

ANTIMICROBIALS

CASE STUDY- Pet Rabbit

1 year old pet doe rabbit

History: Rabbit has been sneezing off and on for 3 weeks (summer, hot, humid). The owner noticed a discharge from the nose for a few days. The rabbit has a decreased appetite and is less active.



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CASE STUDY- Pet Rabbit

List the problems you have identified:

fever

anorexia

sneezing

conjunctivitis

mucopurulent discharge

fur on paws wet, matted



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CASE STUDY- Pet Rabbit

Diagnostic Samples?

Bacterial culture?

conjunctiva?

nasal?

How to collect a sample?

Culturette (sterile swab)

Gram stain?



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CASE STUDY- Pet Rabbit

Treatment

Suspect *Pasteurella multocida* (Gm neg)
(snuffles):

penicillin

enrofloxacin

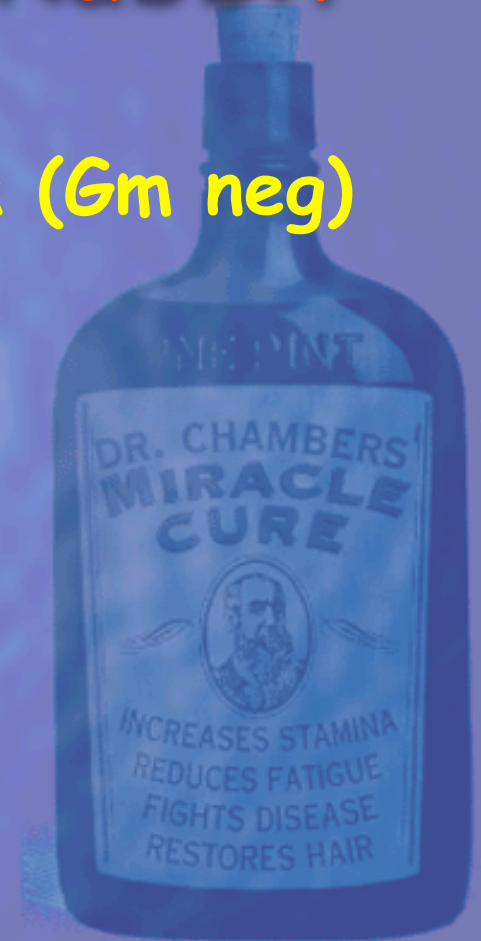
chloramphenicol

doxycycline

trimethoprim/sulpha

erythromycin

aminoglycosides



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CASE STUDY- Pet Rabbit

Route of Administration?

Problems with choice?

Contraindications with choice

Superinfections:

macrolides/lincosamides

oral penicillins



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CASE STUDY- Pet Rabbit

P multocida sensitivity

benzylpenicillin

s s

amoxicillin

s

gentamicin

s

erythromycin

s

tetracycline

r

Enrofloxacin

s

Best antibiotic?

Advice to client;

Husbandry issues

ammonia, air quality...

Disinfect rabbit's cage..

Zoonosis-immunocompromised



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CASE STUDY- Fergus

7 yr old spayed Great Dane

List the problems you can identify:

Fever

Anorexia

Reluctant to move

Hyperdynamic shock

Swollen right elbow

Leukocytosis, mild



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CASE STUDY- Fergus

7 yr old spayed Great Dane

Comment on the referring vet's therapy.

expensive in large dog

potential for developing resistance

other antibiotic options would be effective



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CASE STUDY- Fergus

7 yr old spayed Great Dane
What 3 samples would you
take?

Blood culture

urine culture (cystocentesis)

joint fluid



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CASE STUDY- Fergus

What antibiotic(s) would you choose while waiting for your results?

Choose bacteriocidal, parenteral antibiotics

_____?
while waiting for results



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CASE STUDY- Fergus

| S aureus | Sensitivity |
|-----------------|-------------|
| Ampicillin | r |
| Co-trimazine | s |
| Chloramphenicol | s |
| Gentamicin | s |
| Enrofloxacin | s |
| Cephalexin | s |
| Co-amoxiclav | s |

Based on the sensitivity results, what would you choose to treat Fergus?

How long should the treatment be continued?

