NEW RESEARCH: HOW TO SAFELY AND EFFECTIVELY ANAESTHETISE A CROCODILE

Traditionally crocodiles have been either physically restrained or chemically restrained using paralysing agents when immobilisation is required for diagnostic or surgical procedures. Paralysing agents alone are inhumane because the crocodiles can’t move or breathe properly, but can still see and feel.

Dr Annabelle Olsson, an experienced crocodile and wildlife veterinarian, is currently researching an anaesthetic model suitable for Australian crocodile species. She demonstrated this process on a crocodile as part of the Australian & New Zealand College of Anaesthetists Annual Scientific Meeting in Cairns this week.

“Veterinary anaesthesia and crocodile management has now evolved to encourage more specific and appropriate sedation and pain relief. Previously, there was predominantly anecdotal literature on what drugs and doses to give so we were asked to come up with protocols that are safe for everyone involved – the crocodile handlers, the crocodile and the operating vet,” Dr Olsson said.

The main questions the research addressed are:

- Which drugs are safe, effective and reliable for immobilising crocodiles and will also ensure that recovery occurs smoothly and safely (as opposed to older generation drugs with recovery times up to several days duration).
- What dosage is needed? This depends on the size of the crocodile because the bigger it is, the slower its metabolism and therefore the lower the dose required.
- Does injection site affect the onset, duration and reliability of the drug? Like most reptiles, crocodiles have a renal portal shunt in the lower half of their body where blood can bypass general circulation and be excreted from the body before it is absorbed and effects immobilisation. This poses major problems for anaesthesia.

“Crocodiles, like all reptiles, also use solar heat to manage their body temperature. Therefore, if the environmental temperature drops, the crocodile’s body temperature drops and as a result, this causes its metabolic rate to drop. This significantly changes anaesthetic management because a decrease in temperature then affects the rate at which drugs are absorbed and metabolised, which translates to changes in how quickly the crocodile becomes anaesthetised, how deeply it is anaesthetised and the length of time the crocodile is sedated,” Dr Olsson said.

Dr Catherine Hellier, an anaesthetist at Cairns Base Hospital who has been assisting Dr Olsson with the workshops, said the sessions attracted a lot of interest from anaesthetists attending the Annual Scientific Meeting.

“Crocodiles have a very different physiology and are more difficult to monitor compared with humans,” she said.
“Dr Olsson actually approached the anaesthetic department at Cairns Base Hospital to help brainstorm better drug regimes to anaesthetise crocodiles. We then helped her test various methods of anaesthetic monitoring as part of the research.

“Initial dosing studies were done on small farm crocodiles and then we used the new drug regime while moving larger animals (250-300kgs) to their new ponds at the farm. Finally we took the drugs to the field in Lakefield National Park where the late Steve Irwin assisted by catching the crocodiles.”

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