NABSnet Newsletter

#47 | 15 February 2024

NABSnet info

Hi all in our NABSnet network

Registrations for the next NABSnet Masterclass in Darwin are now full - I'm very much looking forward to seeing everyone who is coming.

This newsletter features an SDI where approximately 100 cattle died over a short period and a thorough PM and full sample set - including ocular fluids - helped pinpoint the diagnosis.

The 'dashboard' infographic below summarises our SDIs since NABSnet began in 2018 - excellent contribution to industry-level surveillance as well as support for the individual producers involved.

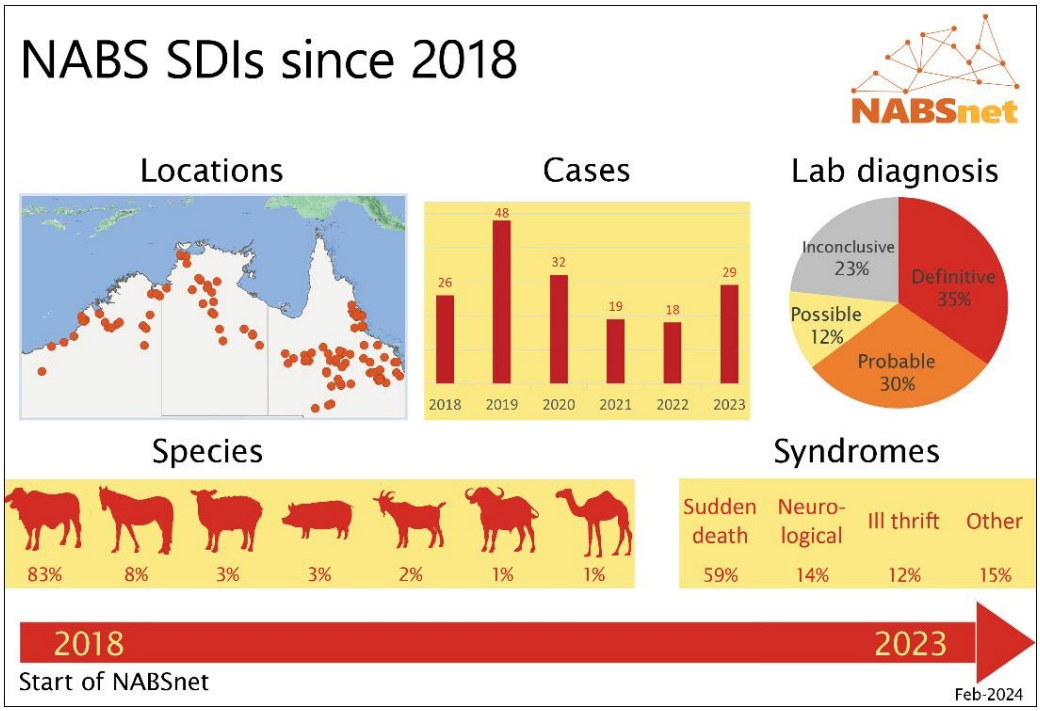
Other topics below:

- Cattle Skin Survey - Insect Hypersensitivity the most common diagnosis so far
- First group of vet students complete their subsidised northern placements - and want to come back!
- "Lunch with Leaders Series' - online opportunity

Cheers

Kev


Laboratory Diagnosis = Insect Hypersensitivity
NT – Katherine Region
NABSnet


NABS SDIs since 2018
NABSnet
Locations
Cases
Lab diagnosis
26
48
32
19
18
29
2018
2019
2020
2021
2022
2023
Inconclusive 23%
Definitive 35%
Possible 12%
Probable 30%
Species
Syndromes
83%
8%
3%
3%
2%
1%
1%
Sudden death 59%
Neuro-logical 14%
Ill thrift 12%
Other 15%
2018
2023
Start of NABSnet
Feb-2024

NABSnet Masterclass

Darwin, Northern Territory

NOW FULLY BOOKED

Looking forward to seeing everyone who is coming,

and including some of the gems in future newsletters for us all

100 of 3000 head found dead

Approximately 100 of 3000 Brahman cattle were found dead on a station in WA over a 3-week period in August 2023.

The cattle were a mix of first round wet cows and bulls, they had been in the paddock for two years prior and mustered and processed in May. Phosphorus supplements were given at the start of the year as well as an annual botulism vaccination. A 30% urea lick had been started in the first week of August. Availability of dry matter in the paddock was low.

The dead cattle were found spread throughout the paddock. The manager noted animals had sunken eyes, dehydration and dullness/ standing with their head down before death.

Post mortem examination
A two-year-old heifer was euthanised for post mortem examination. She had been noticed ill on the previous day. She was lying in lateral recumbency with mild tremors of her neck and head, eyes closed and had flaccid paralysis of her legs and tongue.

Haemorrhagic mottling of the spleen and heart auricles were the only significant findings grossly. The rumen was full of dry grass feed material. The urine was clear.

