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Emergency responders' knowledge on antidotes use for chemical incidents

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Abstract

Objective: Introduction: Chemical incidents can occur whenever chemical agents are stored, transported or used. Optimal supportive care and appropriate antidotes use play an important part in the treatment of chemical incident casualties. Antidotes help enhance the elimination or antagonise the toxic effects of some chemical agents. When administered appropriately in a timely manner, antidotes can reduce complications and improve survival in the poisoned casualties.

Objectives: We aim to evaluate the emergency responders' (pre-hospital paramedics, emergency department doctors and nurses) knowledge on antidote

Methods: An online questionnaire in the multiple choice question format

Results: 157 emergency responders from London, UK participated in this survey.

Nerve agent poisoning: 102 (74.5%) and 71 (51.8%) identified atropine and pralidoxime as antidotes for nerve gas poisoning respectively. The responders had better knowledge on atropine than pralidoxime use: 106 (91.4%) knew that atropine is used to control the clinical features of cholinergic excess. 66 (56.9%) knew that pralidoxime is used to reactivate acetylcholinesterase before ageing occurs. Only 32 (27.6%) were aware that pralidoxime can be given both intravenously and intra-muscularly.

Hydrogen cyanide poisoning: 41 (35.5%) and 60 (46.9%) identified inhaled amyl nitrate and hydroxocobalamin as antidotes for hydrogen cyanide poisoning respectively. 62 (53.4%) were aware that hypotension and methaemoglobinemia can be associated with use of sodium nitrite in hydrogen cyanide poisoning.

Conclusions: Emergency responders appeared to have better knowledge on the antidotes used for nerve agent poisoning, especially atropine, compared to antidotes for hydrogen cyanide poisoning.

We suggest that there may be a role for simulation training to help improve management of chemical incidents and knowledge of antidote use in chemical incidents, especially for less commonly encountered agents.