

Inaugural Issue:

Overview of the Toxicology Investigators Consortium (Toxic)

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In 2018, the National Drug Early Warning System (NDEWS) and the American College of Medical Toxicology (ACMT) initiated a collaboration to develop a capability to identify emerging drugs and drug trends encountered by medical toxicologists during patient consultations and toxicology evaluations. The ACMT established and maintains the Toxicology Investigators Consortium (Toxic). Toxic is a unique multicenter toxico-surveillance registry and research network of physicians specifically qualified in the field of medical toxicology.

ACMT and NDEWS will provide the NDEWS community with six briefs about novel and emerging cases from this unique registry. This inaugural brief provides an overview of Toxic, a description of methods to identify the novel and emerging cases within Toxic, and a preview of drugs that may be featured in upcoming briefs.

Toxicology Investigators Consortium (Toxic)

Toxic is a toxico-surveillance registry and research network of physicians specifically qualified in the field of medical toxicology.

The Toxic registry contains more than 65,000 cases providing a uniform array of reliable clinical data on patients. Approximately 8,000 cases are added each year.

Toxic is operated by the American College of Medical Toxicology (ACMT).

Toxic Briefs are available at:

www.ndews.org

Figure 1: More Than 100 Medical Toxicologists from 35 Participating U.S. Toxic Sites, Jan.–Sept. 2018



Note. Participating medical toxicologists are from approximately 35 sites and practice at 55 hospitals in 21 states.

Source. ACMT website, www.toxicregistry.org

Overview

Medical toxicology is a medical subspecialty in which the diagnosis and management of adverse effects of exposure to drugs and chemical substances are addressed, including drugs of abuse. Medical toxicologists provide consultation and toxicology evaluations on patients in a variety of clinical settings: at the bedside in emergency departments, in intensive care units, in inpatient medical wards, and in outpatient clinics.

In 2010, ACMT, the professional organization of board-certified medical toxicologists, established *Toxic* to collect a uniform array of reliable clinical data on patients evaluated by medical toxicologists. Today, more than 100 medical toxicologists have entered more than 65,000 cases into Toxic. These toxicologists are from approximately 35 sites, practice at 55 hospitals in 21 states, and represent all 10 federal regions around the United States (Figure 1).

Background

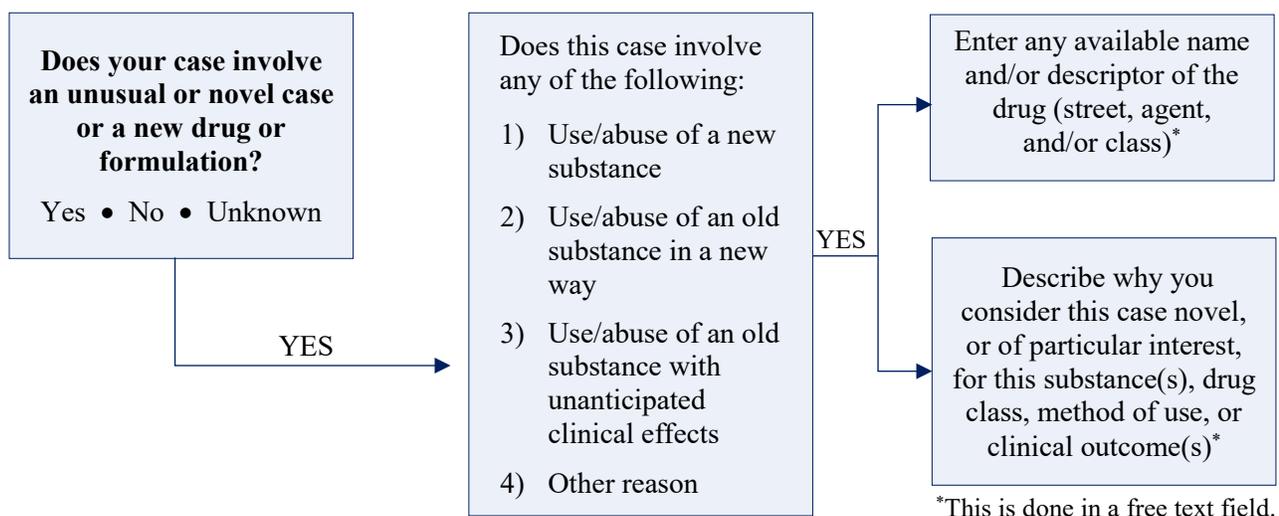
The Toxic registry is a unique database of information about patients who present in the acute care or clinical setting with an overdose and where a medical toxicologist has consulted. At the time of consult, the medical toxicologist collects patient data on demographics, site location, exposure (including type of exposure, i.e., intentional, nonintentional, self-harm, and misuse/abuse), identity of the agent based on patient history and available collaborating information (e.g., pill bottles and history from family member), treatment, and outcomes. Cases in Toxic may involve intentional pharmaceutical and nonpharmaceutical exposures; some are the result of self-harm, whereas others are the result of the misuse or abuse of a substance.