Why was enrofloxacin ineffective?



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CASE STUDY- TB Colt

List the problems you have identified:

fever

anorexia

cough

dyspnoea

Purulent nasal discharge

Swelling of lymph nodes, draining LN



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CASE STUDY- TB Colt

What further physical examinations?
check temperature of all yearlings
examine unaffected yearlings BUT
avoid cross contamination from
obviously sick yearlings



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CASE STUDY- TB Colt

What clinical pathology and bacteriology tests will you perform?

Aspirate lymph node, culture & sensitivity

Gram stain of aspirate

CBC?



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CASE STUDY- TB Colt

What treatment will you give while waiting for results?

Isolate affected yearlings

Use separate halters, buckets, etc between affected and nonaffected yearlings

Drain abscesses, if appropriate

Antibiotics - _____? usually work



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CASE STUDY- TB Colt

How will you manage the unaffected yearlings?

Isolate from affected yearlings

Check temperatures daily

Monitor for clinical signs



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CASE STUDY- TB Colt

Streptococcus equi

Sensitivity

Penicillin s

Ampicillin s

Tetracycline s

Co-trimazine s

Gentamicin r

Erythromycin s

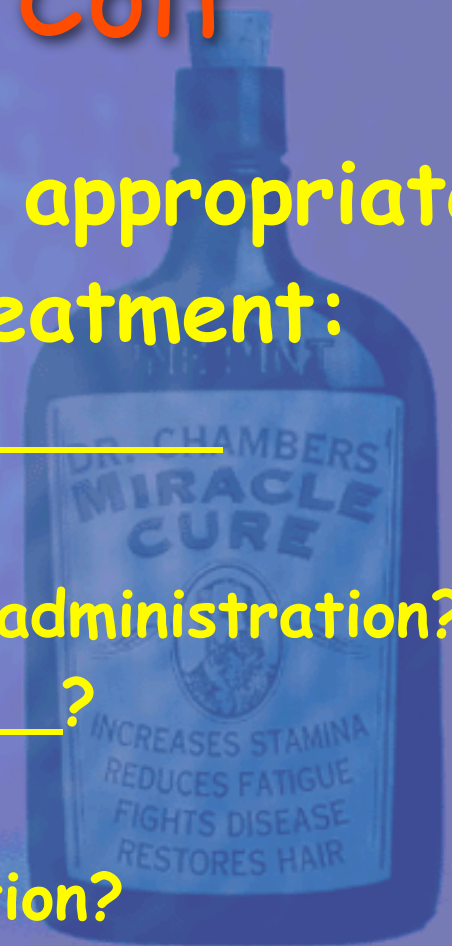
Choose an appropriate treatment:

Dosage? _____

Route of administration?

_____?

Justification?



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CASE STUDY- Minnie DSH Cat

List the problems you have identified:

diarrhoea

Blood in faeces (haematochezia)

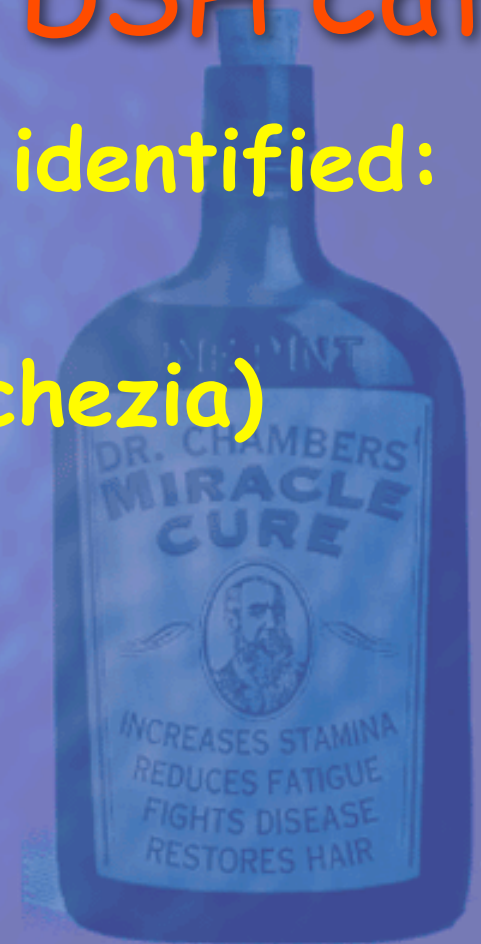
tenesmus (straining)

depression

dehydration

fever

leukopaenia



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CASE STUDY- Minnie DSH Cat

What type of diarrhoea?

