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## 112. Patient characteristics and treatment approaches in U.S. nonpharmacologic nitrite poisonings evaluated by medical toxicologists

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**Background:** Nitrite compounds, including alkyl nitrites ("poppers") and sodium nitrite, are increasingly encountered in acute clinical settings and carry toxicologic risk. This case series describes the demographics, clinical characteristics, management, and outcomes of patients with nitrite toxicity evaluated by medical toxicologists recorded in the Toxicology Investigators Consortium (ToxIC) Core Registry.

**Case report / case series:** We performed a secondary data analysis of the ToxIC Core Registry from January 2010 to December 2025 and identified all cases involving nonpharmacologic nitrite exposures. After initial review of the data, 24 patients were identified over this study period. Three exposure subgroups were identified: sodium nitrite (SN, n = 6), alkyl nitrites (AN, n = 12), and other/unspecified nitrites (ON, n = 5). One patient was exposed to isosorbide and was therefore excluded. Patient demographics, exposure history, clinical presentation, treatment, and outcomes were analyzed using descriptive statistics. The overall cohort median age was 35 years (range 12-54). Age differed across groups with the SN group being younger (median 19 years) compared to AN (44 years) and ON (42 years). The SN group was predominantly female (4/6, 66.7%), while AN was predominantly male (10/12, 83.3%). Most exposures were acute (22/23, 95.6%), and one AN patient had an acute-on-chronic exposure. The most common overall intent was intentional non-pharmaceutical (n = 13, 56.5%). The SN group was characterized predominantly by intentional self-harm (5/6, 83.3%) and the AN group by misuse to achieve intoxication (6/12, 50%). The route of exposure for the AN group was diverse with the predominant routes of exposure being oral ingestion (5/12, 41.7%) and inhalation (4/12, 33.3%), while all SN exposures were oral (6/6, 100%). Methylene blue was administered to all SN patients (6/6, 100%) compared to 7/12 in the AN group (58.3%). One patient in each group required intubation and mechanical ventilation (AN, 1/12, 8.3%, and SN, 1/6, 16.7%). Two AN patients (2/12, 16.7%) and two SN patient (2/6, 33.3%) required intensive care, and one patient in the SN group died during hospitalization.

**Discussion:** Sodium nitrite exposures were predominantly intentional self-harm events in younger, female patients and carried the greatest clinical severity, including the only in-hospital death. Alkyl

nitrite exposures were largely recreational in older males; several patients reported ingestion, which is known to increase risks for toxicity. Methemoglobinemia was common, and treatment with methylene blue was effective in most cases, including 5/6 SN cases.

**Conclusions:**Our case series highlights populations at risk for toxicity from nonpharmacologic nitrites, as well as the importance of availability of testing and treatment for methemoglobinemia. Given the high burden of ingestion in both AN and SN cases, harm reduction and prevention efforts would likely be high yield.