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Use of technology in companion animal vet clinics

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Declaration

I would like to make the following disclosures…

- **Immediate Past President Companion Animal Veterinarian Branch of the NZVA**
- **Companion animal veterinary adviser for Zoetis**
- Standards Steering committee member WSAVA
- Co Convenor Science Week programme Medicine of Cats Chapter ANZCVS

Topics covered

- **Patient Assessment** : acute pain recognition
- **In clinic diagnostics** : AI diagnostic applications.
- **New therapeutics** : Monoclonal antibody therapies

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Use of technology in recognition of acute pain in cats:

Feline Grimace Scale app

The challenge [1]…

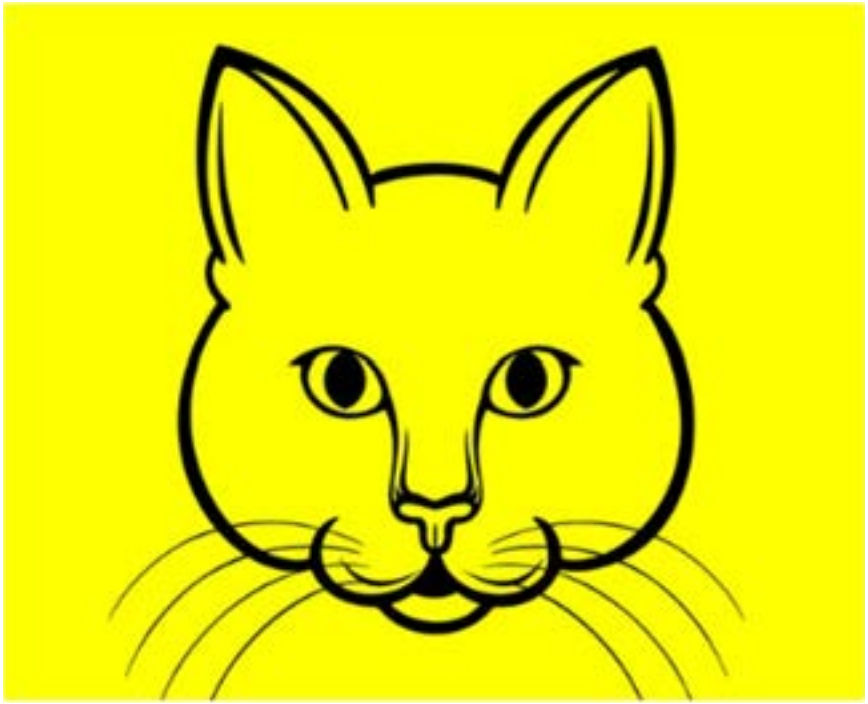
- Differentiating painful behaviours from fear and anxiety
- [@] Clinical parameters not specific.
- Poorly managed acute pain => maladaptive pain and negative experiences at the clinic.
- Continuity for pain monitoring

Feline Grimace Scale[2]

- Validated scale for acute pain in cats
- 5 “action units “ measured
- Score determines an intervention point (when to treat)
- Grimace scales not new tech!

Feline Grimace Scale App

- Free to download
- Photo taken of cat's head
- Image compared to action points in the app
- Score generated- intervention point for treatment
- Opportunities for home monitoring by caregivers



Impact on animal welfare [3]

- Raising awareness of the impact of pain on animals
- More frequent , earlier, and more effective management of acute and chronic post surgical pain
- Companion animal experience at the clinic impacts ability to provide further healthcare to patients.

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Use of AI platforms in Veterinary Diagnostics

The challenge..

- Confidence in performing tests
- Access to expert pathologists
- Time to get results , esp remote clinics
- Space limitations in vet clinics

