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April 16, 2021  
Case Definitions  
Message Mapping Guides  
Supporting Documents for Implementation  
Event Codes & Other Surveillance Resources  
Carbon Monoxide Poisoning  
2014 Case Definition  
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2014 Case Definition  
NOTE:  
A surveillance case definition is a set of uniform criteria used to define a disease for public health surveillance. Surveillance case definitions enable public health officials to classify and count cases consistently across reporting jurisdictions. Surveillance case definitions are not intended to be used by healthcare providers for making a clinical diagnosis or determining how to meet an individual patient’s health needs.  
CSTE Position Statement(s)  
13-EH-01  
Background  
Carbon monoxide (CO) is a colorless, odorless, nonirritating gas that is produced through the incomplete combustion of hydrocarbons. Sources of CO include combustion devices (e.g., boilers and furnaces), motor-vehicle exhaust, generators and other gasoline or diesel-powered engines, gas space heaters, woodstoves, gas stoves, fireplaces, tobacco smoke, and various occupational exposures. CO poisoning is a leading cause of unintentional poisoning deaths in the United States. Unintentional, non-fire related CO poisoning is responsible for approximately 450 deaths and 21,000 emergency department (ED) visits each year.  
1, 2  
Clinical Criteria  
A person with signs or symptoms consistent with a diagnosis of carbon monoxide poisoning. There is no unique list of CO poisoning symptoms: the condition presents with a non-specific profile  
3  
. Typical symptoms include, but are not limited to, headache, dizziness, fatigue/weakness, nausea/vomiting, confusion, shortness of breath, chest pain, and loss of consciousness.  
A person whose poison control center report indicates an exposure to carbon monoxide (Call type= exposure, Substance = carbon monoxide) with minor, moderate, or major health effects (Medical outcome = minor, moderate, major, death).  
Laboratory Criteria For Diagnosis  
A person with a carboxyhemoglobin (COHb) level of ≥ 5.0% as measured by a blood sample or pulse CO-oximetry.  
Criteria to Distinguish a New Case from an Existing Case  
A case should be categorized as a new (incident) case when there is either:  
New exposure to CO from different exposure source.  
Repeated exposure as defined by having the same exposure source as previous occurrence where the criteria used to designate a case has been resolved prior to repeat exposure.  
A case is categorized as a prevalent case when there are multiple reports for the same episode, such as when there are multiple COHb lab test results or when a patient receives multiple hyperbaric treatments following a single poisoning event.  
Case Classification  
Suspected  
Reporting Systems:  
Clinicians, Medical Examiners/Coroners, Laboratories, Hyperbaric Chambers, Poison Centers:  
(S1) A carboxyhemoglobin (COHb) level, as measured by a pulse co-oximeter, of equal to or greater than 9% and less than or equal to 10%.  
-  
OR  
-  
(S2) In the absence of laboratory confirmation of an elevated COHb, a report of a patient with non-specific symptoms (headache, dizziness, and/or fatigue/weakness)  
AND  
environmental monitoring consistent with an exposure to CO.  
-  
OR  
-  
(S3) A report of a patient with an environmental exposure consistent with CO poisoning.  
4  
-  
OR  
-  
(S4) In the absence of laboratory confirmation of an elevated COHb, a report of a patient with non-specific symptoms (headache, dizziness, and/or fatigue/weakness)  
AND  
exposure to a source of CO.  
Administrative Data (in the absence of case investigation):  
(S5) ICD-9-CM Coded Data: In the absence of an N-986 code: (1) a medical care record in which an E-code that mentions CO exposure as a cause of illness is listed anywhere in the record (E818.0-.9, E825.0-.9, E844.0-.9, E867, E868.0, E868.1, E890.2, E891.2), or (2) a medical care record in which an E-Code where carbon monoxide exposure is plausible is listed (N987, E838.0-.9, E869.9, E951.0, E951.1, E951.8, E952.9, E958.1, E962.2, E962.9, E968.0, E972, E978, E979.3, E981.0, E981.1, E981.8, E988.1). [Note: ICD codes are listed in Appendix 1 of the Position Statement].  
