - Who: Other individuals involved
 - What: A detailed description of accident or event(s) circumstances, including force and load
- Nature of symptoms
- Location, character
 - Changes in symptoms since onset:

- Means of increasing or decreasing symptoms
- Limitation of function at home, work, or in other situations
- Relationship of symptoms to work hours and days, as well as symptom changes on weekends and during vacations
- Past history of symptoms and therapy for similar disorders
- Similar symptoms in coworkers or family members
- Results of previous tests, treatments, or procedures:
 - Preplacement or periodic testing relevant to the affected organ system and test results
- Patient report of evaluations by other physicians or practitioners who evaluated the patient for this or similar disorders (medical records of the evaluation should be reviewed, if available)
- Other sources of historical information from the first responder(s) or other personnel involved or associated with the accident
 - Employer’s accident or incident report
 - First report of illness or injury filed for this disorder and workers’ compensation claim information

Effect of Present Illness or Injury

The physician should assess how the current illness or injury impacts the patient’s functional ability by comparing the patient’s current ability with the patient’s pre-illness or injury functional level. Asking about prior activities and activity restrictions can help estimate prior ability. The physician should inquire about time missed from work due to the current health problem and about time missed from work for all current and past health concerns. For example:

- Time missed from work due to the current problem or health concern
- Time missed from work due to all health concerns (current and past)
- Work hours and days:
 - Any recent changes – this is part of why now (earlier)
 - Concerns about job stability, safety, supervision, coworkers
- Prior impairment or restrictions should be discussed via questions such as: What activities, if any, did you engage in previously? What were your restrictions? What are your restrictions now?

Screening for Disability Risk Factors Affecting Outcome

Psychosocial stressors, symptom severity, work support, personal support and the patient’s own coping mechanisms can predict clinical outcomes (see Cornerstones of Disability Prevention and Management chapter). There is often a need for more detailed assessment and increased communication with patients who have these predictors.

Patient and occupational factors that influence the risk of disability include:

- Expectation of not returning to work
- Belief that work is harmful and fear of re-injury
- Heavy or monotonous physical job demands (for disability from musculoskeletal disorders)
- Work history, including a pattern of frequent job changes and lack of vocational direction
- Job dissatisfaction
- Poor relationships with peers or supervisors
- Family and other non-occupational stressors
- Family members, friends, or peers on disability (a “disability culture”)
- Psychiatric disorder(s)

For work-related, acute low back pain, the presence of persistent pain, functional limitation, or impaired work status has been associated with:

- Injury type (falls)
- Work absence preceding medical evaluation
- Job tenure less than a year
- Prior back surgery
- Worries about re-injury
- Lack of expectation for early return-to-work – the patient who in the first couple of weeks of treatment does not believe that he or she will be back to work in 6 months
- Opioid use – have opioids been prescribed early in the course of treatment? Has there been continuation of opioid therapy? For how long? Prescription of opioids for more than 7 days for workers with acute back injuries is a risk factor for long-term disability.

Detailed Work History

A history of exposures to possible causative factors, in terms as quantitative and complete as possible, is central to diagnosing, treating, and preventing each work-related disorder. It is critical for the occupational physician to obtain an accurate, complete, and focused picture of the patient's work situation, including job titles, exposures, and essential job functions to assess the possible work-relatedness of the patient's health concern. This information can assist the determination of an accurate diagnosis and help guide work interventions to aid recovery and avoid recurrences.

The physician should inquire about the patient's specific job and duration of employment, including a description of the intensity, frequency and duration of exposure(s). In the case of chemical exposures, ask for the Material Safety Data Sheets (MSDSs). Having the patient demonstrate the requirements of the job is useful in understanding job physical factors that might cause or aggravate a condition (if available, photos of the worksite may be informative). The physician also should inquire about industrial hygiene surveys or other relevant exposure information, training programs, preventive programs, and the patient's relationship with supervisors and coworkers. Inquiry into compensation structure and other current employment may also be important. Prior employment job titles, exposures, and exposure durations should be collected as part of the baseline work history.

Job History and Description

The physician should inquire regarding:

- The product being made (e.g., beryllium-containing airplane parts)
- The service being rendered (e.g., ventilation system cleaning)
- Job title, description, and design (e.g., machine operator, maintenance mechanic)
- Exposures (e.g., dusts, mists, fumes, physical exertions, chemical, etc.)
 - Specific tasks and time devoted to each task
 - Job or task rotation and other administrative controls
 - Safety and job training
 - Nightshift or rotating shift
- Additional or part-time jobs
 - Specific tasks and time devoted to each
 - Job or task rotation and other administrative controls
 - Safety and job training
 - Night shift or rotating shift
- Historical background
- Job changes in the past year

- Has the patient changed companies or job title because of any health problem over the last 5 years?
- If so, has the patient permanently changed the kinds of things he or she does at work because of the problem?
- If the patient could change something at work to make it easier to work with his or her medical conditions, what would it be?

