In Response to Barbee et al.'s "Analysis of Mushroom Exposures in Texas Requiring Hospitalization, 2005–2006"

Dear Editor,

We would like to thank Barbee et al. for their review of mushroom exposures called to Texas Poison Control Centers (PCC), and we commend them for utilizing the poison center notes for their analysis. However, we feel it is important to point out problems with this study to enable those less familiar with PCC data to better interpret this work and to assist others performing similar research.

The methods section requires explanation of their case inclusion criteria. For exposure reason, the authors do not state if they included both intentional and unintentional exposures; however, given that their *results* state "all exposures were . . . intentional," this suggests they included both. But this is impossible, as 52.4% of their exposures ($n = 389$) were in children <5 years old. Nearly all toxin exposures reported to poison centers in children <5 years old are unintentional; these exposures are results of childhood, age-appropriate curiosity without any specific intent. Excluding malicious reasons and adverse food reactions, the majority of mushroom exposures in this age group will be unintentional. In our center from 2003 to 2008, 99.6% of mushroom exposures in children <5 years old were unintentional ($n = 730$); this ratio is supported by other studies [1–3]. If instead the authors only included intentional exposures, it remains a mystery what these 389 cases of "intentional" children <5 years old represent.

There are several other methods ambiguities. Was ingestion as the route of exposure required for cases to be included? What was done with cases with other routes of exposure besides ingestion? What were the actual AAPCC substance categories used for the database search? How were inconsistencies between coded clinical effects and case notes resolved? What was done with clinical effects that were coded as "not related" or "unknown if related"? How many reviewers analyzed each case and if there were more than one reviewer per case, how were inconsistencies resolved between reviewers? How did "toxic effect" differ from "signs and symptoms"? Why did "hospitalization" include psychiatric admissions (7% of their total admissions)? Regarding the P values; what values were compared?

Regarding case outcomes, the authors report a total of 497 cases with known outcome, 271 cases that were not followed to a known outcome, and 7 confirmed nonexposures. This totals

775 cases compared to the author's $N = 742$, so clearly some (but not all) of those with outcomes not followed or nonexposures were excluded from their total; which cases were excluded is not stated. All cases not followed to a known outcome should have been excluded.

Cases with non-mushroom co-ingestants were included and a disproportionate number of those cases were admitted (79%); with these cases there is no way of assigning causality of the clinical effects or outcomes to the mushroom exposure. All cases with co-exposures should have been excluded.

We encourage researchers to collaborate on these types of studies as broader conclusions might be possible if more poison centers had been called upon to supply additional cases and expertise.

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