Enterocolitis (large and small bowel)

Three potential differentials?

Salmonellosis

Campylobacteriosis

Panleukopaenia

Others: yersiniosis or
clostridial



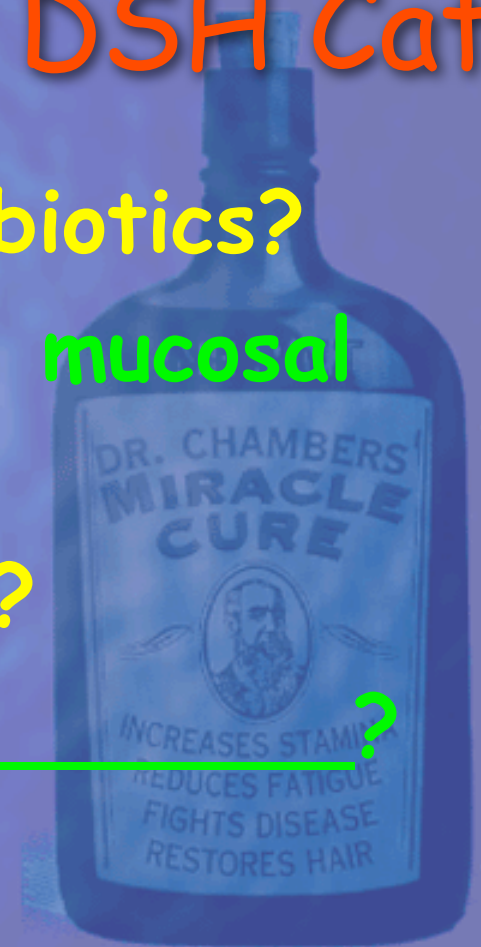
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CASE STUDY- Minnie DSH Cat

Would you put cat on antibiotics?

Yes, evidence of bleeding, mucosal breakdown, fever

What antibiotic and route?



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CASE STUDY- Minnie DSH Cat

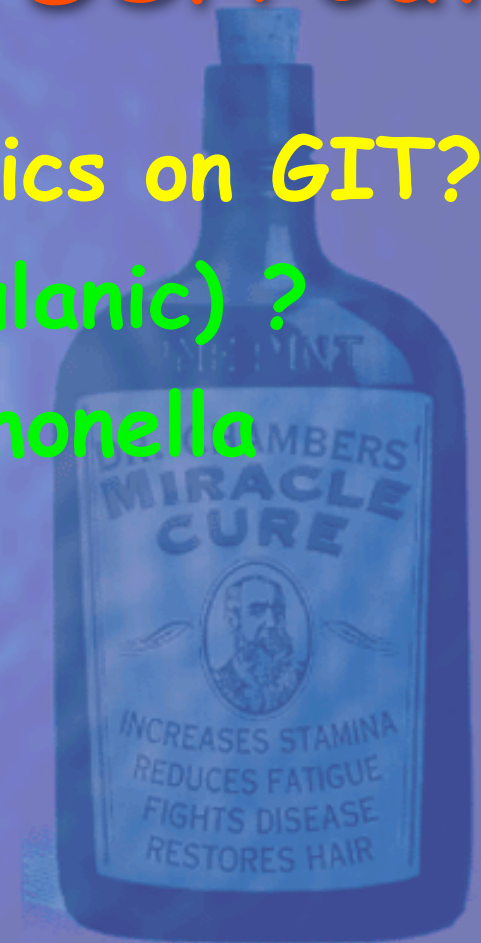
Adverse effects of antibiotics on GIT?