Exposure and Protection

The type and duration of exposure is important, especially in the evaluation of occupational illnesses. Chemical sampling, ergonomic evaluations, and other relevant job evaluation information are important and useful for documentation of exposures potentially related to occurrence of a health effect. The initial interview should include:

- Types and duration of exposures
 - Is ventilation adequate? Area or local ventilation?
 - Is visible dust, mist, or smoke present? (If yes, the ventilation in the work area may be inadequate.)
 - Use of personal protective equipment (PPE) and conditions of use
 - Is respiratory protective equipment used? What type? (Is it appropriate for that type of exposure?)
 - How frequently do you change your respirator or respirator cartridges?
 - Are other PPE, including gloves, protective clothing, hearing protectors used? What type(s) are used?
 - What is the training provided for job performance or PPE?
 - Is a two-part system used to manufacture paint or coating material? (If yes, occupational asthma is possible.)
 - Are chemical odors present? Or, do headaches occur at work? (Yes to either question suggests the possibility of overexposure to solvent or other vapors.)
 - How are chemicals stored? How are they used (e.g., diluted or concentrate used)?
 - Does the work process involve friction, grinding, heat, blasting, generation of fine particles, or enclosed spaces? (If yes, the exposures are more likely to be high.)
- Exposure to trauma or other physical hazards, such as electricity, electromagnetic radiation, noise, high-amplitude vibration, chemicals, hot temperatures (e.g., heat stress/illness) and/or biologic hazards on all jobs
- To avoid this in the future, do you have any ideas on how this could have been prevented?
- Exposures and protection at home, in hobbies, or at additional or part-time jobs
- History of such exposure in the past:
 - What part of your health problem most affects you when you work?
 - Do you think something at work could have caused the problem?
 - Do you think something at work may make the problem worse, even if it did not cause it?
 - Adequacy of protection from hazards (engineering, personal, job or task rotation, exercise breaks, conditioning), methods of hazard control and actual work practices

Sources of Additional Information for Determining and Measuring Exposure

For Potential Chemical Exposure

Chemical information is available from the Material Safety Data Sheets (MSDSs), the Internet, standard texts, or the Regional Poison Control Center.

- Under federal law (29 CFR 1910.1200, Hazard Communication), MSDSs are to be furnished by the employer to the worker or his or her health care provider upon request. However, the quality of the information on MSDSs varies greatly because the information is supplied by the product manufacturer and there is no effective mechanism in place to ensure that it is accurate or complete. MSDSs list the ingredients of the product and profile their important health, safety, and chemical properties and include the following information:

- The name of chemical [description or MSDS information]
- The pH of the material
- The concentration of the material (especially if a mixture)
- The solubility of the material
- Toxicity of the material
- Emergency medical care recommended
- Product manufacturer
- Chemical class or type (alkali, acid, solvent)
- Nature of the exposure (liquids, solids, fumes)
- Dose or level of exposure:
 - The contact time (time from exposure until decontamination)
 - Measurements of environmental concentrations of the agent(s) to which the patient was exposed, if available.
 - Is there quantitative exposure data collected? Does it reflect personal or area monitoring?
 - Was a dust, vapor, mist or fume evaluated? If a dust, was the respirable fraction evaluated? Is there any information available regarding particle size or fiber type?
 - Over what period of time did the monitoring take place? Was it during a representative work period and comparable to the patient's working conditions? Is the exposure monitored a peak level or 8-hour time weighted average?
 - Is there a relevant occupational exposure level (OEL) defined for the substance? How does the measured level compare to the OEL?
 - An industrial hygiene survey of the workplace may be requested if more exposure information is needed to evaluate the potential linkage between a patient's illness and occupational exposure.
- Available biomonitoring data, where available and appropriate.

For Musculoskeletal Disorders

There are multiple methods that have been used to document and evaluate job physical factors for musculoskeletal disorders (MSDs). As well, it is important in evaluating MSDs to query histories of acute injuries, as they can cause, contribute to, or even be the sole source for the manifestation of the current problem. Queries related to acute injuries are reviewed above.

Regardless of whether the current MSD appears to be related to an acute injury, documentation for the current problem should include recent and remote history(ies) of:

- Falls?
- Accidents?
- Motor vehicle crashes?
- Sports injuries?

The above queries should include sufficient detail to ascertain whether these prior events likely caused or contributed to the current problem (e.g., were there treatments rendered, what treatments were rendered, length of disability, length of treatment).

Documentation should be sought to commonly address the following factors for MSDs, both for the current job as well as any second employment or job:

- Intensity of exertion (How much force was used?) Weight lifted or carried? Shape of material lifted or carried? Horizontal distance of the lift? Vertical distance traveled when lifting? Carrying?
- Are lifting devices available for heavy lifts?
- Frequency of exertion (How often did these exertions occur?)
- Duration of exertion (How long does the exertional activity take?)

- Posture (How high must the person reach, or how low must he or she bend? How much of the job involves non-neutral posture?)
- Are there engineering controls to minimize substantially non neutral postures?
- Static work (Are activities performed in one position with the development of localized muscle fatigue?)
- What tools and how are they used? Padded or shaped for comfort?
- Use of hand or other body part as a hammer or tool (Does the worker pound a hand on part of a tool?)
- Vibration (Is there low-frequency high amplitude vibrating tool exposure and for how long?)
- Is there rotation on the job? (Is there substantial variability in the job, or does the person rotate to a substantially different job?)
- Cold temperatures (Are the temperatures cold enough that greater force may have to be expended to hold the product or tool?)