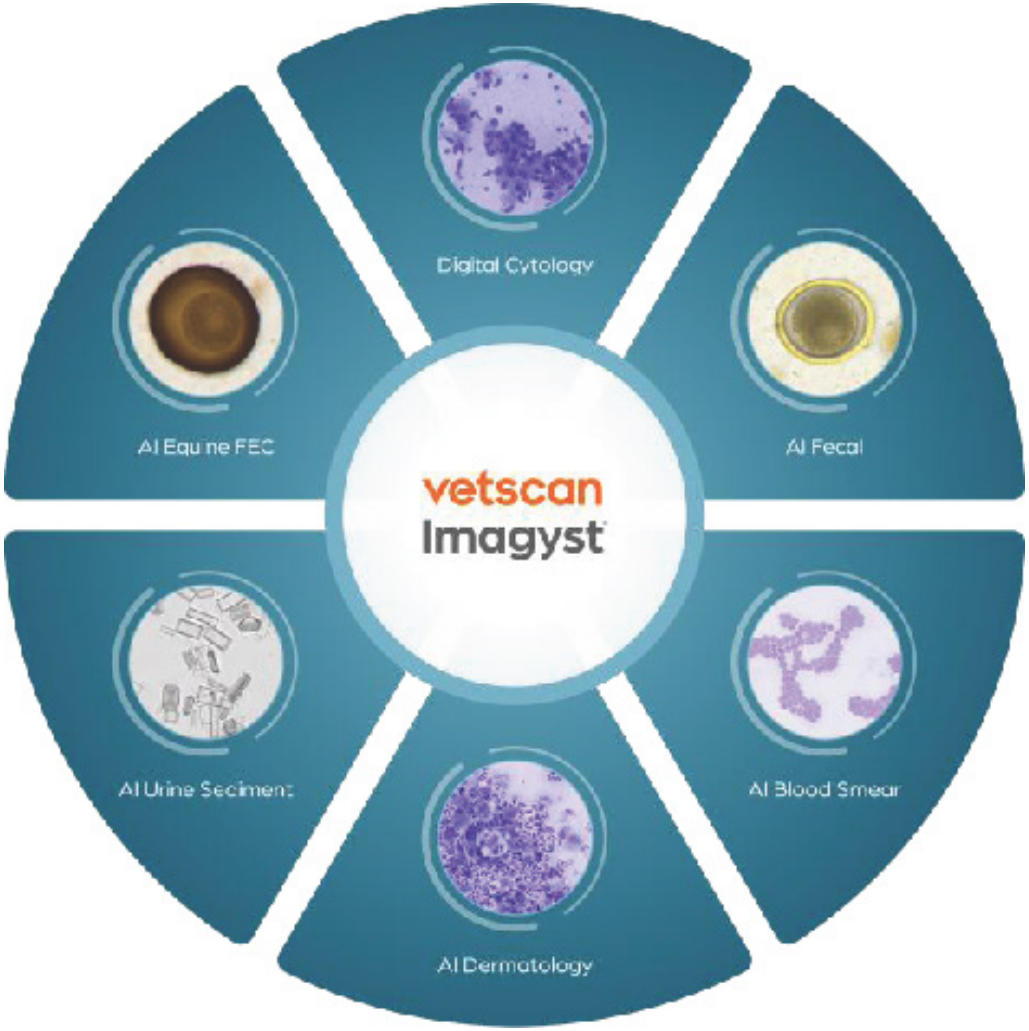
Blood and urine analysers are now regularly utilising AI [4,5]

zoetis

IDEXX LABORATORIES

5-8

vetscan Imagyst



Impact on animal welfare [9,10,11]

- More timely intervention
- Accuracy of diagnosis
- Prevalence information- disease and zoonosis
- Appropriate parasite treatment and anthelmintic programmes

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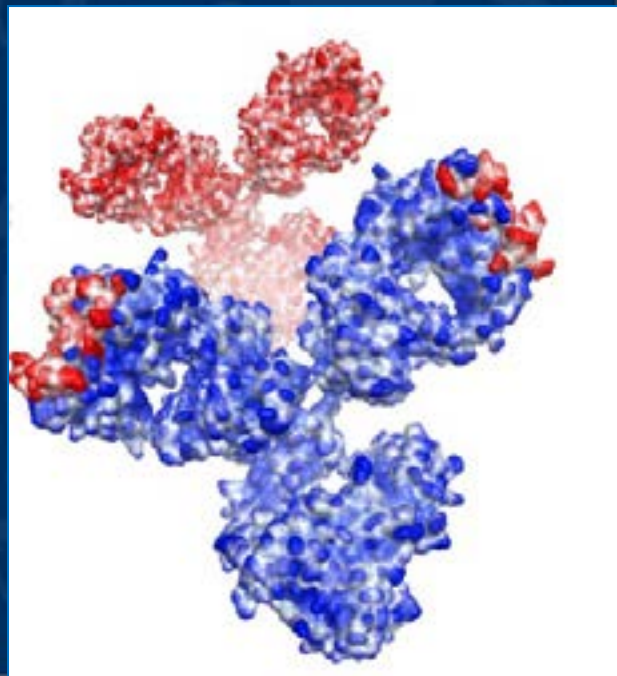
Use of technology in veterinary therapeutics

Monoclonal Antibodies



The challenges [12,13]

Can we improve on safety and efficacy of current veterinary medicines?

