Australasian Veterinary Students’ Conference 2005
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Communication

Specialisation
Communicating specialist knowledge

FIP and microalbuminuria as examples

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a human being

should be able to change a diaper,
plan an invasion,
butcher a hog,
conn a ship,
design a building,
write a sonnet,
balance accounts,
build a wall,
set a bone,
comfort the dying,
take orders,
give orders,
cooperate,
act alone,
solve equations,
analyze a new problem,
pitch manure,
program a computer,
cook a tasty meal,
night efficiently,
die gallantly.

Specialization is for insects.

“Specialization is for insects”

Lazarus Long / Robert A. Heinlein
“Specialization is for insects”

Lazarus Long / Robert A. Heinlein
Glass half empty or half full?
What is a specialist?

“An individual who has narrowed down to such an extent that she / he has lost the broad competency of a generalist...”

Half empty
What is a specialist?

“An individual who has gained very advanced skills, knowledge and understanding in one or more defined areas of special interest...”
What is a specialist?

Society generally defines ‘specialists’ as having advanced knowledge in a fairly substantial area. I can think of no good reason for this. You could ‘specialise’ in one or several very narrow fields, while remaining a generalist. The number of these fields could grow over time. You could start now...
Specialisation: shades of grey
Where’s the motivation to ‘specialise’... or at least to gain specialist-level knowledge and understanding in a particular area?
Am I equipped to understand and convey ‘specialist level’ material?

In general, YES!
A breeder of Birman cats has had several kittens she has sold die of feline infectious peritonitis (FIP) a few weeks to months after the sale. She is absolutely distraught. What would you ask her / say to her?
“Wet” / effusive FIP

“Dry” / non-effusive FIP
“Wet” FIP
“Dry” FIP
Feline coronavirus

- Faecal-oral transmission
- Virus widespread in all cat populations
- FCV seropositivity rate is high, but FIP is an uncommon consequence of infection
- Only 1-5% of FCV-infected animals develop FIP (mainly kittens, some older cats)
- FCV persists in the intestinal tract and continues to replicate at low levels for ages in some cats
  - *i.e.*, some infected cats are long-term carriers
Feline coronavirus (FCV)

- Feline enteric coronavirus (FECV)
- Feline infectious peritonitis virus (FIPV)
Feline coronavirus variants

• FECV
  – Has a tropism for intestinal epithelial cells
  – May cause diarrhoea [usually mild or inapparent]

• FIPV
  – Has a tropism for macrophages
  – Causes death
FIPV and FECV

- Indistinguishable serologically
- Discriminating PCR tests are highly questionable
  - Defining sequence differences are not yet fully understood
  - FIPVs in various parts of the world are very similar to the local FECVs, less similar to distant FIPVs
Epizootiology of FCVs

- Each cat develops and harbours its own distinct FECV ‘quasispecies’

- Evidence is mounting that FIPVs are mutants of FECV arising *de novo* in each FECV-infected animal

- Rarely, a small epizootic of FIP may occur, with horizontal TXN of a FIPV
In vivo mutations of FECV $\rightarrow$ FIPV

- FECV
  - Intestinal epithelial cell tropism
  - Spontaneous mutations
  - Recombination with other coronaviruses

- FIPV
  - Macrophage tropism
  - Ineffective immune response
  - Severe disease
Communicating ‘specialist level’ knowledge and understanding about proteinuria

Should veterinarians recommend that all apparently healthy animals above a certain age be routinely tested for microalbuminuria?
Why is proteinuria so topical?

‘In-clinic’ microalbuminuria detection kits have become available for purchase from Heska [http://www.heska.com](http://www.heska.com)
NEW RESEARCH CONFIRMS:
MICROALBUMINURIA IS LINKED
to the presence of disease.

Only ONE Test Can Detect It.