Summary measures of exposure (or “tools”) have now been at least partially validated in prospective cohort data with measured job exposure data that controlled for numerous potential confounders. These prominently include for the distal upper extremity: the American Conference of Governmental Industrial Hygienist’s Threshold Limit Value for Hand Activity Level and the Strain Index.^(3, 6-11) (Moore 95; Garg 12; Kapellusch 14a,b; Rempel 15; Thiese 15; Harris-Adamson 15) For the spine, the most widely used summary measure is the Revised NIOSH Lifting Equation, which also has now been validated for low back pain.⁽¹²⁻¹⁵⁾ (Waters 93; Garg 14a,b; Kapellusch 14) These tools provide excellent lines of query for history taking to help ascertain and document work-relatedness of disorders. It is noteworthy that the evidence is now clearly supporting that force is the primary occupational risk factor for both the upper extremity and low back. This makes occupational and avocational history queries regarding force particularly important.

Work Load, Job Experience and Accident Proneness

Accident proneness is a term used to describe the increased likelihood for an accident to occur. It has been associated with physically strenuous tasks, being involved in dangerous jobs, younger age, sleep disorders, smoking, requesting a job change, physical disability and lack of physical activity. Personal income level, emotional distress and a poor housing environment may also be associated. Safety training has been negatively related to injury frequency. Risk of injury has been also associated with female sex and worker inexperience.⁽¹⁶⁻¹⁹⁾ Queries into OSHA citations and for what reason(s) may be helpful.

Review of Body Systems and Related Findings

Depending upon the affected organ system, additional historical information and further evaluation may be appropriate.

For Visual System Symptoms:

- Changes in central vision
- Changes in peripheral vision
- Presence of color vision abnormalities
- Double vision, blurred or cloudy vision
- Ocular pain
- Sensation of foreign body in the eye(s)
- Red eye
- Discharge

For Hearing Loss Symptoms

- Muffled quality of speech and other sounds
- Difficulty understanding words, especially against background noise or in a crowd of people
- Frequently asking others to speak more slowly, clearly and loudly
- Needing to turn up the volume of the television or radio

- Withdrawal from conversations
- Avoidance of some social settings
- Not being able to hear high-pitched sounds, like a baby crying or a telephone ringing in another room
- Tinnitus, abnormal ringing or other sounds in the ears interfering with hearing
- Exposure to loud noise such as gunfire, music, power equipment away from work or with prior employment or military service
- Exposure to ototoxic drugs

If occupational noise-induced hearing loss (NIHL) is suspected due to an occupational history of noise exposure, the following should be documented:

1. Industrial hygiene monitoring that is consistent with exposure to excess noise, sufficient to cause hearing loss (> 85 dB(A), 8-hour time-weighted average).
2. Onset or worsening of hearing loss, based upon comparison with a baseline audiogram. Clinical audiometry requires use of trained staff, a calibrated audiometer and a soundproof booth.
3. The shape of the hearing threshold curve often shows a characteristic notch at 4 to 6 kHz, with recovery in both ears for frequencies above 6 kHz. If this recovery is not present, the diagnosis of NIHL may be reconsidered. However, many severe cases of NIHL do not show such a recovery (sometimes it is absent because of tinnitus).
4. Symmetrical loss is expected in each ear, or there should be an explanation for asymmetry on the basis of exposure history or other factors. An explanation for asymmetry could be that the person has a hobby such as rifle shooting (where the leading ear is subject to much higher levels of sound). If there is no convincing explanation for asymmetrical loss, referral to an otolaryngologist should be considered.
5. The audiogram must measure the magnitude of the hearing loss by noting the depth of the notch from an established baseline.
 - The threshold at 4KHz is at least 30dB Hearing Loss (HL) and is at least 15dB worse than the 2KHz threshold. As the NIHL increases, the notch widens and is lost.
 - The hearing loss should be a confirmed, average significant threshold shift at 2KHz, 3KHz and 4KHz measured by clinical audiometry of at least 10 dB, after age correction.
 - The hearing threshold is 25 dB or greater at all frequencies.

The extent of NIHL is not expected to increase after exposure to excessive noise has been permanently discontinued. However, total hearing capacity can further decrease due to factors not related to noise (age, other medical conditions).

For the Musculoskeletal System

- Pain (location, character, and radiation; see appropriate specific body part chapters for details)
- Erythema, pallor, ecchymosis, edema, temperature
- Deformity or dislocation
- Open wounds and/or blood loss
- Specific limitation of motion or other function
- Dysesthesias or paresthesias – numbness, tingling – (location, character, and radiation)
- Weakness
- Atrophy
- Gait (normal, antalgic, giving way)
- Level of physical activity and fitness – routine regular or periodic physical activities for better aerobic capacity and overall muscle tone?

When a patient complains of pain, assessment tools such as pain drawings and visual analogue pain rating scales may help to further document the patient's perceptions and progress.

