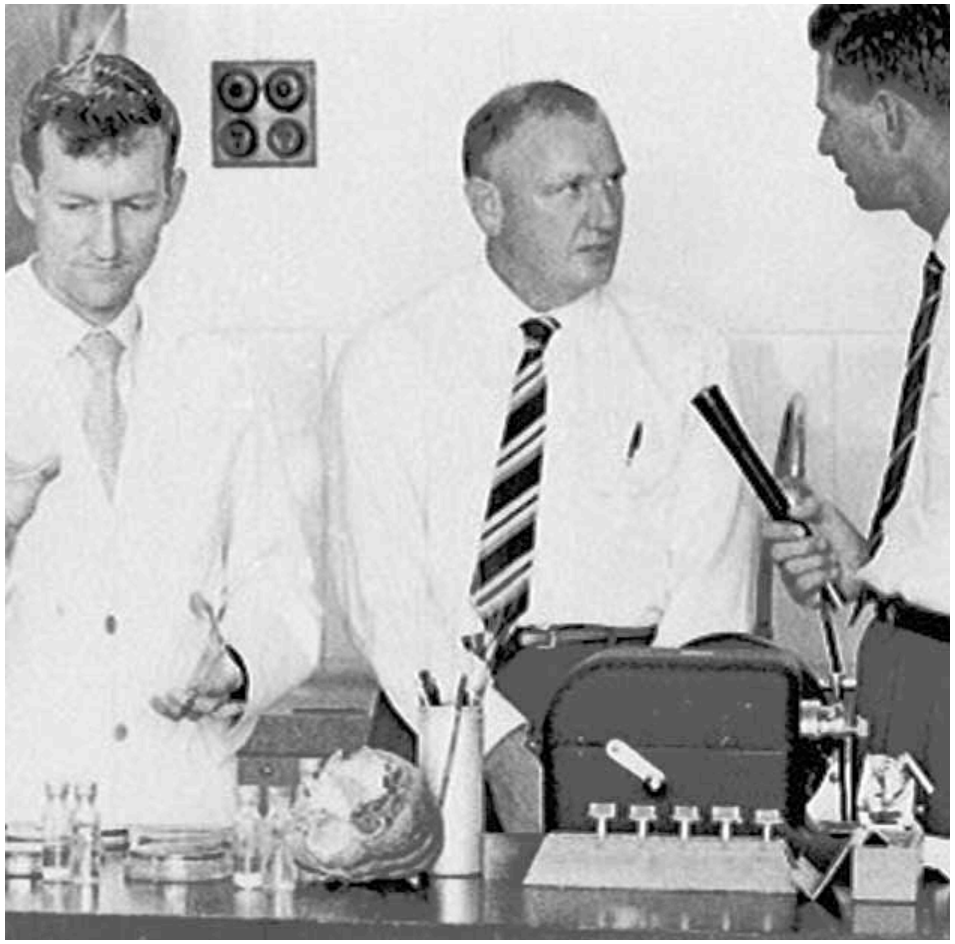
Geoff Simmons Lecture



Geoff Simmons at the Animal Research Institute Yeerongpilly, late 1960s. With him are Des Connole (mycologist) and ABC interviewer R Logan.

QldDeptAgFish_Animal Research InstituteCentenary_Booklet2009.pdf (daf.qld.gov.au)

Geoff Simmons

- Queensland microbiologist
- first identification of *Brucella ovis*
- first identification of *Actinobacillus seminus*
- isolated non-pathogenic Newcastle Disease virus from poultry in Australia
- honorary fellowship of Australian College of Veterinary Scientists 1974
- awarded Doctor of Veterinary Science by UQ in 1984
- founding member of the Australian Microbiology Society 1958

Picture: https://www.theland.com.au/story/6115862/spread-of-brucella-ovis-in-your-flock-explained/

Geoff Simmons

over 70 papers in the peer-reviewed literature

MY NCBI FILTERS

RESULTS BY YEAR

1951 2021

TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- Associated data

ARTICLE TYPE

- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial
- Review
- Systematic Review

PUBLICATION DATE

- 1 year
- 5 years
- 10 years
- Custom Range

Additional filters

Reset all filters

7 results

1 Cite Share
Dermatophilosis in a lizard (Amphibolurus barbatus).
Simmons GC, Sullivan ND, Green PE.
Aust Vet J. 1972 Aug;48(8):465-6. doi: 10.1111/j.1751-0813.1972.tb02285.x.
PMID: 4674383 No abstract available.

2 Cite Share
Psittacosis lymphogranuloma polyarthritis of **sheep** in Queensland.
Tammemagi L, **Simmons GC.**
Aust Vet J. 1968 Dec;44(12):585. doi: 10.1111/j.1751-0813.1968.tb04949.x.
PMID: 5751649 No abstract available.

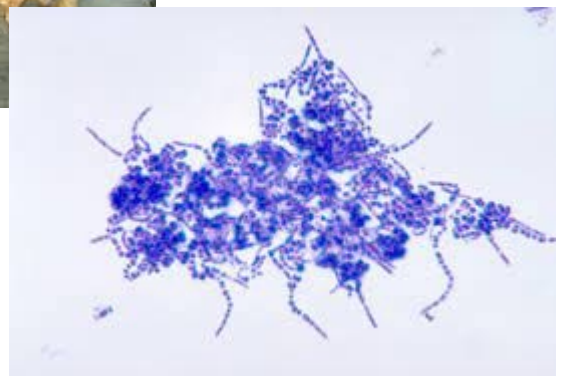
3 Cite Share
Clinical and pathological studies of Border Leicester rams naturally infecte Actinobacillus seminis.
Baynes ID, **Simmons GC.**
Aust Vet J. 1968 Aug;44(8):339-43. doi: 10.1111/j.1751-0813.1968.tb14399.x.
PMID: 5692648 No abstract available.

4 Cite Share
Serological and chemical properties of the Dermatophilus endoplasm.
Kwapinski JB, **Simmons GC.**
Antonie Van Leeuwenhoek. 1967;33(1):100-6. doi: 10.1007/BF02045539.
PMID: 4961925 No abstract available.

5 Cite Share
Cryptococcosis in a **sheep**.
Laws L, **Simmons GC.**
Aust Vet J. 1966 Sep;42(9):321-3. doi: 10.1111/j.1751-0813.1966.tb04729.x.
PMID: 6008188 No abstract available.

6 Cite Share
Epidemiology of Actinobacillus seminis in a flock of Border Leicester **sheep**
Simmons GC, Baynes ID, Ludford CG.
Aust Vet J. 1966 May;42(5):183-7. doi: 10.1111/j.1751-0813.1966.tb16020.x.
PMID: 5333604 No abstract available.

