

Toxidromes—A Decision-Making Tool for Early Response to Chemical Mass Exposure Incidents

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A common language to describe and recognize clinical manifestations of toxic chemical exposures is essential for emergency responders and hospital first receivers to be prepared to provide rapid and appropriate medical care for victims of industrial chemical mass exposures and terrorist attacks. In these situations, when the identity of the chemical is not known, first responders need a tool to rapidly evaluate victims and identify the best course of treatment. Military and civilian emergency response communities use a “toxic syndrome” (toxidrome) approach to quickly assess victims and determine the best immediate treatment when information on chemical exposures is limited. Toxidromes can be defined by a unique group of clinical observations, such as vital signs, mental status, pupil size, mucous membrane irritation, and lung and skin examinations. Data on over 20 toxidrome systems were evaluated to identify salient features and develop a consistent lexicon for use by state, local, tribal, territorial, and federal first responders and first receivers. A workshop of over 40 practitioners and experts in emergency response, emergency medicine, and medical toxicology developed names and definitions for 12 unique toxidromes that describe and differentiate the clinical signs and symptoms from exposures to chemicals. These toxidromes focus on acute signs and symptoms caused by inhalation and dermal exposures. Each toxidrome is characterized by exposure routes and sources, organs/systems affected, initial signs and symptoms, underlying mode of action, and treatment/antidotes. Toxidrome names and definitions are designed to be readily understood and remembered by users. Communication in a crisis requires accurate and succinct terms that can quickly convey the health conditions of patients. These toxidromes lay the foundation for a consistent lexicon that if adopted widely, will improve response to chemical mass exposure incidents.