For Psychological/Behavioral or Stress-Related Symptoms

- Depression, anxiety, panic attacks, mood swings
- Emotional distress, crying
- Predominately sad, anxious, angry, manic or indifferent mood
- Inappropriate responses or paranoia
- Flashbacks or nightmares with situations similar to a traumatic event
- Recurrent intrusive thoughts
- Heightened arousal
- Concentration problems
- Sleep disturbance
- Hypervigilance
- Disruption in social or occupational functioning (e.g., withdrawal from activities, decreased work productivity or failure to complete duties satisfactorily).
- Increased use of substances or substance abuse
- Perceived stressors or excessive demands or recent changes at home or work?
 - Work
 - Number of jobs held and work or shift schedules
 - Physical work environment (e.g., heat, cold, noise, risk)
 - Social and organizational structure of workplace (e.g., pace of job demands, overload, support of coworkers, and attitude of supervisors)
 - Organizational role (e.g., conflict, clarity of responsibility, demands, and degree of fit between worker and job/organization)
 - Family
 - Demands placed on working parents, multiple roles
 - Financial situation
 - Effect of hobbies and after-work activities
 - Other stressful life events or daily hassles
 - Stress-related physical symptoms
 - Cardiovascular (e.g., hypertension)
 - Headaches
 - GI dysfunction (e.g., ulcers, irritable bowel syndrome)
 - Sleep disturbance
 - Somatization or tendency to convert stress into physical symptoms
 - Neuroticism
 - Lack of self-esteem
 - Personality traits associated with difficulties in socialization

Accident-related injury or significant stress can lead to symptoms of post-traumatic stress disorder. Symptoms of posttraumatic stress disorder include persistent re-experiencing of the event in the form of flashbacks, nightmares, intense distress when exposed to situations that remind the patient of the accident, and/or recurrent, intrusive thoughts of the incident. Such workers often will avoid situations or feelings associated with the trauma and may be emotionally unresponsive. Persistent symptoms of heightened arousal (e.g., sleep disturbance, irritability, and anger), concentration problems, and hypervigilance also are characteristic features. Exacerbation of these symptoms may occur relatively frequently and may be associated with higher levels of pain, disability, and psychological distress.

For Pulmonary Disorders

- Chronic cough or phlegm: productive or not? Frequency and nature of cough and/or phlegm:
 - number of months per year;

- number of consecutive years;
- productive of blood.
- Flu-like symptoms (fever, chills, headache, muscle or joint aches)
- Chronic Bronchitis – Do the symptoms meet the criteria of cough and phlegm production for 3 consecutive months in at least 2 consecutive years?
 - time of day of occurrence, at work, home, or both;
 - effect of change in position;
 - triggers – chemicals (dust, mist, fumes), cold air, exertion;
 - past history of asthma, rhinitis/post nasal drip, heartburn or gastric reflux;
 - exacerbating and relieving factors.
- Dyspnea: shortness of breath:
 - with exertion or at rest;
 - walking with other people at an ordinary pace on level ground;
 - walking at own pace on level ground;
 - with how many flights of stairs.
- Associated with wheezing or chest pain/tightness:
 - circumstances of occurrence;
 - frequency, timing and persistence association with other symptoms;
 - association with shortness of breath.

Occupational Asthma

Symptoms of asthma include episodic wheezing, chest tightness, cough, dyspnea, or recurrent attacks of bronchitis with cough and sputum production. Asthma produces significant changes in the forced expiratory volume in 1 second (FEV1) and peak expiratory flow rate (PEFR). Asthma-related airflow changes can occur with a precipitating exposure, spontaneously, or with diagnostic maneuvers, such as non-specific inhalation challenge testing. Many agents can induce work-related asthma by a variety of mechanisms. Generally, there are 3 types of work-related asthma that share several important clinical features, such as airway inflammation, airway hyperresponsiveness and reversible airflow obstruction:

Work-aggravated asthma: when an individual with preexisting asthma, who has been symptomatic or treated with asthma medication within the 2 years prior, experiences increased asthma symptoms or medication use.

Reactive airways dysfunction syndrome (RADS), also known as irritant induced asthma (IIR): when an individual without preexisting asthma develops new-onset asthma symptoms within 24 hours, after a one-time, high-level workplace inhalation exposure to an irritant gas, fume, smoke or vapor that persist for at least 3 months.

Occupational asthma from working with a substance known to cause asthma: when an individual without preexisting asthma develops new-onset asthma symptoms associated with work and has relevant workplace exposure to an agent known to give rise to occupational asthma. A comprehensive list of asthma inducers is available in several occupational pulmonary disease textbooks, as well as several journal articles, included in the references.⁽²⁰⁻²⁴⁾ Patterns of association can vary and include:

- symptoms of asthma that develop or worsen after a worker starts a new job or after new materials are introduced on a job (a substantial period can elapse between initial exposure and development of symptoms);
- symptoms that develop within minutes of specific activities or exposures at work;
- delayed symptoms that occur several hours after exposure (e.g., during the evenings of workdays);
- symptoms that occur less frequently or not at all on days away from work and on vacations;
- symptoms that occur more frequently when the affected worker returns to work; and
- symptoms that are temporally associated with workplace exposure to an agent with irritant properties.

Work-related changes in medication requirements can accompany these symptom patterns.

For Cardiovascular Disease

A number of workplace conditions have been implicated as risk factors for cardiovascular disease (CVD), including:

- Long work hours;
- Shift work;
- Chemical conditions (e.g., carbon disulfide, nitrate esters, carbon monoxide, methylene chloride, solvents);
- Physical conditions (e.g., cold, heat, noise, passive smoking, sedentary work);
- Degree of perceived threat/necessary vigilance³; and
- Job strain (high job demands/low decision latitude).