7 Cite Share
Transmission of contagious ecthyma from **sheep** to man.
PASK VM, MACKERRAS IM, SUTHERLAND AK, **SIMMONS GC.**
Med J Aust. 1951 Nov 10;2(19):628-32. doi: 10.5694/j.1326-5377.1951.tb74646.x.
PMID: 14890218 No abstract available.



Bovine Tuberculosis (bTB)

Torus Research

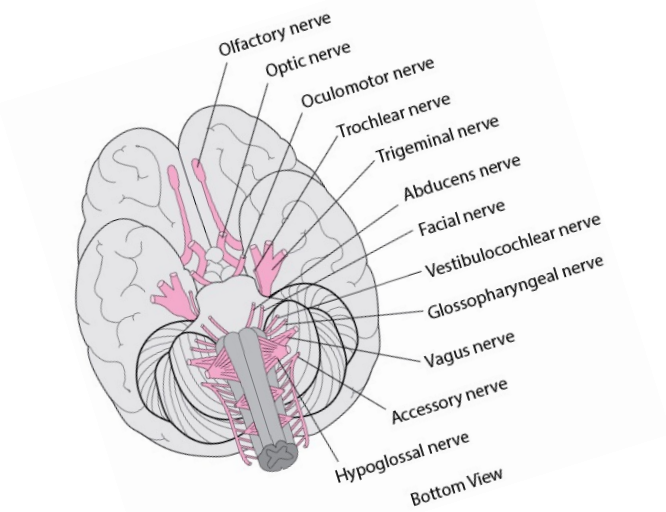
Mini-bio

- **Experiences have made me realise the scope of vet degree**
- **Private mixed practice**
- **Research – UQ / Brisbane hospitals + national/international collaborations**
- **Teaching – School of Medicine MBBS, School of Vet Science**
- **Mater Research**
- **Consultancy**

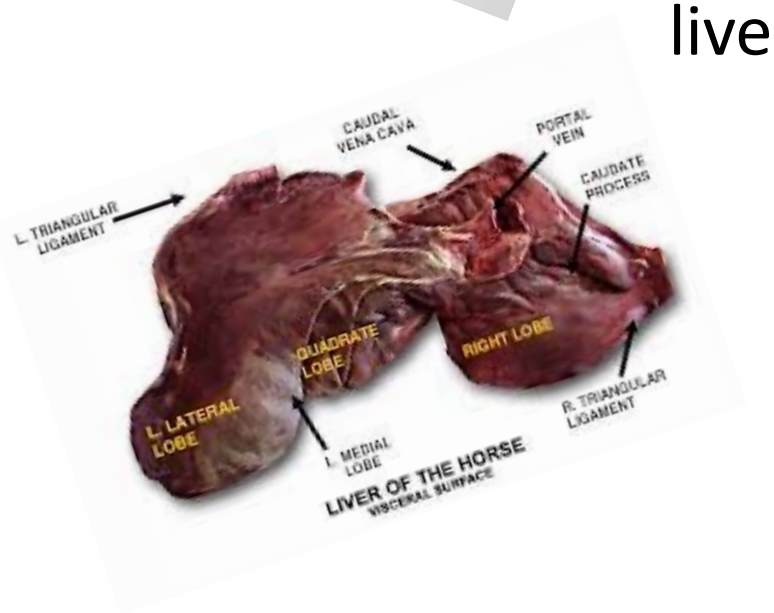
Scope of Veterinary Science

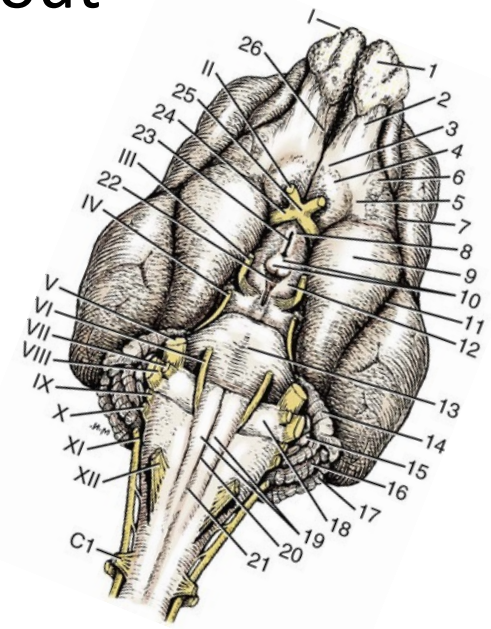
- **Broad degree**
- **Other degrees have elements but vet brings them all in**
- **Science – biology / maths / chemistry / genetics / molecular biology……**
- **Medicine – focussed on 1 species – little comparative anatomy, medicine, therapeutics or pathology**

Do dogs have cranial nerves?



- Do dogs have cranial nerves?
- How do you know all this stuff about liver pathology?





Scope – clinical practice / government / industry / international (FAO etc) /research

Clinical practice

- small animal
  - domestic
  - pocket pet
  - avian
  - reptile
- large animal
  - performance / pleasure
  - production
- exotic
- zoo
- rural
- urban
- peri-urban
- regulatory
- disease control / policy

Research Highlights - themes

• Congenital Hyperinsulinism of Infancy	Ross Walker, Andrew Cotterill
• Cystic Fibrosis	Ross Shepherd, Scott Bell
• Paediatric liver transplant – biliary atresia	Ross Shepherd
• Epidemiology of paediatric respiratory viruses	Ian Mackay
• Maternal / fetal medicine	Sailesh Kumar
• Bone turnover in pregnant mares	Ristan Greer, Stephen Andersen
• Racehorse – injury/performance	Nick Kannegeiter, Kylie Crawford
• Equine / Human opthalmology	Edith Hampson, Jane Camuglia
• **Many others!**	

Congenital Hyperinsulism of Infancy (CHI)

- Monogenic, first few days of life; unregulated release of insulin from the beta cell; severe uncontrollable hypoglycaemia; brain damage
- Some forms amenable to medical tx; otherwise surgical pancreatectomy;

What is Congenital Hyperinsulinism?