Clavulox (amoxicillin & clavulanic) ?

may predispose to *Salmonella*
overgrowth

Diarrhoea

Superinfections



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CASE STUDY- Minnie DSH Cat

Pharmacokinetic property with an Adverse effect on normal flora:

Enterohepatic cycling - e.g. tetracyclines



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CASE STUDY- Minnie DSH Cat

What antibiotic spectrum increases the adverse effects of antibiotics on GIT?

anaerobic

Confirmation of bacterial enterocolitis?

Culture faeces for enteric pathogens



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CASE STUDY- Minnie DSH Cat

Bacteria Salmonella spp cultured
Treatment?

Controversial - severity warrants
treatment

Antimicrobial Treatment?

chloramphenicol?

enrofloxacin?

trimethoprim/sulpha?



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CASE STUDY - CHARLIE

Kings Charles Cavalier Spaniel

10 year-old entire female

Based on the history what problems can you identify?

poor appetite (anorexia)

misalliance (recently in heat)

polyuria, polydipsia (PU/PD)

discharge from vulva



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CASE STUDY - CHARLIE

After clinical examination what additional problems have you identified?

panting

abdominal distension, difficult to palpate

purulent discharge from vulva

heart rate of 160 bpm

Diagnosis: suspected pyometra



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CASE STUDY - CHARLIE

What clinical pathology tests would you do?

Routine CBC

What would you treat Charlie with while waiting for the results?

Treat with a bacteriocidal, broad spectrum antibiotic keeping in mind *E. coli* may be the causative agent.



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CASE STUDY - CHARLIE

What do the clinical pathology results indicate?
Note the total and differential white blood cell counts.

Increase in total WBCs

Left shift with TP:F ratio indicating inflammation

Any problems?

Anaemia

Dehydration

What other tests might be indicated?

Radiographs or Ultrasound to aid diagnosis



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CASE STUDY - CHARLIE

What are your treatment options?

Surgical management and antibiotics

Medical management, antibiotics, +/- prostaglandins

What is the likelihood of success with conservative treatment (e.g. medical management)?

Not very good



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CASE STUDY - CHARLIE

Treatment Plan for Charlie:

Surgery plus

antibiotic treatment - IM, SC or IV initially:

Medical antibiotic treatment:



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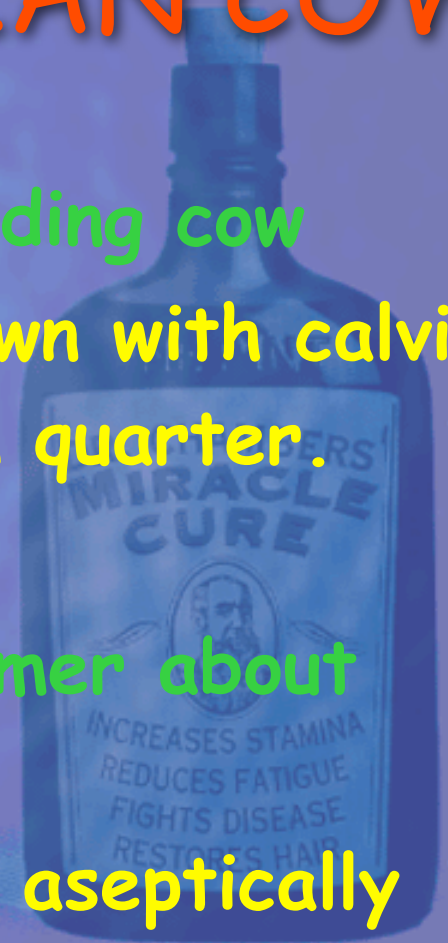
CASE STUDY - FRIESIAN COW

Friesian Cow #267 - 4 yo high yielding cow

History of difficult calving and down with calving paralysis for 10 days. Hot swollen quarter.

Given that you agree with the farmer about mastitis, what would you do next?

Culture the affected quarter aseptically



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CASE STUDY - FRIESIAN COW

What immediate treatment would you give?

Intramammary products:

Parenteral?

Do you think that it is necessary to administer parenteral antibiotics? Why or why not?

Yes, the type of mastitis (watery with white flecks) may indicate *E. coli* and intramammary infusions may not diffuse into the quarter evenly.



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CASE STUDY - FRIESIAN COW

What factors determine a drug's distribution from the blood into the milk?