Patents Pending
Glomerular proteinuria
Glomerular proteinuria
Glomerular proteinuria

Podocyte wrapped around glomerular capillary

Slit diaphragm
Microalbuminuria

“Mildly excessive albumin in the urine. The concentration is abnormally high but is below the limit of detection of most ‘conventional’ urine dipsticks”

Approx. 0.01 – 0.3g/L = 1 – 30 mg/dl
Case challenge
5 year-old MC Black Labrador Retriever – Case outline

- One week of low grade epistaxis
- Severe stiffness of gait
- Swollen painful joints
- Fever
- Anorexia
5 year-old MC Labrador Retriever – Findings

- Mature neutrophilia
- Mild thrombocytopenia
- Borderline hypoalbuminaemia (22g/L)
- Polyarthritis (suppurative, no organisms seen)
- Heavy proteinuria (3+ on dipstick)
5 year-old MC Labrador Retriever – Findings

- Urine S.G. 1.014, pH 7.5
- No hyperglobulinaemia or free haemoglobin / myoglobin in plasma
- No UTI or other features of an “active” urine sediment
- UP:UC 15 (normal <1)
5 year-old MC Labrador Retriever – Findings

- Incisor tooth root abscess
5 year-old MC Labrador Retriever – Your thoughts...
Infection, infestation, vaccination, drug Rx, neoplasia

*In* + *antibody* → *immune complex formation*

- Glomerulonephritis
- Polyarthritis
- Proteinuria
- Stiffness, lameness
5 year-old MC Labrador Retriever – Case progress

- Incisor tooth was pulled, releasing pus from the root abscess
- Signs of polyarthritis, fever and anorexia resolved within one week
- UP:UC improved dramatically within 3 weeks
Complications of glomerular proteinuria

- Renal failure
- Hypercoagulable state
- Thromboembolism
- Systemic arterial hypertension
Glomerular proteinuria as a marker

• The value of detecting mild albuminuria (i.e., microalbuminuria) in cats and dogs as a marker for various renal and non-renal diseases is currently under investigation
  – Diagnostic value?
  – Prognostic value?
  – Indications?
Current controversies

Should veterinarians recommend that all apparently healthy animals above a certain age be routinely tested for microalbuminuria?

If so, what should be done about the animals that yield positive test results?
Current controversies

Is the current definition of microalbuminuria as established by Heska, (i.e., the reference range for urine albumin concentration established using their ELISA) applicable to dogs and cats of all ages?
## Current controversies

<table>
<thead>
<tr>
<th>Age (dogs)</th>
<th>% with MA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 years</td>
<td>7.4</td>
</tr>
<tr>
<td>3-5</td>
<td>8.6</td>
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<tr>
<td>6-8</td>
<td>20</td>
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<tr>
<td>9-11</td>
<td>36</td>
</tr>
<tr>
<td>12+</td>
<td>49.1</td>
</tr>
</tbody>
</table>

*n=3,041*
Assuming for a moment that detection of MA correlates accurately with the presence of renal lesions, to what extent might these lesions represent a risk to the quality and quantity of life of the patient?

Progressive vs. non-progressive renal disease
Current controversies

What is the anticipated benefit of this proposed monitoring intervention to the health and happiness of patient and client?

Over-test: monitor and (perhaps) treat many animals unnecessarily

Under-test: miss an opportunity to intervene effectively in some cases
The future of specialisation?

- An increasing degree of specialisation in veterinary undergraduate curriculae?
- Limited licensure?
- Substantial “transfer” courses and exams for post-grad veterinarians wishing to make a career change?
The Future

• Increasingly convenient consultations for you and your clients with ‘career specialists’ using new technologies?

• Pressure to refer an increasing range and number of ‘challenging’ cases to ‘career specialists’?
Summary

• Communicating ‘specialist level’ knowledge to clients will be an enjoyable, rewarding, everyday part of the professional lives of most of you.

• Access to high quality information resources will further improve in the near future.

• Your challenge will be to assimilate, comprehend and effectively communicate your understanding of this information to your clients.