- Most common form of persistent hypoglycemia in children
  - >1 in 20,000 births
- Previously called "nesidioblastosis"
- High risk of seizures & brain damage
- Glucose infusion rates (GIR) up to 50 mg/kg/min
- Infants who fail medical therapy (diazoxide) need pancreatectomy
- More than half of surgical cases have a curable focal lesion

Scott Adzick 2020
doi.org/10.1016/j.sempedsurg.2020.150924

Congenital Hyperinsulism of Infancy (CHI)

- Pathologic basis – mutations in the ABCC8 or KCNJ11 gene, encoding for the SUR1 K+ channel in the b-cell membrane
- Gene identified in 1995 – Pamela Thomas
- *activating mutations cause neonatal diabetes, inactivating mutations cause hyperinsulinism

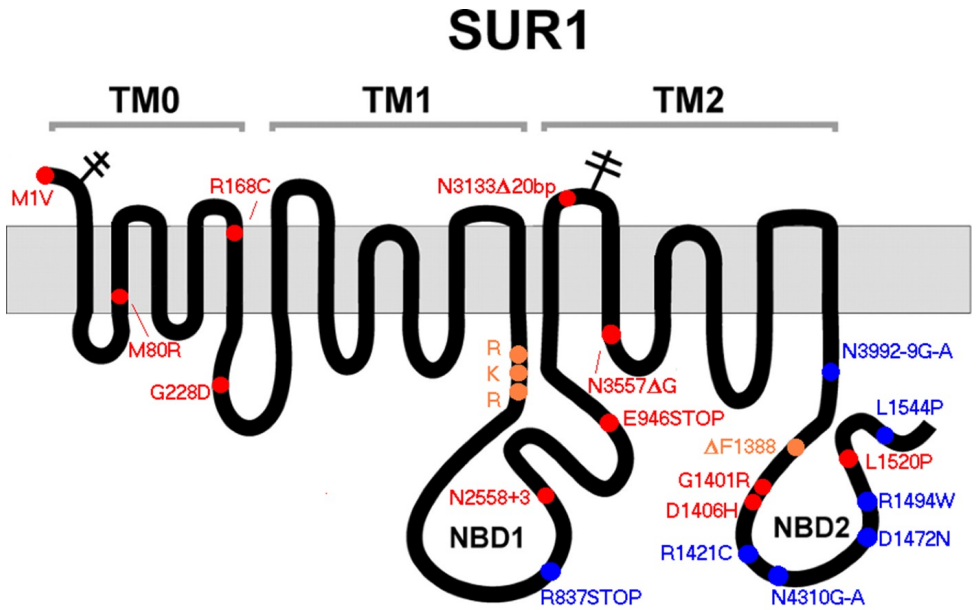


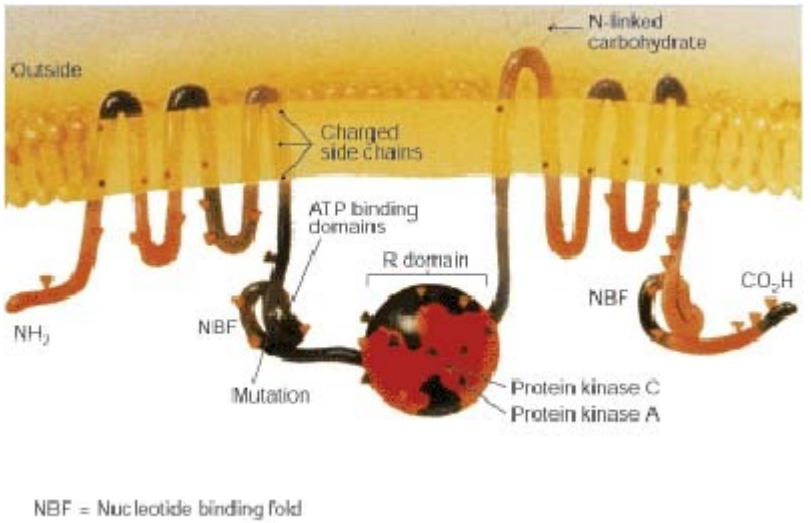
Figure: SUR1 Topology. The locations of mutations found in the Australasian HI cohort are shown.
Novel mutations are in red. Previously described mutations in blue.
Common F1388 mutation location is indicated.
Based on Conti et al. 2001

Cystic Fibrosis

- Monogenetic, manifests in first few months of life;
- Used to be dx by ‘failure to thrive’ & recurrent chest infection
- Now by neonatal screening (Qld ~ 1990)
- Characterised by progressive lung disease and pulmonary failure
- Reduced life expectancy – females shorter life exp than males

Cystic Fibrosis

- Pathologic basis: mutation in CFTR gene encoding for CFTR protein
- Cyclic AMP mediated Cl- channel in epithelial cell membrane
- Epithelium can't secrete Cl- and thus H2O
- Lung – thick sticky mucus – eventually destroys lung tissue
- GIT, liver, repro organs (males infertile)
- used to be dx by 'sweat test' – inc. NaCl in sweat



NBF = Nucleotide binding fold

Wikipedia

Torus Research

Cystic Fibrosis

- Dorothy Anderson – pathologist, paediatrician
- Identified ‘cystic fibrosis of the pancreas’ 1938 – pm finding
- New York heatwave of 1948 – heat prostration in children – connected salty sweat with cystic fibrosis
- basis of Gibson & Cooke sweat test until genetic screening ~ 1990s

ABCC8 and CFTR are both members of the ABCC sub-family of ABC ion transporters
https://humgenomics.biomedcentral.com/articles/10.1186/1479-7364-3-3-281

https://litfl.com/dorothy-h-andersen/

Paediatric liver transplant – Biliary atresia

- Congenital malformation / absence of bile ducts
- infant onset, jaundice, portal hypertension with oesophageal varices, malnutrition, hypoproteinaemia, etc
- ‘Rescue’ – Kasai operation
- Ultimately needs liver transplant