Lipid solubility

Degree of ionisation

Extent of protein binding in milk and plasma



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CASE STUDY - FRIESIAN COW

Culture E. coli:

Antibiotic sensitivity

| | | |
|--------------|---|--|
| Penicillin | r | |
| ampicillin | s | |
| cloxacillin | r | |
| amoxicillin | s | |
| streptomycin | r | |
| neomycin | r | |
| co-trimazole | s | |
| erythromycin | r | |

Would you change your initial treatment plan based on these results? If yes what would you treat with?



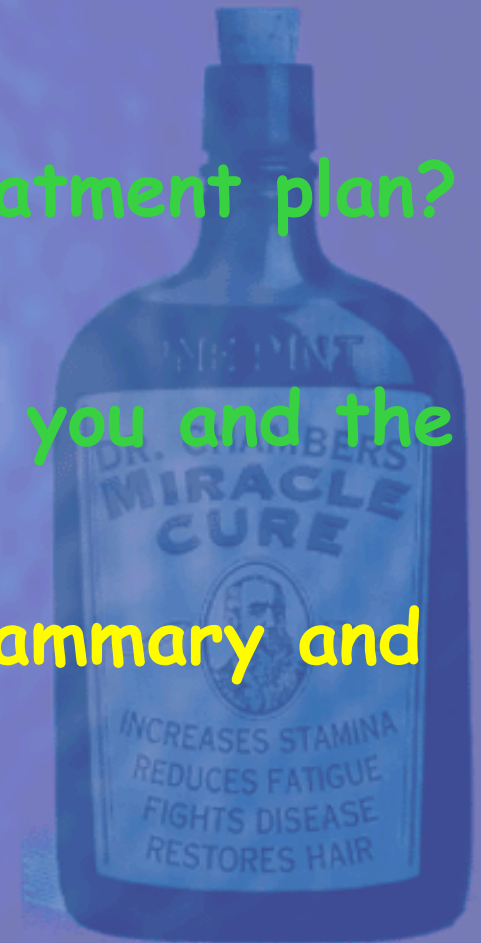
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CASE STUDY - FRIESIAN COW

Would you change your initial treatment plan?

What other important factors do you and the farmer need to consider?

Milk withholding times for intramammary and parenteral therapy.



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CASE STUDY - Kaiser

German Shepherd

6 year-old entire male

Based on the history what problems can you identify?

- ♦ Pain, pyrexia initially
- ♦ Hunched, resented palpation of hindleg,
- ♦ abdomen and manipulation of the neck
- ♦♦ Blood results:
 - ♦ neutrophilia, inflammatory change



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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

What do you think of the previous treatment?

- ♦ Changing antibiotic families, treatment time too short
- ♦ Trimethoprim/sulphas not effective for gram positive bacteria producing beta lactamase
- ♦ Using steroids in the face of a slight neutrophilia



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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

List the problems you can identify.

- ♦ Reluctant to stand and hunched while standing
- ♦ Resents hindleg extension and lumbar pressure
- ♦ Takes short strides when walking



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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

What clinical pathology tests might you consider?

Clinical tests

- ◆ Bloods CBC and chemistry panel
- ◆ Blood culture (Staph aureus, Strept or B canis)
- ◆ Urine culture



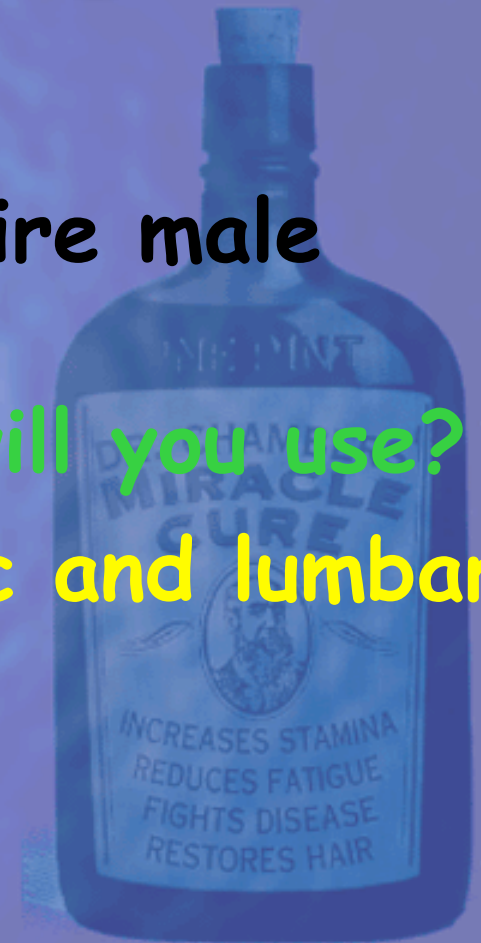
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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