Samples taken:

- Pre-mortem bloods
- Aqueous humour
- Fresh and fixed heart, liver, kidney, spleen, lung, small intestine, forestomach, spinal cord, brainstem and brain
- Rumen contents
- Urine

Field differentials

Because of the paralysis before death and predominately normal gross post-mortem findings, botulism was considered the prime differential. It was suspected that the vaccinations given earlier in the year may have been stored/administered incorrectly. Urea toxicosis was also a differential given the timing of starting the urea lick and the beginning of the mortalities.

Lab findings

- The ammonia was markedly raised in both the aqueous humour (2788umol/L) and blood plasma (964umol/L), above normal (<45umol/L)
- ALT, total bilirubin, creatinine, CK, GGT and GLDH were all significantly raised in the serum biochemistry.
- Histopathology revealed severe, diffuse hepatic necrosis (consistent with the biochemistry results) indicating liver toxicity as significant pathology.
- Botulism C and D toxin ELISAs and botulism C and D toxin gene PCRs were all negative.

Diagnosis

The laboratory results confirmed that urea toxicity was the likely cause of deaths in these cattle, with plant hepatotoxins as a second differential.

Urea toxicity normally first presents with ileus and bloat, aggression, muscle tremors, hyper salivation, polyuria and grinding teeth in distress. This progresses to stumbling and weakness, gasping then an acute death. Although not all these clinical signs were noted in these animals they were not closely observed due to the extensive environment.

Urea toxicity can occur from a sudden increase in urea concentration or quantity. After an animal eats non-protein nitrogen the rumen microflora converts urea into ammonia which is absorbed by the blood stream. Urea poisoning then results in a rapid death due to high ammonia.

Recommendations

To allow the rumen microflora to adapt to urea supplements it is recommended to start on an 8% supplement and slowly transitioned to the maximum of 30% urea lick over a period of months. The feed availability and palatability of the lick must also be considered as animals on fibrous pastures with low energy are more likely to suffer from urea toxicosis and a high palatability will increase consumption. After a period of three days off urea the rumen microbiome will need to be reintroduced slowly again.

Recommendations to the manager on this property:

- Start NPN supplements with 8% concentration and gradually increase up to 30% urea.
- Monitor and keep a record of how quickly supplements are being consumed when initiated.
- Don't allow dry urea supplements to get wet as this can dissolve the urea and cause cattle to consume excess amounts quickly.

'The eyes have it' - add ocular fluids to your sample set

Ocular fluid biochemistry can help diagnose causes of sudden death. The eye is relatively isolated and protected so collection of ocular fluid up to 48 hours after death can add value in an investigation.

Testing can include:

- urea and nitrate/nitrite poisoning
- cyanide poisoning
- pregnancy toxaemia/ketosis (beta hydroxybutyrate)
- ruminal acidosis (D-lactate)
- hypocalcaemia
- hypomagnesaemia

Placement of needle to collect aqueous humour and vitreous humour

To collect either aqueous or vitreous humour

- Use an 18-gauge needle and 3 mL syringe not a vacutainer (to reduce the likelihood of getting tissue contamination – which can affect results).
- **Aqueous humour** - the watery contents of the anterior chamber. Insert the needle horizontally just below the cornea. Face the bevel of the needle towards the cornea to avoid the iris.
- **Vitreous humour -** the gel-like contents of the posterior chamber. Insert the needle via the sclera into the centre of the globe behind the lens (the tip of the needle may be seen through the pupil).

Tips

- If there's blood, sample the other eye with a fresh needle and syringe.
- Transfer samples to plain blood tubes (without anticoagulant) for transport. Choose small sample tubes.
- Collect from multiple animals that fit the case definition.
- Label and freeze samples and send to the lab as soon as practicable.
- Reference ranges are not available for many analytes, but extreme values are likely to be useful indicators of a particular disease or exposure to a toxin.

Cattle Skin Survey – continues to June 2024

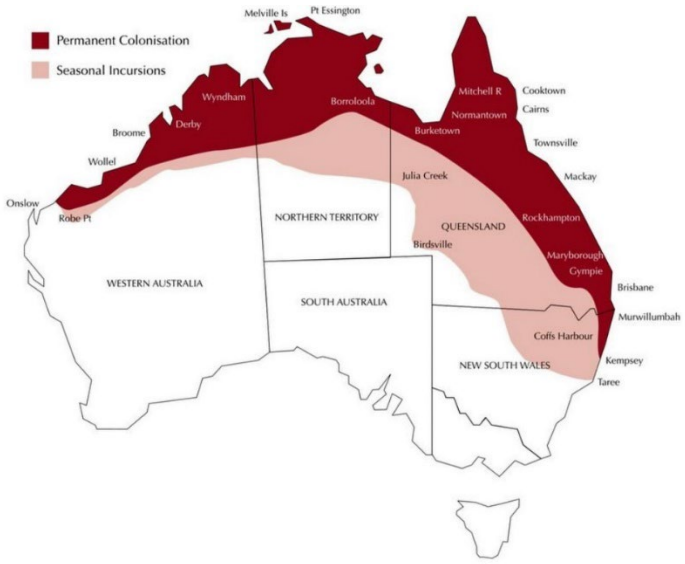
Insect hypersensitivity..... Buffalo Fly – a horrible pest!