Evidence suggests a causal association between job strain (a combination of high psychological demands and low job decision latitude or control) and hypertension and CVD. Low decision latitude may also be a risk factor for CVD. As yet limited but convincing evidence exists for a role of another purported psychosocial factor – effort-reward imbalance (ERI), with similar observed effect sizes as job strain. In addition, threat-avoidant vigilant (TAV) work has been identified through studies of single occupations as a potentially helpful explanatory variable as to why groups such as professional drivers – whose work is characterized by high TAV – have the most consistent evidence of CVD.

For Abdominal Disorders

A relatively detailed history of the patient's symptom's and environmental or occupational exposure is recommended. Beyond this, a gastrointestinal review of systems (ROS) may be appropriate and may include history relevant to occupational liver disease evaluation.

Abdominal Hernia

A hernia, the protrusion of an organ(s) through the abdominal wall, is thought to be caused by any factor that increases pressure in the abdomen, such as:

- Lifting heavy objects
- Frequent forceful coughing or sneezing
- Constipation and straining for a bowel movement
- Obesity
- Pregnancy
- In men, pushing too hard to urinate when an enlarged prostate is causing a blockage.

Temporal relationship to the onset of symptoms/occurrence of a hernia during a work activity can be evaluated. Symptoms associated with a groin hernia may include:

- Pain or discomfort in lower abdominal or groin area;
- A bulge that cannot be pushed back in, a potentially life-threatening problem because the bowel (or other organ) may be trapped or strangulated.

Elevation of Liver Function Tests and Relevant History

The possibility of a relationship between elevation of liver function tests and occupation is not usually easily determined. The pattern of liver function tests is important. When faced with an abnormality, the first step should be to assess the degree of abnormality. Very high levels (>5 times normal range) should prompt further evaluation without delay. Levels 2 to 5 times normal range are frequently asymptomatic.

Most hepatic disease processes are not expected to elevate just one value in the panel, and it would be very unusual for any of the most common forms of liver injury (alcohol, viral hepatitis, non-alcoholic steatohepatitis, chemical injury, or biliary disease) to produce a pattern of four low values and one high. A simple strategy for reducing the number of false-positive results is to discount a moderate elevation in one isolated value when the other four tests are well within normal limits. A single isolated value is then likely due to analytic variation if it does not correlate with any reasonable pattern of hepatic injury or disease.

An AST/ALT ratio of less than one is suggestive of viral or toxic exposures rather than alcohol use. Ratios of greater than two are suggestive of alcoholic liver disease. (Hepatic enzyme values in alcoholism vary widely and may include different combinations of hepatic enzymes. The most common are an AST>ALT elevations, gamma GTP elevation, and elevated MCV. Anemias may also occur.) If a significant hepatotoxic exposure is identified, the patient should be removed from further exposure, alcohol use and potential hepatotoxin medications discontinued and his or her AST and ALT rechecked in 2 to 4 weeks. As long as an irreversible condition like fibrosis or cirrhosis is not present, toxically elevated liver function test results are expected to vary with variable levels of exposure. Thus, recovery suggests an occupational or environmental etiology, while persistent elevations indicate otherwise, provided that the suspected exposure had been correctly identified and reduced. Persistent elevation of AST and ALT levels greater than twice normal for more than 2 months warrants further investigation; referral to a hepatologist should be considered. Such individuals have an increased likelihood of chronic active hepatitis, steatohepatitis, and fibrotic changes.

A number of factors have been implicated as risk factors for liver disease, including:

- Significant alcohol use;
- Viral hepatitis (B, and C) and other infectious diseases and biliary disease (Hepatitis A is an acute liver disease, but is not believed to have associated chronic disease risks);
- Medications, including but not exclusive to acetaminophen, isoniazid, erythromycin, estrogens, phenytoin, leukotriene inhibitors, chronic NSAIDs and megavitamins such as vitamin A and herbal or alternative remedies;
- Metabolic or systemic disorders including diabetes mellitus, hemochromatosis, Wilson's disease, hemochromatosis, autoimmune disease) hyperlipidemia and obesity;
- Presence of any known or suspected hepatotoxins in the workplace or environment (sources of information include MSDSs, toxicology, and industrial hygiene data. A list of known hepatotoxins can be obtained from HazMap at <http://hazmap.nlm.nih.gov/hazmapadv.html>).

For Skin Disorders

Dermatitis resulting from a local exposure to irritants or caustics/acids, with full recovery within several days to several weeks, is an acute injury. Corrosion, acute irritation, and phototoxic injury of the skin are usually easily diagnosed because of the significant erythema, vesicles, and/or bullae that develop in a sharply delineated area within minutes to hours after exposure. Ninety percent of occupational skin disease cases are due to occupational contact dermatitis (OCD), usually moderately severe, chronic or recurrent skin disorders. There are no reliable clinical features to determine whether a dermatitis is OCD or endogenous, with the exception that a case history with rhinitis, asthma, dry skin, signs of atopic disposition or a central palmar pattern may correlate with an underlying endogenous process, such as atopic dermatitis. Not all cases of work-related skin symptoms come to medical attention, and standard case definitions for OCD, including occupational irritant contact dermatitis (OICD) and occupational allergic contact dermatitis (OACD), have not been in use.