What other diagnostic aids will you use?

- ♦ Radiograph of mid thoracic and lumbar vertebrae



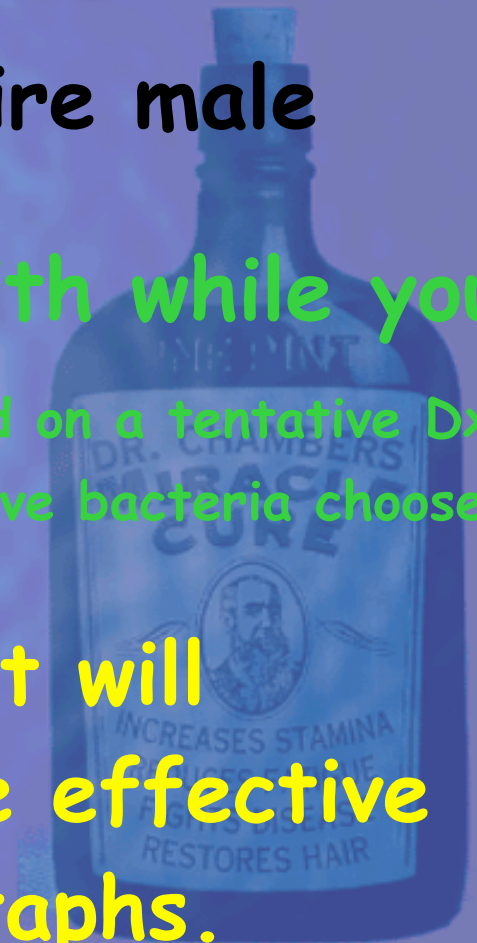
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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

What will you treat Kaiser with while you wait for the results? (Hint: Based on a tentative Dx of discospondylitis with a likelihood of gram positive bacteria choose an appropriate antibiotic)

♦ choice of antimicrobial that will distribute to the bone and be effective against gram positives like Staphs.



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CASE STUDY - KAISER

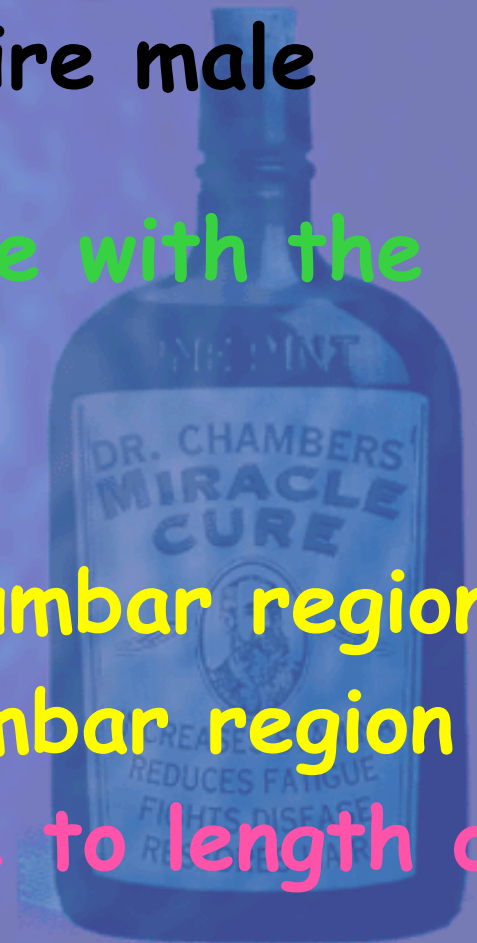
German Shepherd - 6 yo entire male

What would you expect to see with the other diagnostic aid?