liverfoundation.org

1998 Aug;27(2):148-54.
doi: 10.1097/00005176-199808000-00004.

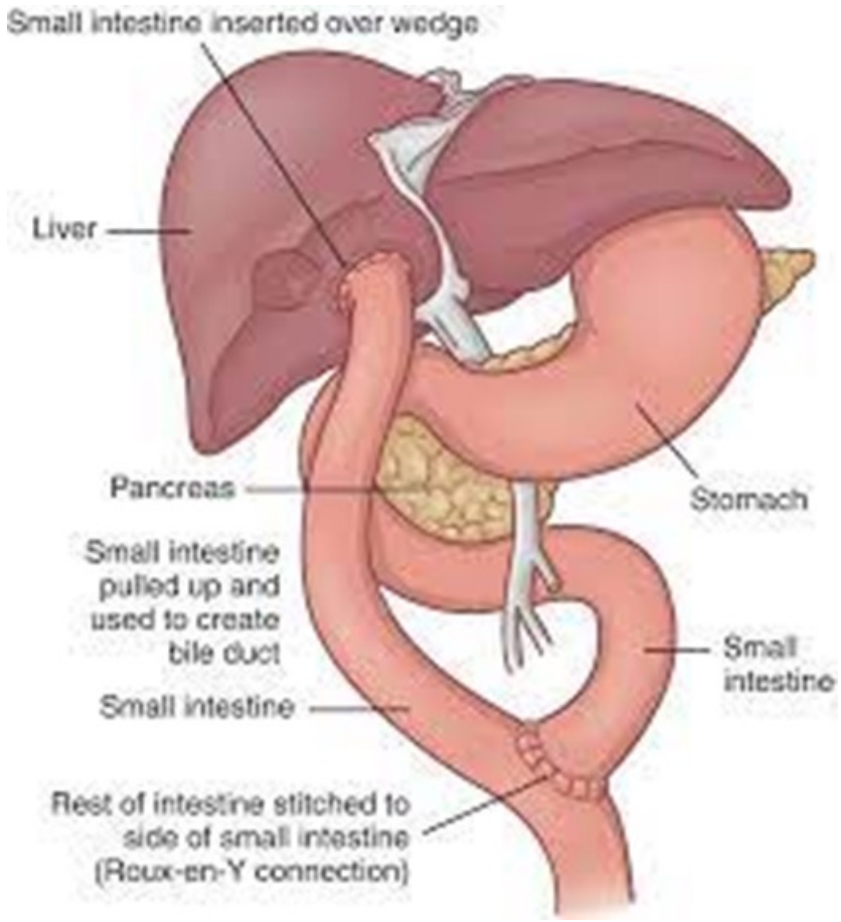
Growth hormone resistance and somatomedins in children with end-stage liver disease awaiting transplantation

R M Greer[1], P Quirk, G J Cleghorn, R W Shepherd

DOI: 10.1097/00005176-199808000-00004

Biliary atresia

- Hepato-portoenteostomy
- Morio Kasai
- Roux-en-Y - loop of jejunum attaches to the cut-back liver
- duodenum attaches further down
- ‘Brisbane technique’ (splitting donated liver) – Russell Strong – now famous



liverfoundation.org

Gastrospirillum hominis – 'One Medicine'

Now - *Helicobacter heilmannii*

THE LANCET
FULL-TEXT ARTICLE

1994 Jun 25;343(8913):1605-7.
doi: 10.1016/s0140-6736(94)93060-0.

Canine-human transmission of Gastrospirillum hominis

M A Thomson [1], P Storey, R Greer, G J Cleghorn
Affiliations collapse
Affiliation
[1]Gastroenterology Unit, Royal Children's Hospital, Brisbane, Australia.

PMID: 7911923
DOI: 10.1016/s0140-6736(94)93060-0

Abstract
We report electron microscopic evidence of transmission from a pet dog to a 12-year-girl of *Gastrospirillum hominis* which caused gastric disease in both that was eradicable with treatment.

- 12 yo girl with recurrent gastritis and vomiting
- Close contact with 2 dogs, one with recurrent vomiting
- Gastric biopsy of all 3 via endoscopy
- All 3 returned +ve *Gastrospirillum hominis*, affected dog ++ organisms
- All 3 treated with amoxycillin – bismuth
- Resolved without recurrence

Gastrospirillum hominis (Helicobacter heilmannii) – 'One Medicine'

human transmission by diagnostic endoscopy of the animal contacts.

The symptoms and the clinical course of the patient, a 12-year-old girl and her two pet dogs are presented in the table.

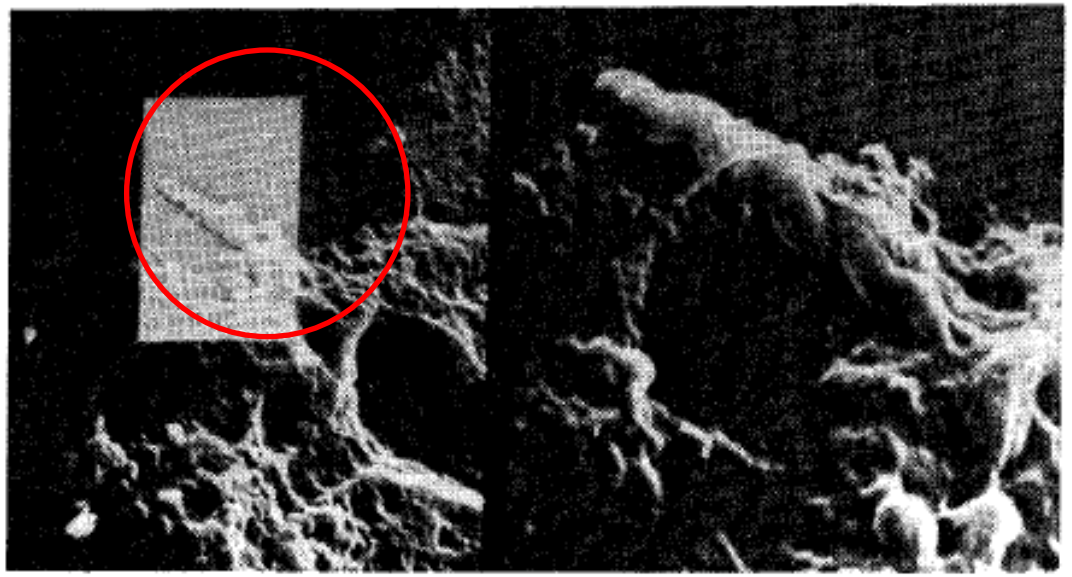


Figure: **Gastric-body biopsy specimen of dog A on scanning electron microscopy**

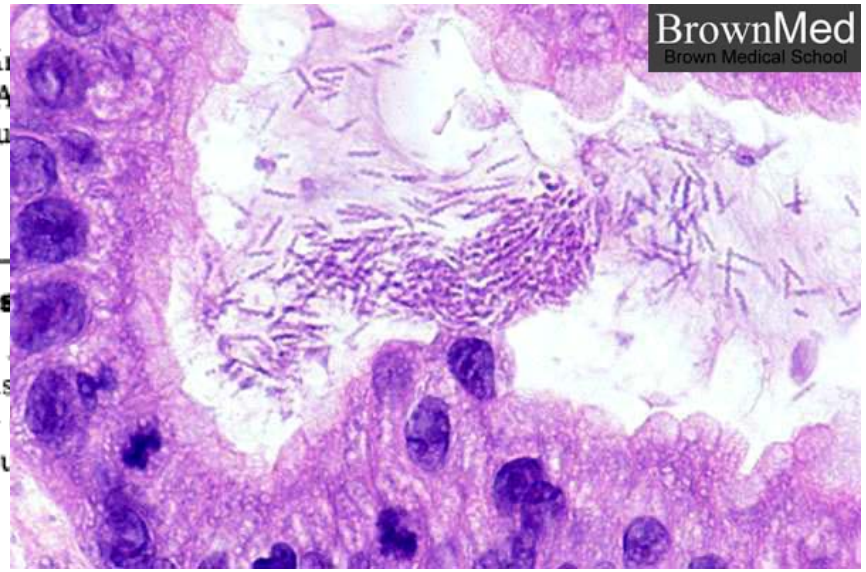
Characteristic spiral coiling of *G hominis* (× 1130, glutaraldehyde fixed, resin embedded).

mucosa was clear.

