

# Is poisoning a problem in South Sudan?

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Poisoning may result from four main causes:

**Self-poisoning:** this deliberate act may be an attempt to commit suicide or a “cry for help” caused by depression or relationship problems.

**Accidental poisoning:** this is most common in young children. For example, from the ingestion of attractive but poisonous berries or the drinking of a poisonous liquid (e.g. kerosene, weed killer) kept in a soda bottle.

**Intoxication at a place of employment** either from the acute effects of the escape of a toxin (e.g. as may arise from oil-based paint and especially if used in a poorly ventilated place) or the long-term effects of some toxins (e.g. mesothelioma caused by contact with asbestos).

**Criminal act of poisoning:** e.g. “spiking” of a drink at a party.

## Poisoning in Uganda

When I was working in Uganda I saw several cases of poisoning with organophosphates and was horrified by the mortality. Almost ten years ago, we carried out a simple study to find how widespread poisoning was in Uganda. We used the questionnaire below to assess the experience of individual Medical and Clinical Officers, in order to gain an indication of the drugs/chemicals taken and the mortality. Excess alcohol consumption was excluded from this study.

## Results

Fifty Medical and Clinical Officers at 40 Ugandan

hospitals/health centres were approached. Twenty-three replies (46%) were received (representing 20 health units). 133 cases were reported (mean of 6 patients per Medical/Clinical Officer) – see Table 1.

## Comment

This study did not attempt to define the incidence of poisoning. It described the experience of individual Medical/Clinical Officers in health units (hospitals and health centres). There is no indication of the numbers of patients who never arrived at these units. However the study did confirm that there was a serious problem. This was especially so for those over age 10 years among whom 66% had taken an organophosphate. These chemicals accounted for all the deaths. Death among adults from an organophosphate was disturbingly high at 30% although this is similar to international figures. All eight children up to age 10 years who had taken an organophosphate survived. Kerosene (see next article) was the main poisoning chemical taken by 55% of the children. There were no fatalities in those aged up to 10 years. This may reflect the smaller quantities of agents taken by accident by this group.

An assessment of the number of poisonings each year in Uganda using this information is difficult. However the annual total number of poisonings in all age groups may well reach 10,000 - 20,000. If 50% of these involve an organophosphate, with an overall mortality of 25%, then there may be 1,250 - 2,500 deaths. It must be emphasised that this is a very approximate calculation. On a worldwide basis it has been estimated that there are 1,000,000 accidental serious pesticide poisonings each year and 2,000,000 deliberate self-poisonings. These could account for a million deaths.

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Table 1. Types of poisoning and related deaths by age

| Drugs / chemicals | Age up to 10 years |          | Age over 10 years |                 |
|-------------------|--------------------|----------|-------------------|-----------------|
|                   | Number (%)         | Deaths   | Number (%)        | Deaths (%)      |
| Aspirin           | 1 (3%)             | 0        | 2 (2%)            | 0               |
| Batteries         | 2 (5%)             | 0        | 2 (2%)            | 0               |
| Chloroquine       | 0                  | 0        | 3 (3%)            | 0               |
| Chlorpheniramine  | 0                  | 0        | 1 (1%)            | 0               |
| Diazepam          | 0                  | 0        | 2 (2%)            | 0               |
| Herbicide         | 0                  | 0        | 1 (1%)            | 0               |
| Kerosene          | 21 (55%)           | 0        | 1 (1%)            | 0               |
| Organophosphate   | 8 (21%)            | 0        | 63 (66%)          | 19 (30%)        |
| Paracetamol       | 4 (11%)            | 0        | 4 (4%)            | 0               |
| Rat poison        | 1 (3%)             | 0        | 1 (1%)            | 0               |
| Unknown           | 1 (3%)             | 0        | 15 (16%)          | 0               |
| <b>Totals</b>     | <b>38</b>          | <b>0</b> | <b>95</b>         | <b>19 (20%)</b> |

## What is the situation in South Sudan?

Do we know how widespread the problem is in South Sudan? I suggest that we carry out a similar study here and then commission a series of articles covering the most common poisoning agents. So I encourage all Medical and Clinical

Officers who treat patients with poisoning to complete the questionnaire below and send it to me ([david@tibbutt.co.uk](mailto:david@tibbutt.co.uk)). When I have received enough responses I will report on the findings in this journal and acknowledge everyone who has sent in a completed questionnaire.

Questionnaire to assess type of poisoning and related mortality

| Name of reporter:  | Name of hospital / health centre: | Address: | Email:               | Date:  |
|--|-----------------------------------|----------|----------------------|--------|
| Question   | Number                            |          |                      |        |
|  | Up to age of 10 years             |          | Over age of 10 years |        |
|  | Total                             | Deaths   | Total                | Deaths |
| How many cases of poisoning have you seen and managed in the last six months?                |                                   |          |                      |        |
| What drugs / chemicals had been taken? Please list commercial and chemical names if possible |                                   |          |                      |        |

## How to treat kerosene (paraffin) poisoning

This is a common problem among young children. In a study reported in this journal (1) it accounted for over half of the children with all forms of poisoning admitted to 20 health units in Uganda. This problem usually seems to arise from kerosene being kept in an unlabelled container (e.g. a cola bottle) and within reach of the child.

Kerosene is poorly absorbed by the gastrointestinal tract but there is often aspiration into the respiratory tract especially if the child vomits. This causes pneumonitis which may be so severe as to cause pulmonary oedema and hypoxaemia. Such features usually occur within hours but may be seen a day or so after ingestion when the child becomes breathless and feverish up to 40°C. The signs of pneumonitis also include cough, tachypnoea and tachycardia, cyanosis, pulmonary crepitations and rhonchi. However a chest X-ray often shows pulmonary changes (non-segmental consolidation or collapse, especially on the right side and lower lobes) even without pulmonary physical signs (2). The incidence of central nervous system complications is variable but may occur in at least a quarter of cases. These most commonly include lethargy and much less often semi-coma, coma and convulsions (2).

Bone marrow toxicity and haemolysis are not common but the clinician must be aware of the possibility of heart rhythm problems (such as atrial fibrillation and ventricular fibrillation) and hepatic and renal failure. Contact with the skin and mucous membranes may cause variable degrees of irritation up to the formation of bullae. From the Ugandan data total mortality appears to be low although reports are more common in those under 5-years-old. Among the 506 cases reported by Cachia and Fenech (2) there was one death.

### Treatment

1. Immediately remove the child from the source of the poisoning and ensure the airway is open (this is always the first priority).
2. Remove contaminated clothing and thoroughly wash the skin with soap and water.
3. If possible perform pulse oximetry and give supplemental oxygen if indicated. Intubation and mechanical ventilation may be needed in a patient with severe hypoxia, respiratory distress or decreased consciousness.
4. Avoid gastric lavage because of the risk of inhalation and hence pneumonitis. If very large amounts of kerosene have been ingested less than an hour earlier then lavage may be considered if the airway can be protected by expert intubation.

There is no evidence that corticosteroids are helpful. Some texts recommend the routine use of antibiotics (3) but this remains controversial.

### References

1. Tibbutt, D. 2011. Is poisoning a problem in South Sudan? *South Sudan Medical Journal* 4: (4)
2. Cachia, E. A. 1964. Kerosene poisoning in children. *Archives of Diseases of Childhood*. 39: 502 – 504.
3. Godfrey, R. 2004. Common life-threatening emergencies in "Principles of Medicine in Africa" p.1359. Ed. Parry, E. et al., Publ. Cambridge University Press.

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