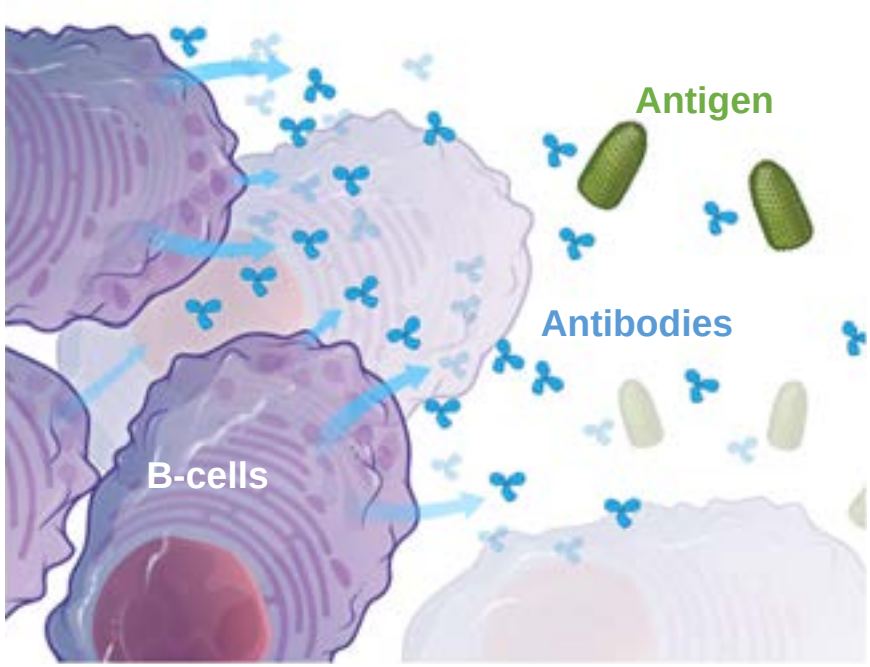
Limited information about Rx in patients with comorbidities and concurrent medications

Compliance and caregiver burden are significant with daily medications

Elevated CGB and treatment complexity impacts vet client relationship

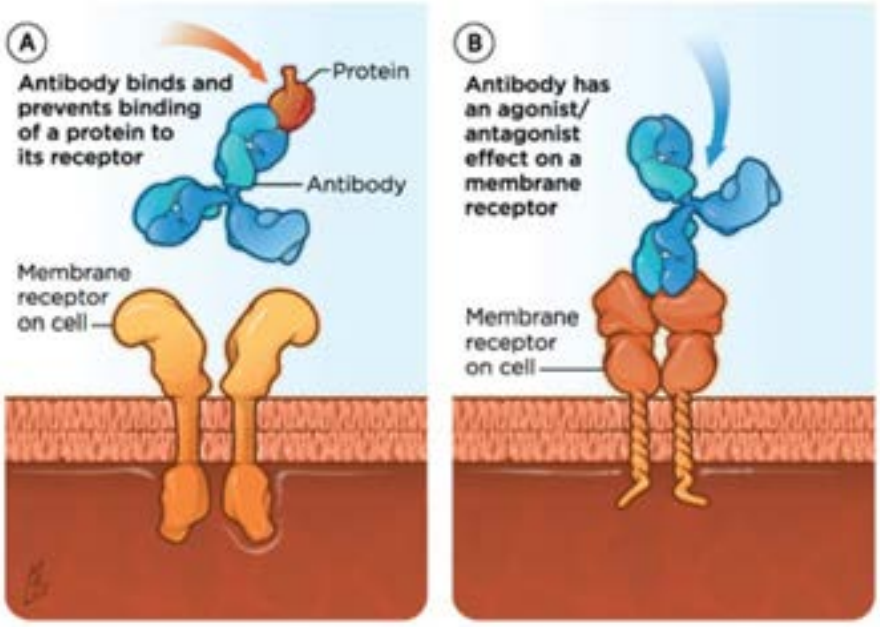
What is an antibody?