Both *G hominis* and *H pylori* are urease-producing organisms, which may limit the specificity of this test in the detection of *H pylori*.

G hominis is an easily treated cause of gastritis, the importance of which may increase as it is more readily identified and sought with greater zeal, as occurred with *H pylori*. Recognition and treatment of a reinfection source in the form of a domestic canine contact may help to treat cases refractory to conventional anti-helicobacterials.

We thank Mr
material. MA
Hospital Fou

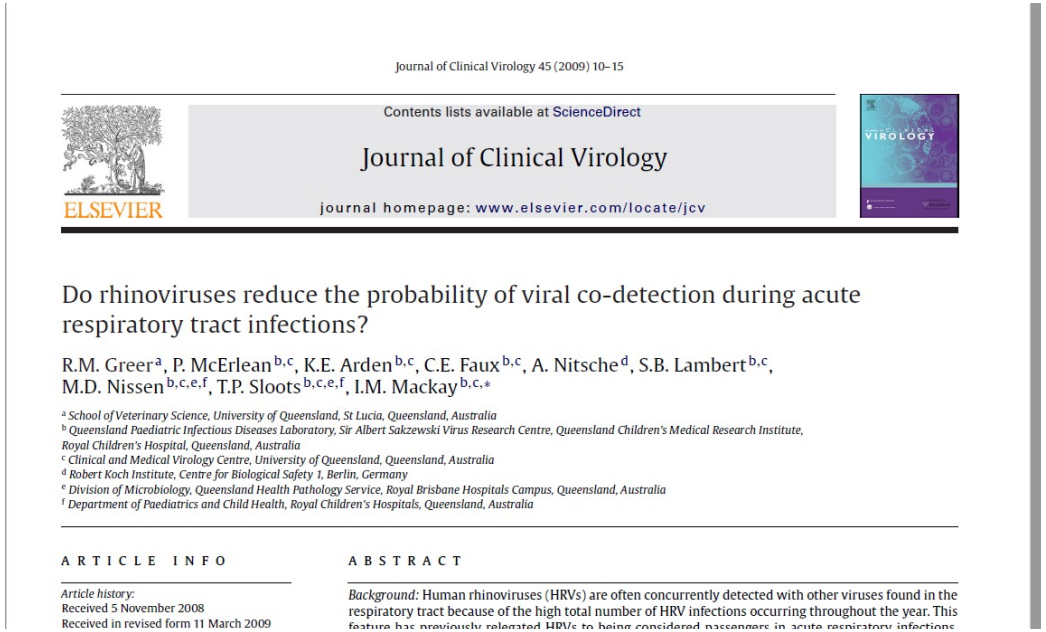


Reference

1 Dent JC,
organisms
2 McNulty
gastric mu

Epidemiology of respiratory viruses in children

- Common respiratory viruses
  - Human rhinovirus (HRV)
  - Human adenovirus (HAdv)
  - Human Corona Virus (HCoV)
  - Influenza A (IFAV)
  - Human parainfluenza virus (HPiV)
  - Human Enterovirus (HEV)
  - Human metapneumovirus (HMPV)
  - Human respiratory syncytial virus (HRSV)
  - Human polyoma virus (PyV)
- Normal development of immune system?



Journal of Clinical Virology 45 (2009) 10–15

Contents lists available at ScienceDirect

Journal of Clinical Virology

journal homepage: www.elsevier.com/locate/jcv

Do rhinoviruses reduce the probability of viral co-detection during acute respiratory tract infections?

R.M. Greer[a], P. McErlean[b,c], K.E. Arden[b,c], C.E. Faux[b,c], A. Nitsche[d], S.B. Lambert[b,c], M.D. Nissen[b,c,e,f], T.P. Sloots[b,c,e,f], I.M. Mackay[b,c,*]

[a] School of Veterinary Science, University of Queensland, St Lucia, Queensland, Australia
[b] Queensland Paediatric Infectious Diseases Laboratory, Sir Albert Sakzewski Virus Research Centre, Queensland Children's Medical Research Institute, Royal Children's Hospital, Queensland, Australia
[c] Clinical and Medical Virology Centre, University of Queensland, Queensland, Australia
[d] Robert Koch Institute, Centre for Biological Safety 1, Berlin, Germany
[e] Division of Microbiology, Queensland Health Pathology Service, Royal Brisbane Hospitals Campus, Queensland, Australia
[f] Department of Paediatrics and Child Health, Royal Children's Hospitals, Queensland, Australia