Radiographs:

- ♦ Lysis of the bone in the lumbar region
- ♦ new bone growth in the lumbar region

Different from 1st visit due to length of time to develop



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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

Based on evidence of discospondylitis from radiographs plan your treatment:

Antibiotic? Dose? Course of treatment?

Need a long course of antibiotic treatment.

Might consider parenteral therapy for 5 days and then oral therapy for 4-6 weeks.

See: <http://www.walthamusa.com/articles/wf82cor.pdf>



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CASE STUDY - KAISER

German Shepherd - 6 yo entire male

Based on evidence of discospondylitis from radiographs plan your treatment:

1st Choice Antibiotic?

Other options?



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CASE STUDY - DRIBBLES

Labrador Retriever

8 year-old entire female

Based on the history what problems can you identify?

- ♦ chronic skin infections
 - Staphylococcus intermedius
- ♦ intractable ear infection, otitis externa
- ♦ depression
- ♦ possible exercise intolerance
(not moving around)



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CASE STUDY - DRIBBLES

List the problems you can identify

- ♦ chronic skin infections *Staphylococcus intermedius*
- ♦ intractable ear infection, otitis externa
- ♦ depression
- ♦ possible exercise intolerance (not moving around)



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CASE STUDY - DRIBBLES

Defend or criticise your boss's approach to therapy:

- ♦ Possibility of primary endocrine disorder initially
- ♦ initial therapy should have been bacteriocidal

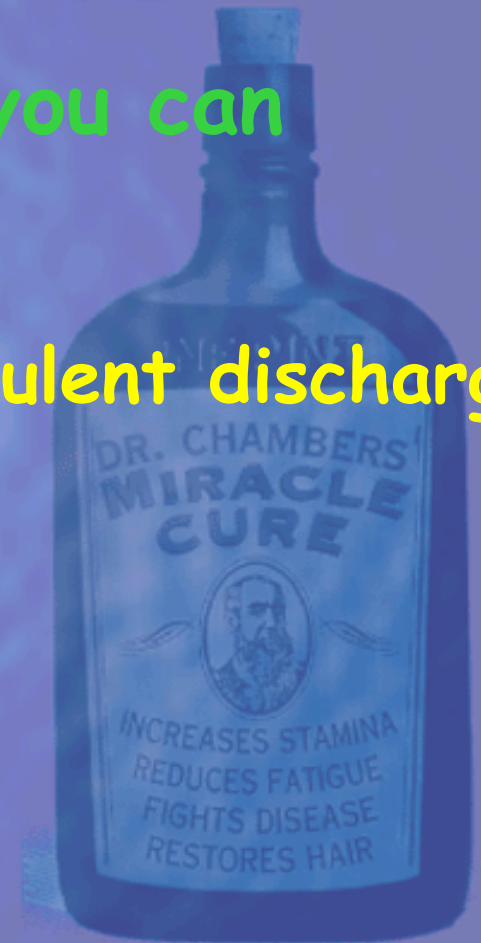


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CASE STUDY - DRIBBLES

List the additional problems you can identify now

- ♦ otitis externa (green smelly purulent discharge)
- ♦ purulent chronic skin infection
- ♦ cold to touch
- ♦ partial alopecia
- ♦ obese
- ♦ bradycardia



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CASE STUDY - DRIBBLES

Should you do anything diagnostically or therapeutically about the hormonal disorder at this time and why?

- ♦ Yes, need to correct for treatment to be successful
- ♦ Diagnostic tests: T4, \pm TRH or TSH stimulation test, CBC



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CASE STUDY - DRIBBLES

Should you do anything differently about the skin and ear infections at this time?
If so what and why?

- ♦ Treat them as separate and distinct problems



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CASE STUDY - DRIBBLES

Indicate your course of therapy if the owner has no money and cannot afford diagnostic tests at all, i.e. what is your recommended empirical therapy?

- ♦ Ancillary treatment for ears-drain and keep clean
- ♦ Suspect *Pseudomonas* by colour and smell
 - ♦ Skin:
 - ♦ Topical treatment of ears:
- ♦ Need to correct endocrine problem

