The need for ICU admission in intoxicated patients: a prediction model


**Context**

Intoxicated patients are frequently admitted from the emergency room to the ICU for observational reasons. The question is whether these admissions are indeed necessary.

**Objective**

The aim of this study was to develop a model that predicts the need of ICU treatment (receiving mechanical ventilation and/or vasopressors <24 h of the ICU admission and/or in-hospital mortality).

**Materials and methods**

We performed a retrospective cohort study from a national ICU-registry, including 86 Dutch ICUs. We aimed to include only observational admissions and therefore excluded admissions with treatment, at the start of the admission that can only be applied on the ICU (mechanical...
ventilation or CPR before admission). First, a generalized linear mixed-effects model with binominal link function and a random intercept per hospital was developed, based on covariates available in the first hour of ICU admission. Second, the selected covariates were used to develop a prediction model based on a practical point system. To determine the performance of the prediction model, the sensitivity, specificity, positive, and negative predictive value of several cut-off points based on the assigned number of points were assessed.

**Results**

9679 admissions between January 2010 until January 2015 were included for analysis. In total, 632 (6.5%) of the patients admitted to the ICU eventually turned out to actually need ICU treatment. The strongest predictors for ICU treatment were respiratory insufficiency, age >55 and a GCS <6. Alcohol and "other poisonings" (e.g., carbonmonoxide, arsenic, cyanide) as intoxication type and a systolic blood pressure ≥130 mmHg were indicators that ICU treatment was likely unnecessary. The prediction model had high sensitivity (93.4%) and a high negative predictive value (98.7%).

**Discussion and conclusion**

Clinical use of the prediction model, with a high negative predictive value (98.7%), would result in 34.3% less observational admissions.

Full text available from: [http://dx.doi.org/10.1080/15563650.2016.1222616](http://dx.doi.org/10.1080/15563650.2016.1222616)

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**Modelling dimercaptosuccinic acid (DMSA) plasma kinetics in humans**


**Context**

No kinetic models presently exist which simulate the effect of chelation therapy on lead blood concentrations in lead poisoning.

**Objective**

Our aim was to develop a kinetic model that describes the kinetics of dimercaptosuccinic acid (DMSA; succimer), a commonly used chelating agent, that could be used in developing a lead chelating model.

**Material and methods**

This was a kinetic modelling study. We used a two-compartment model, with a non-systemic gastrointestinal compartment (gut lumen) and the whole body as one systemic compartment. The only data available from the literature were used to calibrate the unknown model parameters. The calibrated model was then validated by comparing its predictions with measured data from three different experimental human studies.

**Results**

The model predicted total DMSA plasma and urine concentrations measured in three healthy volunteers after ingestion of DMSA 10mg/kg. The model was then validated by using data from three other published studies; it predicted concentrations within a factor of two, representing inter-human variability.

**Conclusions**

A simple kinetic model simulating the kinetics of DMSA in humans has been developed and
validated. The interest of this model lies in the future potential to use it to predict blood lead concentrations in lead-poisoned patients treated with DMSA.

Full text available from: http://dx.doi.org/10.1080/15563650.2016.1221508

**Fipronil insecticide toxicology: oxidative stress and metabolism**


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**The 100 most influential publications in paracetamol poisoning treatment: a bibliometric analysis of human studies**


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**An immunoassay to rapidly measure acetaminophen protein adducts accurately identifies patients with acute liver injury or failure**


Abstract and full text available from: http://dx.doi.org/10.1016/j.cgh.2016.09.007

**Harmful algal blooms and public health**


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**Comparative metabolism of tramadol and tapentadol: a toxicological perspective**


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Methadone maintenance therapy


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Aluminium phosphide
Marashi SM.


Carbamate insecticides
General

Carbofuran

Herbicides


Atrazine

Insecticides

Fipronil


Organochlorine pesticides
General


Organophosphorus insecticides
General


**Diazinon**


**Paraquat and diquat**

**Pyrethroid insecticides**
General


**Rodenticides**
Brodifacoum


**Yellow phosphorus**

**Zinc phosphate**

**CHEMICAL WARFARE, BIOLOGICAL WARFARE AND RIOT CONTROL AGENTS**

**Biological warfare**
**Ricin**

**Chemical warfare**
**General**


**Mustard gas**


**Nerve agents**

Graham LA, Johnson D, Carter MD, Stout EG, Erol HA, Isenberg SL, Mathews TP, Thomas JD, Johnson RC.
A high-throughput UHPLC-MS/MS method for the quantification of five aged butyrylcholinesterase biomarkers from human exposure to organophosphorus nerve agents. Biomed Chromatogr 2016; online early: doi: 10.1002/bmc.3830:

**Sarin**


**VX**


**PLANTS**

**Algae**


**Datura spp.**


**Mushrooms and other fungi**


**Mycootoxins**


**Rhododendron spp.**


**Ricinus communis**


**Taxus baccata** (*Yew*)


**ANIMALS**

**Fish/marine poisoning**

*Ciguatera*


**Frogs**


**Scorpions**


**Snake bites**


**Colubridae**


**Crotalinae** (*Pit vipers*)

Estaevo-Costa MI, Gontijo SS, Correia BL, Yarleque A, Vivas-Ruiz D, Rodrigues E, Chávez-Ortégui C, Oliveira LS, Sanchez EF. Neutralization of toxicological activities of medically-relevant *Bothrops* snake venoms and relevant toxins by two polyvalent bothropic antivenoms produced in Peru and Brazil. Toxicon 2016; online early:
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Pezzì M, Giglio AM, Scozzafava A, Filippelli O, Serafino G, Verre M.  
Spider bite: a rare case of acute necrotic arachnidism with rapid and fatal evolution.  

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