ARTICLE INFO

Article history:
Received 5 November 2008
Received in revised form 11 March 2009

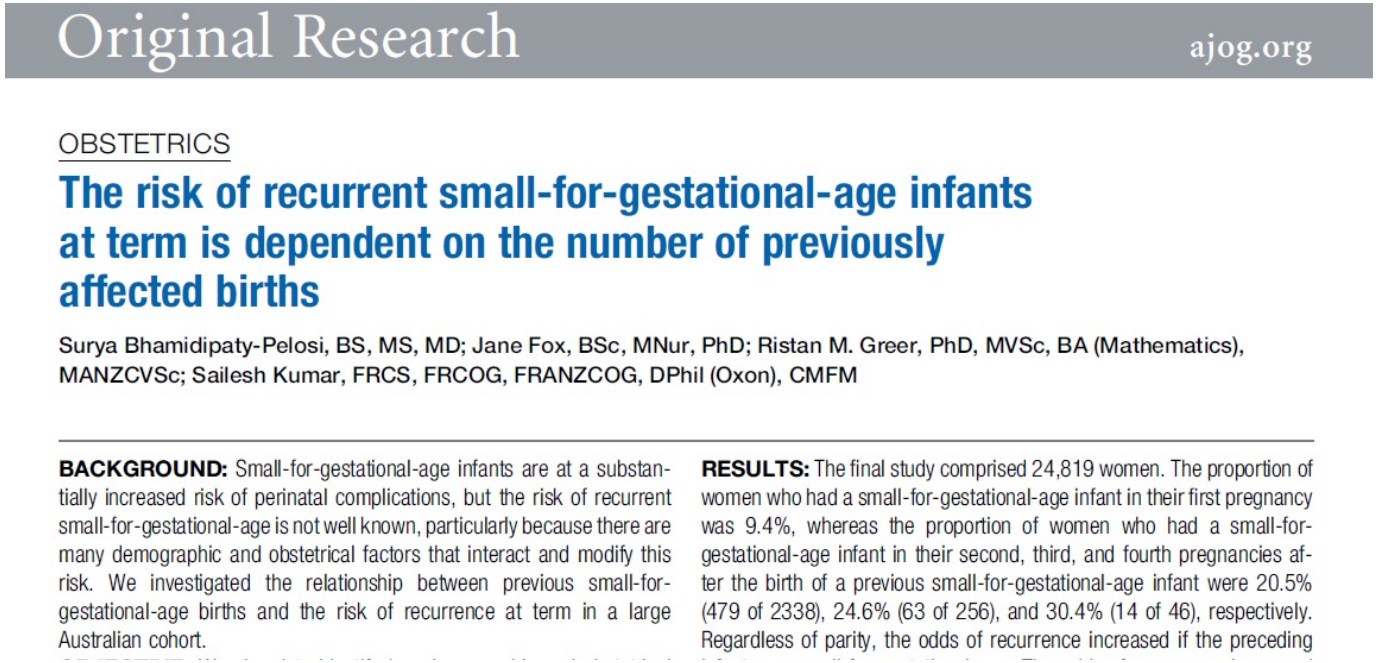
ABSTRACT

Background: Human rhinoviruses (HRVs) are often concurrently detected with other viruses found in the respiratory tract because of the high total number of HRV infections occurring throughout the year. This feature has previously relegated HRVs to being considered passengers in acute respiratory infections

- 1247 mainly naso-pharyngeal specimens
- ~70% children 0 – 2 years
- HRVs frequently found as a single infection
- other viruses found as co-infection
- ? Does HRV 'protect' against other viruses?

Maternal/fetal medicine

- Overall aim: identify pregnancies ‘at risk’ of having an ‘adverse neonatal outcome’
- premature birth, stillbirth, neonatal death, disability (hypoxic ischaemic encephalopathy)
- markers: intrauterine growth retardation, acidosis, intensive care admission
- Diagnostic tools: maternal risk factors (eg smoking, BMI, socioeconomic, ethnicity, age), investigations (ultrasound - multiple derived indices, blood biomarkers)
- Series of many studies using large databases and prospective observational studies and randomised controlled trials



Original Research ajog.org

OBSTETRICS

The risk of recurrent small-for-gestational-age infants at term is dependent on the number of previously affected births

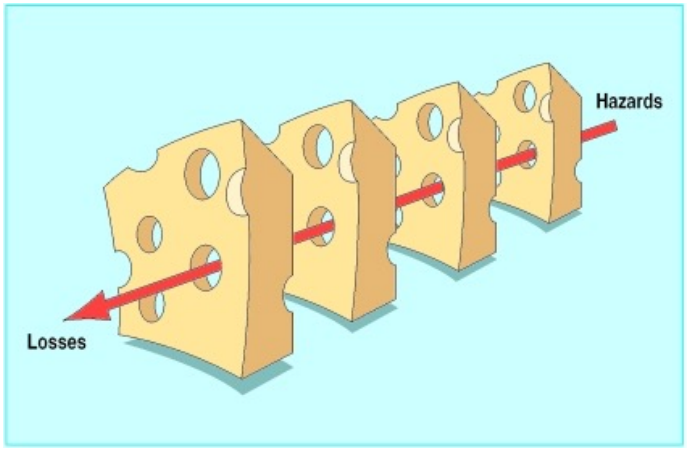
Surya Bhamidipaty-Pelosi, BS, MS, MD; Jane Fox, BSc, MNur, PhD; Ristan M. Greer, PhD, MVSc, BA (Mathematics), MANZCVSc; Sailesh Kumar, FRCS, FRCOG, FRANZCOG, DPhil (Oxon), CMFM

BACKGROUND: Small-for-gestational-age infants are at a substantially increased risk of perinatal complications, but the risk of recurrent small-for-gestational-age is not well known, particularly because there are many demographic and obstetrical factors that interact and modify this risk. We investigated the relationship between previous small-for-gestational-age births and the risk of recurrence at term in a large Australian cohort.

RESULTS: The final study comprised 24,819 women. The proportion of women who had a small-for-gestational-age infant in their first pregnancy was 9.4%, whereas the proportion of women who had a small-for-gestational-age infant in their second, third, and fourth pregnancies after the birth of a previous small-for-gestational-age infant were 20.5% (479 of 2338), 24.6% (63 of 256), and 30.4% (14 of 46), respectively. Regardless of parity, the odds of recurrence increased if the preceding

Human factors – minimizing human error

- Technology and systems have improved greatly
- Systems are designed to ‘catch’ the errors – James Reason’s ‘Swiss Cheese model’
- Errors only result in failure when all the ‘holes’ line up
- Human error is inevitable – ties in with ‘no blame’ culture



BMJ. 2000 Mar 18; 320(7237): 768–770.
doi: 10.1136/bmj.320.7237.768
Human error: models and management
James Reason, professor of psychology

Flying – the world of Human Factors

Torus Research

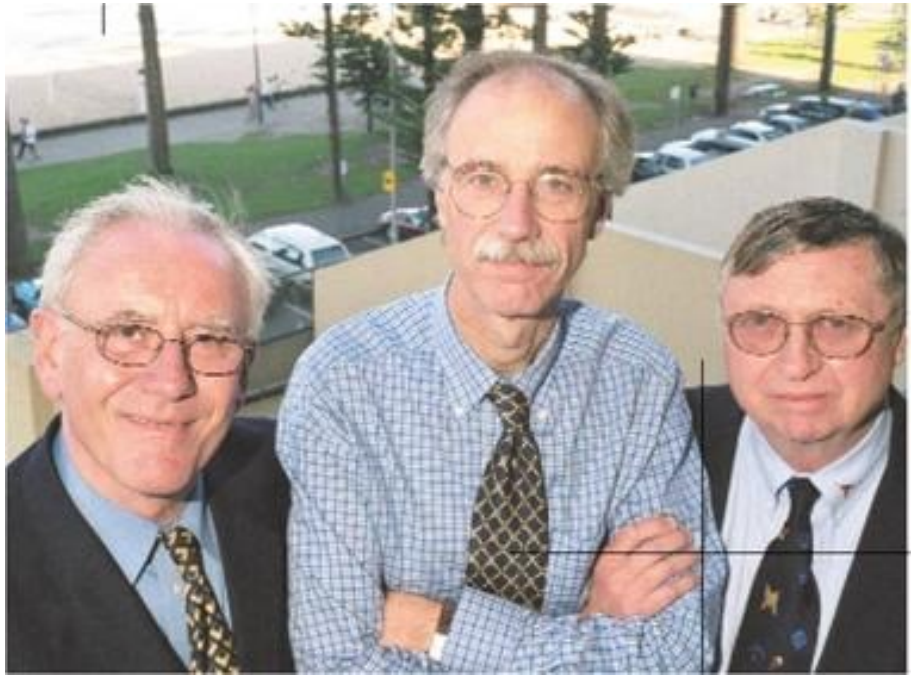
Human Factors - Just Culture

- James Reason – the Swiss Cheese Model
- Bob Helmreich, Dan Maurino UTexas
- Sidney Dekker The Second Victim youtube/YeSvCEpg6ew

