

HIGHLIGHTS

Deaths from PMMA

Paramethoxymethamphetamine (PMMA) is similar to “ecstasy” but is substantially more toxic. Although it has been found only in a small fraction of ecstasy pills confiscated during drug seizures, it is responsible for a disproportionate number of deaths. In this case series, the authors looked at deaths in Alberta and British Columbia from June 2011 to April 2012 where the forensic toxicologic analysis was positive for PMMA and the drug was implicated as the primary toxic agent. Of the 27 PMMA-associated deaths during this time period, 10 patients were pronounced dead at the scene and 17 died in hospital. The median time from exposure to death was 17 (range 5–264) hours. Exposure to PMMA was characterized by multiorgan dysfunction and serotonin syndrome, followed by cardiovascular collapse and death. Severe hyperthermia, hyperkalemia and hypoglycemia were present in most cases (Table 1). Toxicologic analysis showed multiple synthetic amphetamines. When evaluating patients suspected of exposure to sympathomimetic drugs of abuse, clinicians must anticipate multiple clinical effects from the increased release of dopamine,

Table 1: Results of antemortem laboratory investigations for patients transported to hospital ($n = 13/17$)*

Investigation	Level, median (range)	Normal range†
Peak potassium, mmol/L	7.0 (4.4–12.5)	3.5–5.1
Peak creatinine, mmol/L	214 (146–1127)	50–110
Peak AST, U/L	2944 (116–5124)	7–40
Peak creatinine kinase, U/L	8200 (1952–237 960)	38–215
Lowest recorded glucose, mmol/L	1.9 (0.4–17.1)	3.9–6.1

Note: AST = aspartate transaminase.
 *Data missing for 4 patients; they were pronounced dead soon after arrival to the emergency department (no antemortem investigations).
 †Normal values were obtained from the Royal College of Physicians and Surgeons of Canada.

serotonin, norepinephrine and other neurotransmitters, caution the authors. *CMAJ Open* 2015;3:E83-90

Effect of pediatric palliative care programs on use and costs of health care resources

Pediatric palliative care, a relatively new and evolving field, differs from adult palliative care in important ways. In particular, it is usually delivered over a longer time frame. This review synthesizes what is known about the effects of pediatric palliative care programs on health care use and costs among children with life-threatening conditions. The authors found 11 observational studies published between 2000 and 2013, but they were unable to do a meta-analysis of the findings because of considerable heterogeneity between the studies. Overall study quality was moderate to low (Table 2). There were fewer hospital admissions among children enrolled in these programs and fewer planned hospital admissions for those with cancer. However, the overall number of hospital, emergency and outpatient admissions did not differ from that for patients receiving usual care. Although studies showed a trend toward shorter lengths of stay in hospital, there was some evidence to suggest a shift to non-hospital settings. No conclusion could be drawn on health care costs. The authors call for prospective studies with improved study designs and standardization of outcome measures in this area. *CMAJ Open* 2015;3:E68-75

Table 2: Summary of quality assessment

Study*	Newcastle–Ottawa Scale quality assessment score		
	Selection (max 4 stars)	Comparability (max 2 stars)	Outcome (max 3 stars)
1	★ ★	★	★ ★ ★
2	★ ★ ★	★	★ ★
3	★ ★ ★	★	★ ★
4	★ ★ ★	★	★
5	★ ★ ★		★ ★
6	★ ★ ★		★
7	★		★ ★
8	★	★	★
9	★ ★		★

*A case series of 3 patients and a conference abstract were not included in the quality assessment.