- Antibodies = Y shaped proteins produced by mature B-cells
- Used by the immune system to identify and neutralise foreign substances



Monoclonal Antibodies (mAbs) [14]

- Antibodies can now be manufactured and used therapeutically.
- Various ways of effecting disease- eg preventing binding of proteins to receptor, blocking receptors for proteins



Human monoclonals you may have heard of…

Herceptin®
trastuzumab
Precision • Power • Promise

KEYTRUDA®
(pembrolizumab)

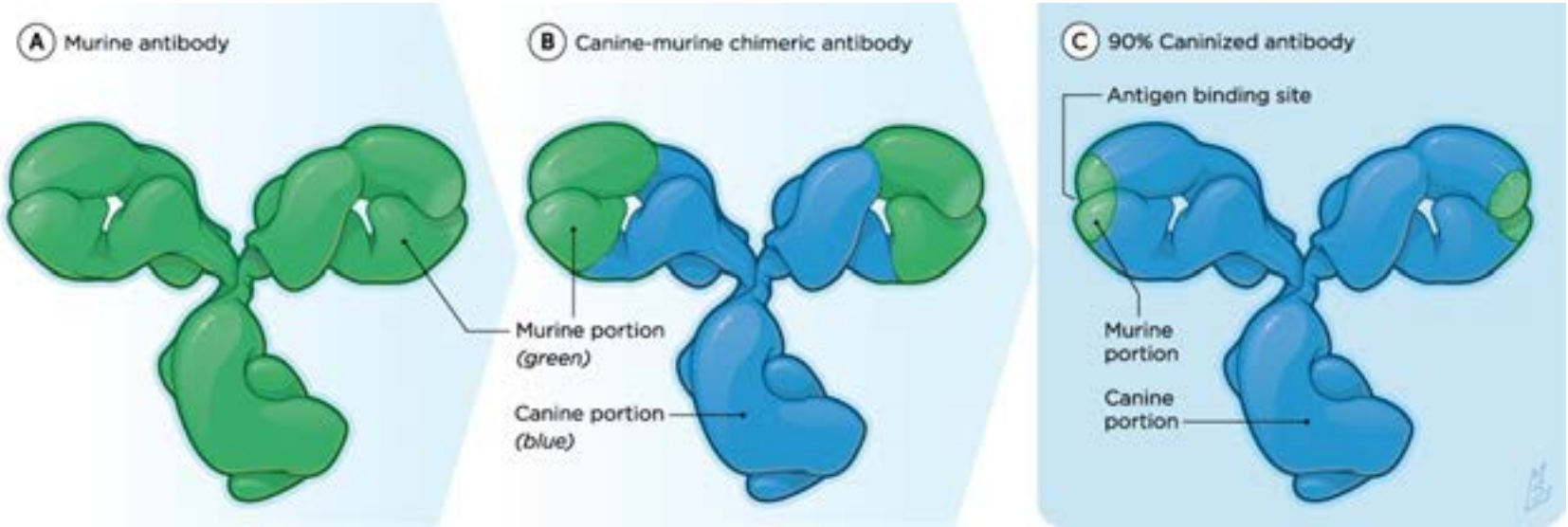
DUPIXENT®
(dupilumab) Injection
200mg · 300mg

HUMIRA®
adalimumab

Creating a monoclonal antibody [14]

- Use of rodent spleens for B cells…ethics
- Cells are harvested and mixed with cancer cells (hybridomas)
- Antibodies are secreted from hybridomas into culture
- Antibodies extracted and purified from culture medium

Speciation- veterinary indications



Less Immunogenic

Veterinary monoclonals

Gilvetmab

Why the interest?

	Traditional pharmaceuticals	Antibody therapy
Definition	Synthetic chemicals or plants	Mono or polyclonal Abs
Size	Small	Large protein macromolecules
Route/frequency	Mostly oral, often daily	Injectable, monthly or +
MOA/Specificity	Drug receptor interaction	Mimics natural interaction, EXTREME specificity
Targets	Intracellular targets (bacterial cell wall)	Extracellular targets (receptor or cytokine)
Metabolism/elimination	Hepatic, renal metabolism and elimination	Protein catabolism; minimal hepatic, renal elimination

Challenges [15]

- Manufacturing
- Education & expectations
- Regulator constraint
- Cost
- Immunogenicity

Impact on animal welfare [16]

Wide variety of targets available

Opportunity to treat disease previously thought of as specialist tx eg oncology and chronic diseases.

More opportunities for preventative healthcare

Reduced compliance requirement

Monoclonals -the future [17]

Source: Polaris Market Research Analysis

Future applications for technology [18]

- Imaging
- Customer management software- clinical records
- Disease surveillance
- Education
- Research

Future considerations for technology [19]

- Privacy and ethics – who owns the data
- Consent
- Data quality
- Bias

Questions……?