Determination of a relationship between contact dermatitis and occupation is not always clear-cut. A "yes" answer to 4 of the following 7 questions is considered adequate to establish probable occupational causality for a case of contact dermatitis and for reporting that case:⁽²⁵⁾ (Mathias 89)

- Is the clinical appearance compatible with contact dermatitis? Are physical findings present?
- Are there workplace exposures to potential irritants or allergens? Is the work history consistent?
- Is the anatomic distribution of the eruption compatible with job exposure?
- Is the temporal relationship between exposure and onset consistent with contact dermatitis? Is there an appropriate temporal sequence?
- Have non-occupational exposures been excluded as causes?
- Does dermatitis improve away from work exposure (weekend, holiday, etc.) to the suspected irritant or allergen?
- Do patch or provocation tests identify a probable allergic cause?

OICD may be clinically indistinguishable from OACD, although certain features may suggest one over the other. The diagnosis of OICD is one of exclusion, since there is no diagnostic test for this condition. There are a few clinical features that may help to distinguish between OICD and OACD. If symptoms occur in a non-sensitized individual,

after first contact with a chemical substance, it is probably OICD because a latency period is required for the development of sensitization in OACD – the immune system needs about 1 to 2 weeks to develop antibodies. If re-exposure with improved protective measures does not lead to symptoms after, for example, a holiday, sick leave or temporary change of workplace, the contact dermatitis is likely OICD since minimal exposure would cause a recurrence if a case of OACD were present.

Patients presenting with findings consistent with OCD consistent with either OACD or OICD need to be appropriately patch tested, when available – to determine the final diagnosis. The strongest evidence that an allergic dermatitis is of occupational origin is a positive patch test response to a nonirritating concentration of a substance found in the workplace. Patch testing of chemicals and work substances should be carried out by a skilled physician/dermatologist but may be discouraged because of difficulty with availability and a relatively high false-positive rate (the sensitivity and specificity of patch testing is approximately 70%). Thus, allergic OCD may be under diagnosed because of under-utilization of patch testing in dermatology and occupational medicine clinics.

Physical Examination

The focus of the physical examination should be guided by the medical history. Elements may include:

- General observation of the patient
 - Gait and weight bearing, seated posture, and comfort level
 - Use, disuse, or guarding of the affected body part
 - Posture, station, body habitus, overall fitness level, appearance relevant to stated age if markedly different
 - General demeanor, affect, facial expression, mood changes, and appropriateness of responses
- Vital signs
 - Blood pressure
 - Heart rate
 - Respiratory rate
 - Height
 - Weight
 - Body mass index
 - Pulse oximetry (especially for pulmonary-related disorders)
- Focused regional examination
- Neurologic, ophthalmologic, or other specific screening
- More comprehensive examination areas with related or potentially referred symptoms, as indicated by the history or the physician's knowledge of the provisional diagnosis
- Evaluation of nonorganic symptoms and signs

The content of focused examinations is determined by the presenting symptom and the area(s) and organ system(s) affected (see the appropriate body part chapters). Many elements of the musculoskeletal exam, particularly those involving tenderness, pain, range of motion, or effort, elicit subjective patient responses. Some patients with musculoskeletal and other symptoms will have no objective findings.

Communicating the Results of the Initial Assessment: Evaluating Fitness for Duty and/or Return to Work

Physicians communicate with employers to help facilitate the return to work and ensure safety for the returning employee and coworkers. Physicians inform supervisors and managers about medically indicated permanent and temporary restrictions on the patient's work or duties, and inform first aid and safety personnel, when appropriate, whether the patient's health status might require emergency treatment or whether any specific assistance is needed in case of fire or other evacuations.

Physicians should provide clear, concise, and specific limitations when possible. Physicians must understand and recognize, though, the limitations in their own ability to either predict an individual's functional capacity or define what is safe and/or reasonable for an individual to do. For example, lifting limitations often are arbitrarily assigned and based largely on prior practice experience combined with the patient's best guess about their ability. Many factors, such as how something is lifted, may be more important than how much is lifted. (Parameters that affect lifting capacity particularly as related to spinal capacities are available from the CDC/NIOSH.)⁽²⁶⁾ Many providers and therapists believe early referral for specialized treatment (or therapy) results in superior outcomes. However, there is an absence of supporting evidence regarding this issue as selection bias is highly likely since earlier referrals include milder cases that usually have better prognoses.

There is no quality evidence to provide clear, concise, or specific guidance in assignment of limitations. Therefore, arbitrary and opinionated limitations are a frequent occurrence. These limitations often do not comport with home or hobby activities, which is incongruous. It should be understood that arbitrary designations (e.g., unable to lift more than 1 pound) may be taken by court systems as unbending and inflexible truths. Simple transcription of a patient's symptom into the medical record with subsequent assertion that these reports have special scientific or clinical weight is inappropriate. In many cases, when limitations are assigned, they are used by vocational rehabilitation specialists and others and translated into the *Dictionary of Occupational Title* definitions. At the very least, physicians should be fully aware of the implications of their prescribed limitations.

Return to work extends beyond concerns about managing physical function to the complexities related to beliefs, roles, and perceptions of the patient and the employer. There often are social and communication barriers to return to work. Physicians have the potential to play a key role in facilitating the return to work process. Facilitating return to work reduces the patient's probability of disability. Disability has been associated with reduced longevity.^(27, 28) (Patja 00; Levantesi 12) Beyond evaluating a patient's health status, it is necessary to address how that status may affect the patient's ability to perform the essential functions of his or her current job or anticipated modified duty. The examining physician should avoid disclosing to the employer any specific findings, diagnoses, or information unrelated to the patient's occupation or work environment.