‘Error results from physiological and psychological limitations of humans

…causes include…

fatigue, workload, cognitive overload, poor personal communication, imperfect information processing and flawed decision making’



James Reason, Dan Maurino, Bob Helmreich

Flight Safety Australia 2001

Human factors – minimizing human error

https://www.mater.org.au/Mater/media/page-content/publications/pdfs/2018-Mater-Clinical-Safety-Report.pdf

Mater (& other hospitals) active in auditing and minimizing medical errors

- Human error accounts for 83% of medical errors
- Fixation error – fixating on one problem only - is a major contributor

The Elaine Bromiley case

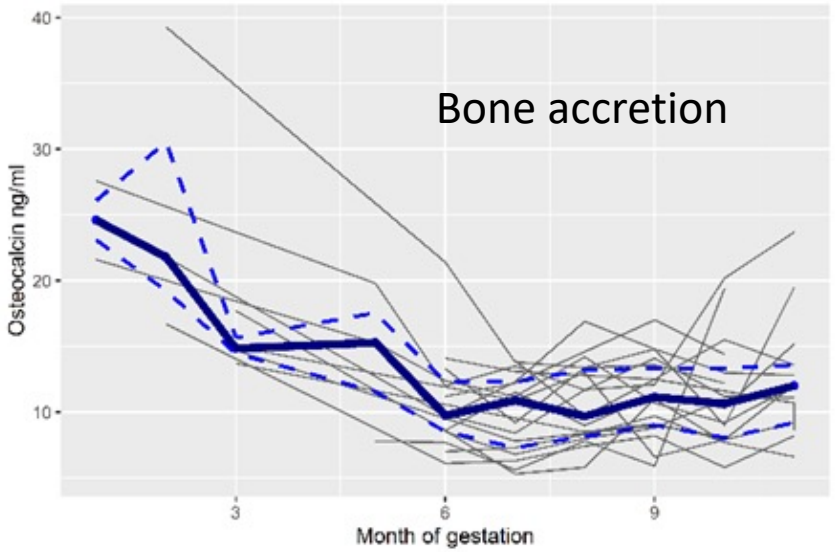
- Elaine Bromiley, an otherwise well 37 year old woman, presented for routine sinus surgery in 2005 and died due to complications of an an unanticipated difficult airway.

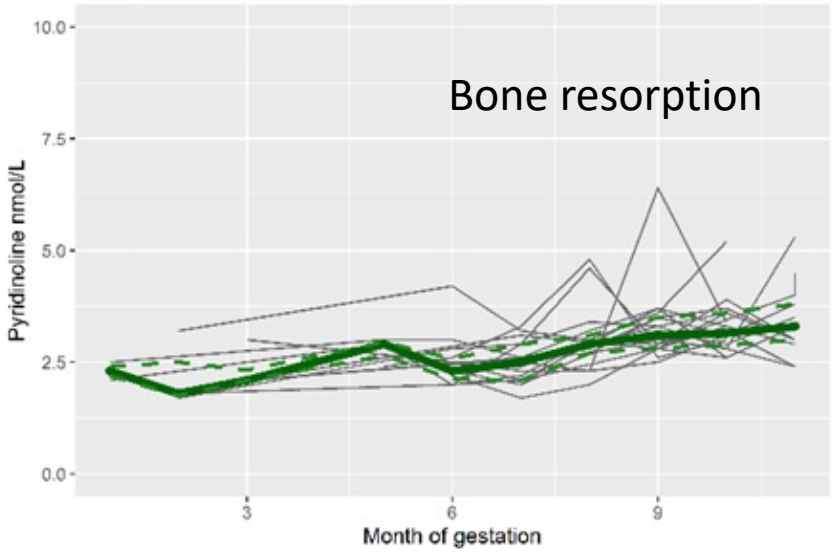
- The case highlights how, despite the presence of skilled and diligent clinicians, human factors can adversely impact on patient care.

- The following free resources have been made available in order to increase awareness of the issues involved in cases such as these and potential strategies to address them.
- http://simpact.net.au/bromiley.html

Equine – equine bone metabolism

- Markers of bone turnover in pregnant mares
- Yearly foal – mare often lactating AND pregnant
- When do mares replenish their own calcium stores?
- Window seems to be between foaling and early pregnancy
- osteocalcin – OC – marker of bone accretion
- Pyridinoline – Pyd – marker of bone resorption





[Serum bone biomarkers osteocalcin and pyridinoline in mares during pregnancy and lactation, and in foals during early post-natal life.]
Anderson ST, Kidd LJ, Barton AJ, **Greer RM.** Res Vet Sci. 2018 Jun;118:34-40. doi: 10.1016/j.rvsc.2018.01.007.

Equine – racehorse injury / return to racing

- Do racehorses return to performance after surgery?

Medication and management factors influencing return to racing after arthroscopic surgery
Kannegieter N, Schaaf K, Greer R
Publication: *Australian Equine Veterinarian*, Volume 30, Issue 3, pp 58-59, **Sep 2011Publisher:** Australian Equine Veterinary Association

- Risk factors for musculoskeletal injuries

***Appraising the Welfare of Thoroughbred Racehorses in Training in Queensland, Australia: The Incidence, Risk Factors and Outcomes for Horses after Retirement from Racing.**
Crawford KL, Finnane A, **Greer RM**, Phillips CJC, Woldeyohannes SM, Perkins NR, Ahern BJ. Animals (Basel). 2021 Jan 11;11(1):142. doi: 10.3390/ani11010142.PMID: 33440666 **Free PMC article.**
***Kylie awarded ANZCVSc Medal for most commendable paper in a peer reviewed international journal 2021**

Equine – conjunctival flora

Vet Ophthalmol. 2019 May;22(3):265-275. doi: 10.1111/vop.12587. Epub 2018 Jul 2.