Even though medical toxicologists are not asked to consult on every overdose patient that presents to the hospital, they tend to consult on the more complex cases, especially on cases involving the toxicity of new and emerging drugs and chemicals. *These novel and emerging cases, along with their supporting information, may be helpful to the NDEWS community and those working to address and combat drug overdoses in the United States.*

Methods for Case Identification for Toxic Briefs

The Toxic registry has a mandatory sentinel event detector field that helps flag novel and emerging exposures. The sentinel field will be searched to identify cases for the *Toxic Briefs*. Figure 2 presents information collected about novel cases.

Figure 2: Questions Included in Toxic Registry’s Sentinel Event Detector Field to Help Flag Novel and Emerging Exposures for NDEWS



Upcoming *Toxic* Briefs

A sample search using the methods described in Figure 2 for novel cases occurring June 1 through August 30, 2018 was conducted to identify potential topics. Novel drugs and drug combinations found in these cases that may serve as topics for future briefs include:

- Ibogaine (a naturally occurring substance with hallucinogenic and dissociative properties)
- U-47700 (a synthetic opioid)
- M30 (a semisynthetic opioid often contaminated with fentanyl)
- DOB (a synthetic substituted amphetamine with hallucinogenic properties)
- Accidental ingestion of fentanyl and marijuana specifically by children

Other types of cases that may be reviewed are cases involving new-to-market prescription drugs (demonstrating previously unknown toxicities), uncommon exposures, and unusual responses from common exposures. To identify topics for future briefs, a search will be conducted one month prior to publication to identify novel cases occurring in the previous six months. A topic will be selected by NDEWS and ACMT staff based on a review of the search results.

Limitations

Toxic case accrual is limited to medical centers that have medical toxicologists on staff. Participating sites are in 21 states but do not represent a population-based sampling and cannot be used to produce prevalence estimates. The results are intended to be used for epidemiologic and descriptive purposes. Analytical confirmation is rarely obtained as such laboratory analysis is not generally part of the clinical consultation and rarely has impact on the treatment plan. Although all participating sites have been trained to use the sentinel event detector field, a drug that would be considered new or emerging by one investigator may be considered less novel by another.

References

- Farrugia LA, Rhyee SH, Campleman SL, Judge B, Kao L, Pizon A, Porter L, Riederer AM, Wiegand T, Calello D, Wax PM, Brent J; Toxicology Investigators Consortium (Toxic) Study Group. The Toxicology Investigators Consortium Case Registry—the 2017 Annual Report. *J Med Toxicol*. 2018;14:182–211. PMID: 30094774.
- Gilley M, Brent J, Calello DP, Wax P, Finkelstein Y. Synthetic Cannabinoid Exposure in Adolescents Presenting for Emergency Care. *Pediatr Emerg Care*. 2018 Mar 12. PMID: 29538266.
- Riederer AM, Campleman SL, Carlson RG, Boyer EW, Manini AF, Wax PM, Brent JA, Toxicology Investigators Consortium (Toxic). Acute Poisonings from Synthetic Cannabinoids—50 US Toxicology Investigators Consortium Registry Sites, 2010–2015. *MMWR. Morbidity and Mortality Weekly Report*. 2016;65:692–695.
- Wax PM, Kleinschmidt KC, Brent J. The Toxicology Investigators Consortium (Toxic) Registry. *J Med Toxicol*. 2011;7:259–265.

***Toxic* Briefs are available at: <https://www.ndews.org>
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