-  
OR  
-  
(S6) ICD-10 Coded Data: In the absence of T58 code, a mortality record in which a code that mentions CO exposure as a cause of illness, is listed anywhere in the record (X47, X67, Y17).  
-  
OR  
-  
(S7) Poison Control Center (PCC) Data: A record of a case with "exposure" recorded as the type of call, when the exposure substance was carbon monoxide,  
AND  
a minor medical outcome was reported.  
-  
OR  
-  
(S8) Worker’s Compensation (WC) Data: A record of a workers compensation submitted claim where CO poisoning is listed.  
Probable  
Reporting Systems:  
Clinicians, Medical Examiners/Coroners, Laboratories, Hyperbaric Chambers, Poison Centers:  
(P1) A carboxyhemoglobin level, as measured by a blood sample, that is 9% ≤ COHb ≤ 10% in smokers or for those whom smoking status is unknown.  
-  
OR  
-  
(P2) A carboxyhemoglobin level, as measured by a pulse co-oximeter of > 10%.  
-  
OR  
-  
(P3) Loss of consciousness or death without alternative explanation  
AND  
exposure to a source of CO.  
-  
OR  
-  
(P4) In the absence of environmental monitoring, a report of a patient with signs or symptoms consistent with acute CO poisoning  
AND  
concurrent environmental exposure as that of a confirmed CO poisoning case.  
-  
OR  
-  
(P5) A PCC report (status= closed) with “exposure” recorded as the type of call, when the exposure substance was carbon monoxide,  
AND  
a moderate or major medical outcome or death was reported.  
Administrative Data (in the absence of case investigation):  
(P6) ICD-9-CM Coded Data: A medical care record in which an E-code indicating acute carbon monoxide poisoning inferred from motor vehicle exhaust gas exposure is listed anywhere in the record, i.e., E868.2, E952.0, or E982.0. [Note: ICD codes are listed in Appendix 1 of the Position Statement].  
-  
OR  
-  
(P7) Poison Control Center (PCC) Data: A record of a case (status= closed) with "exposure" recorded as the type of call, when the exposure substance was carbon monoxide,  
AND  
a moderate or major medical outcome or death was reported.  
-  
OR  
-  
(P8) Workers’ Compensation (WC) Data: A record of a workers compensation paid claim where CO poisoning is listed.  
Confirmed  
Reporting Systems:  
Clinicians, Medical Examiners/Coroners, Laboratories, Hyperbaric Chambers, Poison Centers:  
(C1) A carboxyhemoglobin level, as measured by a blood sample, of > 5% in nonsmokers  
5  
.  
-  
OR  
-  
(C2) A carboxyhemoglobin level, as measured by a blood sample of > 10% in smokers or for whom smoking status is unknown.  
5  
-  
OR  
-  
(C3) In the absence of laboratory confirmation of an elevated COHb level, signs or symptoms consistent with acute carbon monoxide poisoning  
AND  
a positive environmental exposure consistent with CO poisoning.  
4  
-  
OR  
-  
(C4) A PCC report (status = closed) with "exposure" recorded as the type of call, when the exposure substance was carbon monoxide,  
AND  
a minor, moderate or major medical effect or death was reported  
AND  
a positive environmental exposure consistent with CO poisoning was indicated in the case notes  
4  
.  
Administrative Data (in the absence of case investigation):  
(C5) ICD-9-CM Coded Data: (1) A medical care record for CO poisoning in which the Nature of Injury code N-986 "Toxic effect of CO" is listed anywhere in the record,  
OR  
; (2) a medical care record in which an External Cause of Injury code (E-code), indicating exposure to carbon monoxide (exclusively) is listed anywhere in the record, i.e., E868.3, E868.8, E868.9, E952.1, or E982.1. [Note: ICD codes are listed in Appendix 1 of Position Statement].  
-  
OR  
-  
(C6) ICD-10 Coded Data: A mortality record in which T58, Toxic Effect of Carbon Monoxide, is listed anywhere in the record.  
-  
OR  
-  
(C7) ICD-10-CM coded data: A medical care record for CO poisoning in which T58, Toxic Effect of Carbon Monoxide, is listed anywhere in the record.  
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