

## ESTIMATION OF THE VOLUME OF LIQUID INGESTED - SIGNIFICANCE FOR LIQUID CHEMICAL AND DRUG INGESTIONS

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**Introduction:** Intentional and accidental ingestion of liquid chemicals and drugs such as pesticides, toxic alcohols and analgesics is common. Knowledge of the ingested volume in these patients can be important for accurate risk assessment and determining further management. The aim of this study was to determine how good people are at estimating the volume of liquid that they have ingested. **Methods:** Individuals were asked to take i) a "small mouthful", ii) a "large gulp" and iii) "5 mouthfuls" from a 500ml transparent, non-sports top water bottle (a new bottle of water was used for each of these). After each intake they were asked to estimate the amount ingested in ml. The actual amount ingested was subsequently determined by measuring the volume of water left in the bottle using a measuring cylinder, which measures in 1ml increments. **Results:** 50 individuals completed the study (mean±SD age 37.3±12.8 years, 44% male). The median (IQR) estimations (ml) were 39.5 (30-3-48.8), 73.0 (56.3-92.0) and 151.0 (94.3-190.0) for "small mouthful", "large gulp" and "5 mouthfuls" respectively. There was very poor correlation between the estimated and actual volume:  $r^2 = 0.01, 0.12$  and  $0.27$  for "small mouthful", "large gulp" and "5 mouthfuls" respectively. In the "small mouthful" category, estimations ranged from 91.7% underestimation to 100% overestimation; only 8% and 46% of estimations were within 10% and 50% of actual volume respectively. In the "large gulp" category estimations ranged from 87.7% underestimation to 52.9% overestimation; only 12% and 40% of estimations were within 10% and 50% of actual volume respectively. In the "5 mouthful" category, estimations ranged from 94.7% underestimation to 89.7% overestimation; only 9% and 29% of estimations were within 10% and 50% of actual volume respectively. **Conclusions:** Individuals are poor at estimating the volume of liquid that they have ingested. Toxicologically significant under- and over-estimations were common at both low and high actual ingested volumes. Clinical Toxicologists and Emergency Department staff involved in managing patients with ingestion of liquid chemicals need to be aware of this and build other factors into their risk assessment.