The Skin survey is continuing and it's great seeing samples being collected on property and submitted to the lab for a diagnosis. **The most common laboratory diagnosis for skin lesions in northern cattle so far has been Insect Hypersensitivity.**

A common cause of hypersensitivity is Buffalo Flies. The Buffalo Fly is a major parasite in Australia, particularly in the north. It's a small biting fly that feeds off cattle and buffalo. It can cause severe irritation which can result in reduced production in heavily infested cattle. Control of Buffalo Fly is costly and extremely challenging in extensive northern properties. Buffalo flies also commonly develop resistance to insecticides.

Some of the effects of buffalo fly include:

- Skin lesions (which can have trade implications & reduce hide value)
- Reduced weight gain
- Pink eye (flies spread the bacteria)
- Resistance to current treatments.



Distribution of buffalo flies in Australia (Meat and Livestock Australia)

https://flyboss.com.au/seasonal-distribution-of-buffalo-fly/

The Skin Survey will continue until June 2024, so **NABSnet vets are encouraged to continue to sample cattle they see with skin lesions due to endemic causes. As you gear up to be out on properties again, take skin sampling kits.**

Kits are available from the primary industries department in your jurisdiction, all diagnostic testing is conducted charge exempt and a NABSnet subsidy is currently available.

DON'T FORGET to take photos of the lesions - this is an important and required step. Email them to the lab OR text direct to Teagan Fitzwater (NABSnet project manager) on 0466 614 706.

How to participate in the cattle skin survey

Attracting and retaining – people in focus

Young, veterinary, people

Last year vet students in years 4 and 5 at all Vet Schools in Australia were invited to apply for $3,000 subsidies from the NABS program to complete veterinary course placements in the northern Australian livestock industry in 2023 or 2024. The subsidy program was offered with the expectation that student experience in the region could be a positive step to attracting additional veterinarians to work in northern Australia – they might want to come back!

Applications exceeded places for all jurisdictions and 40 subsidies were awarded, 10 in WA, 10 in NT and 20 in QLD.

Of the 10 placements that have so far been completed with reports, 9 were with private practices in Qld, NT and WA and one on a pastoral property in WA.

All ten have indicated that they would return to work in the north, and 2 already have jobs lined up there – so congratulations to the practices that clearly enthused them.

Most said they wouldn't have come to the north without the assistance of the subsidy.

"Another highlight was learning about the diagnosis, prevention, management and treatment of several infectious diseases that commonly occur in the tropics (but are not a major consideration in Perth) such as heartworm disease, tick paralysis, leptospirosis and Hendra virus. ….. It was also a fantastic opportunity to explore a beautiful part of the country that I had never visited before, and I would love to work in North Queensland during my veterinary career. This placement has made me feel more prepared to do so." 5th year student from Murdoch, in FNQ

"The ability to explore the extensive systems and how they differ from intensive southern systems was a highlight .. and the opportunity I had to be exposed to the live export industry, both in terms of loading ships and trucks, inspecting cattle prior to loading and conducting bleeding and pregnancy diagnosis as apart of processing cattle. This has resulted in me being offered employment in the industry which has been my goal since the commencement of my placement" 5th year student from CSU in NT

"This was by far my favourite placement this year. It was a very hands-on experience, and witnessing tropical diseases that I would not have been able to otherwise witness first hand. Everyone was very welcoming, and the veterinary practice was fantastic, with a great level of care and detail. I am seriously considering a job in this practice in the future". 5th year student from UQ in NT

Building capacity across the north - (virtual) lunch with leaders

The Northern Australia People Capacity and Response Network (NAPCaRN) has been developed to build capacity across government, industry and indigenous stakeholders in northern Australia.

The online monthly 'Lunch with Leaders Series' is one of the initiatives under NAPCaRN to motivate, encourage and support current and emerging leaders across northern Australia through stories, challenges, reflections and lessons learned from inspiring and courageous leaders.

The events are virtual so anyone with an internet connection can attend. Guests in 2023 included Cathy McGowan, Paul Burke, Mike Guerin and Lois Ransom. 2024 kicked off with guest speaker the Hon. Ngaree Ah Kit, and the next event is with Anthony Wilkes on 23 February. Recordings of the events will be uploaded on the NAPCaRN website **agriculture.gov.au/napcarn**

The leadership series is open to anyone. Those interested in attending can email NABS@aff.gov.au. A reminder will be sent each month prior to the upcoming event.

Key NABS SDI network contacts

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Newsletter sent on Kevin's behalf from the team at Harris Park Group

Let us know any topics you'd like to see covered here.