Identification of bacteria and fungi sampled from the conjunctival surface of normal horses in South-East Queensland, Australia

Edith C G M Hampson [1] [2], Justine S Gibson [1], Mayank Barot [1], Frances M Shapter [1], Ristan M Greer [1]

- 98.9% of horses had a positive bacterial culture in at least one eye
- Culture results provide a guide to therapy where necessary

Clonal Pseudomonas – ‘One Medicine’

› Vet Microbiol. 2011 May 5;149(3-4):508-12. doi: 10.1016/j.vetmic.2010.11.030. Epub 2010 Dec 1.

Clonal complex Pseudomonas aeruginosa in horses

Timothy J Kidd [1], Justine S Gibson, Susan Moss, Ristan M Greer, Rowland N Cobbold, John D Wright, Kay A Ramsay, Keith Grimwood, Scott C Bell

Affiliations – collapse

Affiliation

1 Department of Infectious Diseases, Royal Children's Hospital, Queensland Children's Medical Research Institute, The University of Queensland, Brisbane, Australia.
Tim_Kidd@health.qld.gov.au

PMID: 21183294 DOI: 10.1016/j.vetmic.2010.11.030

cdc.gov

Abstract

Pseudomonas aeruginosa is associated with infectious endometritis in horses. Although infectious endometritis is often considered a venereal infection, there is relatively limited genotypic-based evidence to support this mode of transmission. The study sought to determine the relatedness between genital P. aeruginosa isolates collected from a limited geographical region using molecular strain typing. Enterobacterial repetitive intergenic consensus PCR typing was performed on 93 isolates collected between 2005 and 2009 from 2058 thoroughbred horses (including 18 stallions) at 66 studs

Current work

- In cancer patients undergoing palliative care, do cannabinoids improve the quality of life?
- Pain, sleeplessness, nausea, anxiety
- Series of multi-centre randomized controlled trial
- Assess various cannabinoid compounds (THC, CBD) and dose effects

Lead investigators

Prof Janet Hardy

Prof Phillip Good

Mater Health Services, The University of Queensland, St Vincent's Hospital

Other veterinary clinical studies

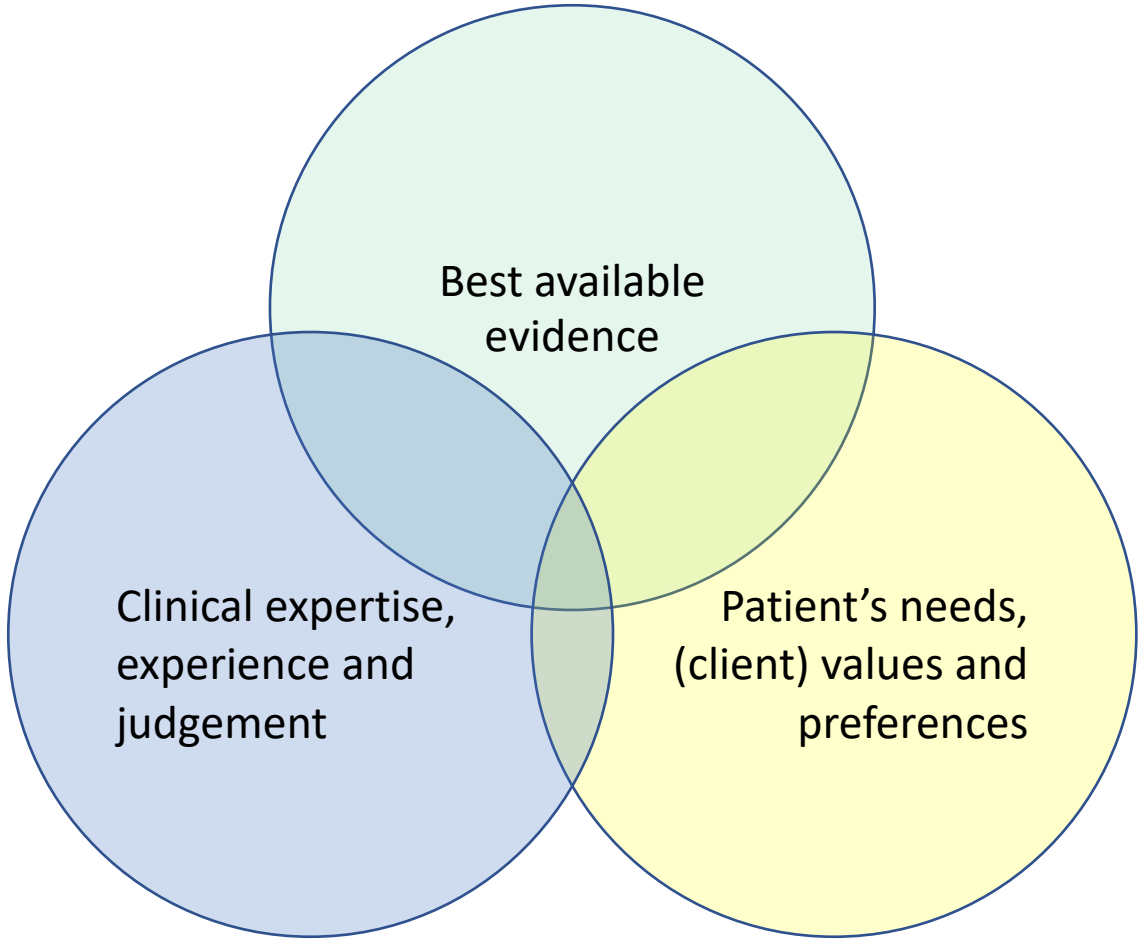
- Urinary catheterisation in dogs – evaluate new technology – gadget as quick and easier to use than speculum (Abbie Tipler)
- Sesamoid disease in dogs - risk factors & outcomes
- Red bellied black snake - risk factors & outcomes
- Soft palate surgery in dogs – risk factors and outcomes

All motivated by a clinical problem

Every clinician should be a researcher!

Carry on the tradition of Geoff Simmons

The evidence based medicine triad



David Sacket et al, BMJ 1996;312:71-2

Study design and analysis – write the protocol before you start

1. Formulate your **research question**/s
2. Select the best **study design** to answer your question (RCT, cohort, case-control or cross sectional; diagnostic test
3. Plan your **data collection** and **analysis**
4. Estimate the **sample size** you will need
5. Consider **ethics** implications/get approval
6. **Conduct** your study
7. **Analyse** and write up the results
8. Submit your manuscript to a suitable journal, aiming to reach your **target audience**
9. Address the **reviewer's comments**
10. Your paper is accepted! Well done! You have contributed to knowledge in your field.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