The following may be included in communications with the employer:

- Specific and objective limitations
- Specialized equipment requirements
- Permanent or temporary restrictions
- Day/work-hour limitations
- Time period for restrictions/scheduled follow-up
- Diagnosis (Some jurisdictions may require this information be released to the workplace.)
- Treatment issues that may impact the workplace (This information is helpful if allowed to be released as it provides the employer the appropriate information required (e.g., elevate the leg 5 times a day with ice) that would have to be performed at work to be effective.)

Reasons for communicating with employers include:

- Informing supervisors and managers about medically indicated permanent and temporary restrictions on the patient's work or duties.
- Informing first aid and safety personnel, when appropriate, whether the patient's health status might require emergency treatment or whether any specific assistance is needed in case of fire or other evacuations.
- Helping to ensure safety for the returning employee and coworkers.
- Identifying other individuals at risk from similar exposures, particularly industrial poisoning, such as lead.

Recordkeeping

The information obtained at the time of the first contact with the patient will, in the United States, normally be part of the Occupational Safety and Health Administration (OSHA) Form 301 (Injury and Illness Report)⁽²⁹⁾ (OSHA FAQ) and any other reports, such as workers' compensation reports, that may be required. Employers in the United States

are required to record work-related injuries or illnesses that result in death, days absent from work, restricted work or transfer to another job, medical treatment beyond first aid,ⁱ⁽³⁰⁾ (OSHA 1904.7) loss of consciousness, or diagnosis of a significant injury/illness by a physician or other licensed health care professional. Further, an adequately documented, legible report is essential for accurate billing and legal purposes. Incomplete or illegible recording for billing purposes can lead to inaccurate coding, billing, insufficient reimbursement, and loss of reimbursement.

Records generally contain the following information and answer the following questions:

- Full name and address data
- Date of birth
- Date of hire
- Gender
- Date and time the injury/illness occurred
- Nature of the injury/illness (part of the body affected)
- How did it happen?
- What was the employee doing just before the incident occurred?
- What object or substance directly harmed the employee?
- Where was treatment given? At the worksite?
- If treatment was administered away from the worksite, where was it given?
- Who was in charge of treatment?
- Was the employee hospitalized as an inpatient? Who was the attending practitioner and his or her subspecialty?
- If the employee died, when and where did the death occur? Who pronounced the employee dead?

Privacy of Records

The confidentiality of medical information and records is protected and required by statutes, regulations, and codes of medical ethics, which govern their maintenance, retention, and release. Medical information concerns the medical status of individual patients, including historical, physical, and laboratory findings. Medical records are the physical or data-storage form of medical information gathered from or applying to patients and should be considered protected health information. Examples of information reflected in medical records include:

- Oral information, including telephone communication, noted by a physician or other allied health professional
- Reports of medical examinations, progress notes, lab results, consultations, assessments, and recommendations
- Electronically or optically stored or transmitted information
- Photographs taken for medical purposes
- Radiologic studies
- Billing data or records


Medical records should be secured, with access limited to physicians, their qualified designees, and others who have a legal right to access. An authorization for release of medical information, signed by the patient and meeting the

ⁱOSHA 29 CFR 1904(b)(5)(ii) defines “first aid” as: a) using a nonprescription medication at nonprescription strength (for medications available in both prescription and nonprescription forms, a recommendation by a physician or other licensed health care professional to use a nonprescription medication at prescription strength is considered medical treatment for record keeping purposes); b) administering tetanus immunizations (other immunizations, such as hepatitis B vaccine or rabies vaccine, is considered medical treatment); c) cleaning, flushing, or soaking wounds on the surface of the skin; d) using wound coverings such as bandages, Band-Aids, gauze pads, etc. or using butterfly bandages or Steri-Strips (other wound-closing devices such as sutures, staples, etc., are considered medical treatment); e) using hot or cold therapy; f) using any nonrigid means of support, such as elastic bandages, wraps, nonrigid back belts, etc. (devices with rigid stays or other systems designed to immobilize parts of the body are considered medical treatment for record keeping purposes); g) using temporary immobilization devices while transporting an accident victim (e.g., splints, slings, neck collars, back boards, etc.); h) drilling of a fingernail or toenail to relieve pressure or draining fluid from a blister; i) using eye patches; j) removing foreign bodies from the eye using only irrigation or a cotton swab; k) removing splinters or foreign material from areas other than the eye by irrigation, tweezers, cotton swabs, or other simple means; l) using finger guards; m) using massages (physical therapy or chiropractic treatment are considered medical treatment for record keeping purposes); or n) drinking fluids for relief of heat stress.

applicable legal requirements, must be executed before medical records are released. When medical information or records are transmitted, only that information pertinent to the issue at hand should be sent unless otherwise authorized.

Medical confidentiality may be waived by operation of law and by authorization of the patient or the patient's legal representative. The former commonly occurs in legal proceedings in which the patient places his or her physical condition at issue. For example, in some states, the filing of a workers' compensation claim is deemed to allow the insurer access to all medical records that relate to a condition relevant to the claim, regardless of whether the injured worker authorizes such release. The latter is the more common manner by which physicians obtain authorization to release medical information.

