

Reference Materials for Diagnostic Coding Associated with Shale Gas Activity

The mission of the Southwest Pennsylvania Environmental Health Project (EHP) is to respond to individuals' and communities' need for access to accurate, timely, and trusted public health information and health services associated with natural gas extraction. The purpose of this document is to: 1) provide healthcare professionals with basic information emerging on health impacts and exposures related to shale gas drilling and 2) present reference materials for use of ICD-10-CM diagnostic codes for symptoms potentially associated with this exposure.

Activities associated with unconventional natural gas development (UNGD) and transport consistently produce air emissions known to cause both acute and chronic health effects. The stages and infrastructure of drilling a Marcellus Shale natural gas well are identified in this toolkit under the heading "Environmental Health Medical Toolkit". Emissions from some sources occur at a relatively steady rate, while those from other sources occur in episodic peaks. Some sources are only temporary. Weather conditions and wind direction may affect an individual's actual exposure. As a result of these factors, acute health symptoms related to air emissions may be persistent, episodic, or temporary.

Common new symptoms reported by individuals following the onset of nearby UNGD activities include:

- Respiratory (e.g., cough, shortness of breath, wheezing, throat soreness or irritation, sinus problems, nosebleeds)
- Dermal (e.g., rash, pruritis, irritation)
- Neurological (e.g., headache, dizziness)
- Eye symptoms (e.g., burning, itching, irritation)
- Gastrointestinal (e.g., nausea, abdominal pain)
- Cardiac (e.g., palpitations, chest pain)

Although most environmental diseases either manifest as common medical problems or have nonspecific symptoms, environmental factors rarely enter into the clinician's differential diagnosis.

However, including this practice in assessment of individuals can provide clues to explaining symptoms whose possible etiology might otherwise be missed by the health provider or patient.

Exposure to the air contaminants associated with unconventional natural gas drilling increase an individual's risk for the development or worsening of respiratory or cardiovascular disease. In addition, some of the contaminants have adverse neurologic effects, others are carcinogenic.

As with other air pollution, some individuals are at greater risk for health impacts. Children, developing fetuses, the elderly, and individuals with chronic respiratory or cardiovascular disease are those most susceptible.

Contamination of well water as a result of accidental spills, leaks, and well casing failures occurs more sporadically and less predictably than air contamination.

Residents living in proximity to shale gas activities also frequently reported the development of additional symptoms that interfere with normal functioning, including anxiety, depression, sleep disturbance, fatigue, difficulty focusing, irritability/mood swings, and feeling a loss of control.

Based on the constellation of symptoms noted on page one and patient self-reported response to potential exposure to UNGD, there are ICD-10 CM diagnostic codes that may be warranted. ICD-10 CM codes will enhance accurate payment for

services rendered and facilitate evaluation of medical processes and outcomes. They are also important sources for injury identification and evaluation of injury prevention strategies. EHP has compiled the following coding guidelines to assist

healthcare providers in diagnosing and billing for possible exposure to shale gas activities. The following codes are based on assessments seen in our office and are not all inclusive.

Example of Diagnostic Coding Associated with Shale Gas Activity

EXPOSURE	ICD-10 CODE	ICD-10 CODE DESCRIPTION
Heat	X30.XXXA	Exposure to excessive natural heat, initial encounter
	X30.XXXD	Exposure to excessive natural heat, subsequent encounter
	X30.XXXS	Exposure to excessive natural heat, sequela
Hot Substances	X19.XXXA	Contact with other heat and hot substances, initial encounter
	X19.XXXD	Contact with other heat and hot substances, subsequent encounter
	X19.XXXS	Contact with other heat and hot substances, sequela
Poisoning	T52.91XA	Toxic effect of unspecified organic solvent, accidental, initial encounter
	T52.91XD	Toxic effect of unspecified organic solvent, accidental, subsequent encounter
	T52.91XS	Toxic effect of unspecified organic solvent, accidental, sequela
Gas	X14.0XXA	Inhalation of hot air and gases, initial encounter
	X14.0XXD	Inhalation of hot air and gases, subsequent encounter
	X14.0XXS	Inhalation of hot air and gases, sequela
Vapor	T59.91XA	Toxic effect of unspecified gases, fumes, and vapors, accidental, initial encounter
	T59.91XD	Toxic effect of unspecified gases, fumes, and vapors, accidental, subsequent encounter
	T59.91XS	Toxic effect of unspecified gases, fumes and vapors, accidental, sequela
Corrosive	T54.91XA	Toxic effect of unspecified corrosive substance, accidental, initial encounter
	T54.91XD	Toxic effect of unspecified corrosive substance, accidental, subsequent encounter
	T54.91XS	Toxic effect of unspecified corrosive substance, accidental, sequela
Petroleum	T52.0X1A	Toxic effect of petroleum products, accidental, initial encounter
	T52.0X1D	Toxic effect of petroleum products, accidental, subsequent encounter
	T52.0X1S	Toxic effect of petroleum products, accidental, sequela
Flammable	X04.XXXA	Exposure to ignition of highly flammable material, initial encounter
	X04.XXXD	Exposure to ignition of highly flammable material, subsequent encounter
	X04.XXXS	Exposure to ignition of highly flammable material, sequela
Noise	Z77.122	Contact with and (suspected) exposure to noise
	Z57.0	Occupational exposure to noise

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