Only pertinent information and records should be released. Absent patient consent or specific legal authority, physician recommendations communicated to an employer concerning a patient's medical clearance, performance, and/or safety in the workplace should not include medical diagnoses. Providers should familiarize themselves with the laws of their states that relate to the disclosure of confidential medical information. In the U.S., complex issues involving the supremacy of federal law in a particular circumstance may arise depending on the wording of certain state statutes. It is beyond the scope of this publication to explore such issues. It is a sound practice for providers, whenever possible, to require that they be provided with current, properly worded releases that specify the records to be released and the recipients who are to receive them. Once in possession of such documentation, providers should take care not to release information that is beyond the scope of the authorization that has been received.



Appendix 1: HIPAA Privacy Guidance

The Secretary of the Health and Human Services (HHS) has assigned oversight of HIPAA (45 CFR Parts 160 and 164 created December 28, 2000, amended August 14, 2002) privacy compliance to the Office of Civil Rights (OCR). *Frequently Asked Questions about the HIPAA Privacy Rule* is available at www.hhs.gov/hipaa/index.html. Guidance on HIPAA issues is based on information contained in *Small Practice Implementation Guide, version 2.0* (<https://hipaa.gmdsolutions.com/documents/Reference%20Materials/WEDI%20Sites/Small%20Practice.pdf>). The standards for Privacy of Individually Identifiable Health Information, 45 Code of Federal Regulations (CFR), Parts 160 and 164, set forth the mandatory requirements on privacy of records, summarized as follows:

(A) Standard.

A covered entity may not use or disclose protected health information, except as permitted or required by Part 164 or by subpart C of Part 160.

1. Permitted uses and disclosures. A covered entity is permitted to use or disclose protected health information as follows:
 - (i) To the individual;
 - (ii) For treatment, payment, or health care operations as permitted by and in compliance with Part 164
 - (iii) Incident to a use or disclosure otherwise permitted or required by this subpart, provided that the covered entity has complied with the applicable requirements with respect to such otherwise permitted or required use or disclosure.
2. Required disclosures. A covered entity is required to disclose protected health information:
 - (i) To an individual, when requested
 - (ii) When required by the Secretary of Health and Human Services under subpart C of part 160 of this subchapter to investigate or determine the covered entity's compliance with this subpart.

(B) Standard: minimum necessary.

1. Minimum necessary applies. When using or disclosing protected health information or when requesting protected health information from another covered entity, a covered entity must make reasonable efforts to limit protected health information to the minimum necessary to accomplish the intended purpose of the use, disclosure, or request.
 - Assurances from business associates to safeguard confidential information that your practice shares with them. A business associate is defined as a person or organization that is not a member of your staff but performs a function that uses confidential information from your practice. A good example of a business associate might be a health care clearinghouse that submits the practice's claims. Plumbers, electricians, office equipment repair people, and mail carriers are not considered business associates unless the practice has contracted with them to handle or shred medical records. Practices will need written contracts or similar agreements with business associates that list the permitted and required uses and disclosures of confidential information. Practices may look at the sample contract language on the U.S. Department of Health and Human Services (HHS) Office of Civil Rights Web site listed in "Sample Business Associate Contract Provisions."
 - Procedural and physical safeguards to protect and ensure the security of confidential information. What are the practice's procedures for patients' and other visitors' access to the office beyond the waiting room? How are the records maintained and secured? What measures do you take to ensure the security of the confidential information when it is housed on your computer system or transmitted by modem or fax? If a fire, flood, or computer breakdown occurs, what is your contingency plan to recover and secure the records? You will have to document the answers to these questions in writing and include the documentation in the privacy manual.
 - Access and audit control. Each practice must establish and document levels of staff access to patient records. During this process, it is important to ensure that the staff understands what the practice considers to be unauthorized use, disclosure, modification, and destruction of confidential patient information. In electronic medical records systems, a mechanism must be in place for identifying and

tracking who has accessed or attempted to access confidential information. The privacy manual must specify who may access the log and how the log will be reviewed to identify potential weaknesses or actual breaches of security. Because of the required privacy provisions, it seems possible that all electronic health systems will soon have auditing capability. At the present time, however, there is no comparable requirement for paper medical records.

- **Training.** All members of your staff must receive sufficient training so that they can implement properly your practice's policies and procedures for handling confidential information. Training could be done individually or in a staff meeting to discuss how the practice will handle privacy concerns or by having the staff review the practice's notice of privacy policies. During training, the practice's privacy officer can emphasize that the practice is open to staff observations of lapses in compliance with privacy procedures and that staff members can feel comfortable approaching the privacy officer about their observations.
- **What if confidential information is disclosed?** A practice is obligated to make a reasonable effort to mitigate any harm that might result from using or disclosing confidential information in violation of its policies and procedures. A practice also must impose sanctions against staff members or business associates who do not comply with its policies and procedures. At a minimum, sanctions could mean retraining on privacy policies and perhaps noting the violation in an employee's record. If the disclosure is serious or flagrant enough, dismissing the staff member or canceling a contract with a business associate may be necessary.

When developing, organizing, and refining the practice's policy manual, it must be remembered that its contents must include procedures to address each item listed in the "Notice of Privacy Practices."

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