STRANGLES

Epidemiology and control

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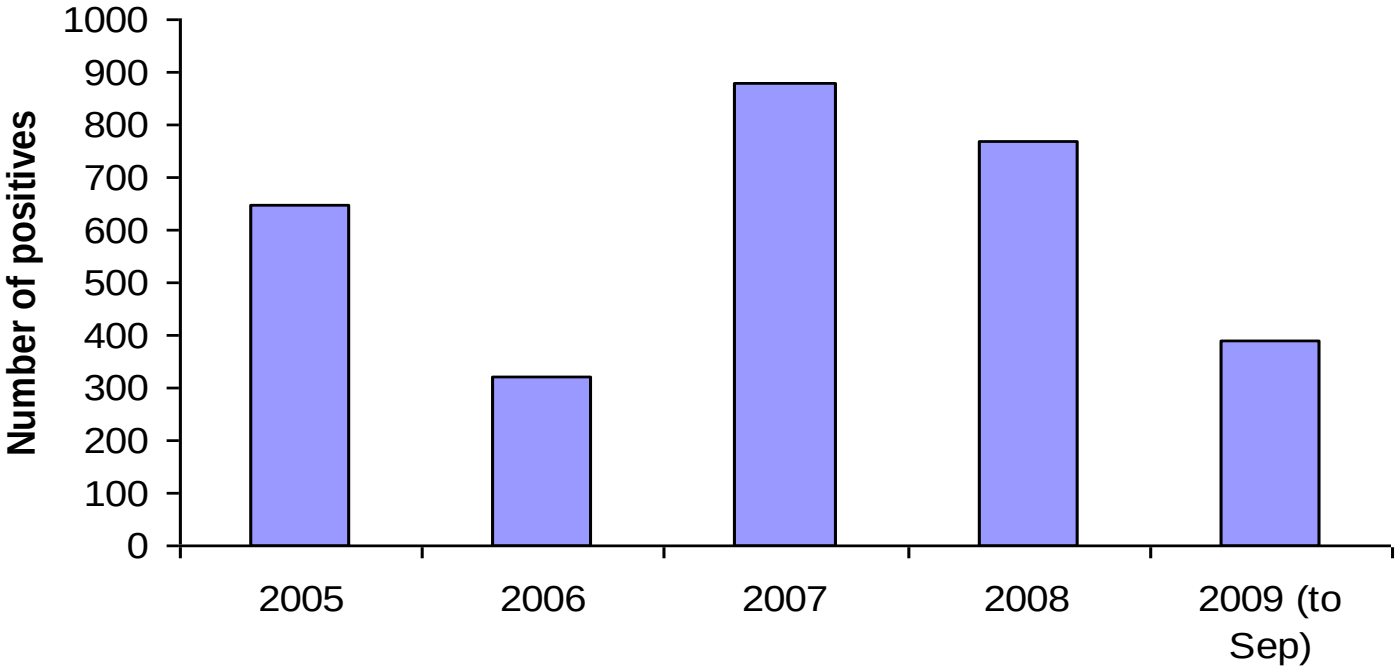
Strangles in horses

- The most important contagious equine disease worldwide
- Infection with the bacterium *Streptococcus equi*

- Respiratory obstruction gives the disease its name
- Infection rates up to 100%
- Case fatality rates up to 10% reported in some outbreaks

Is strangles on the increase?



Respiratory Disease in Africa?

Respiratory disease is important

Ethiopia – 250 horse taxi owners 48% reported respiratory disease

Mid Rift Valley - 79% horse cart owners reported respiratory disease as a major constraint

Andy Stringer - Liverpool

Strangles in Africa?

Little data recorded

Hot dry countries may be less of an issue?

(Big problem in Ethiopia?)

Lesotho – serological evidence suggests 10%

Melissa UpJohn – RVC

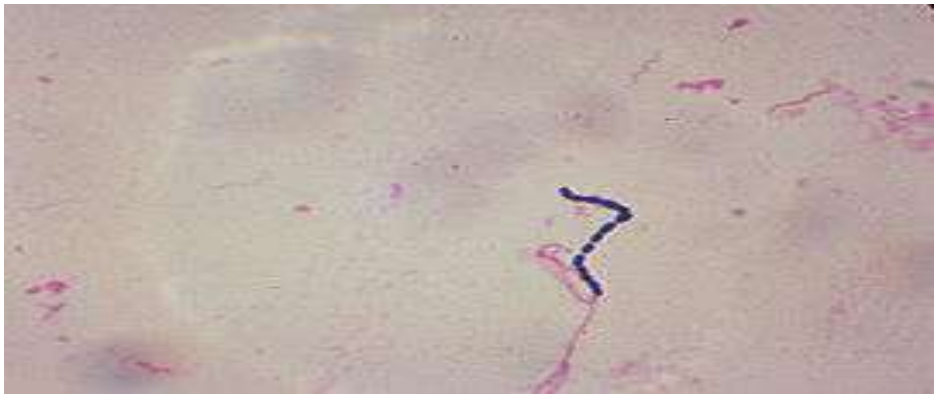
Strep equi

Beta haemolytic streptococci

Gram +ve

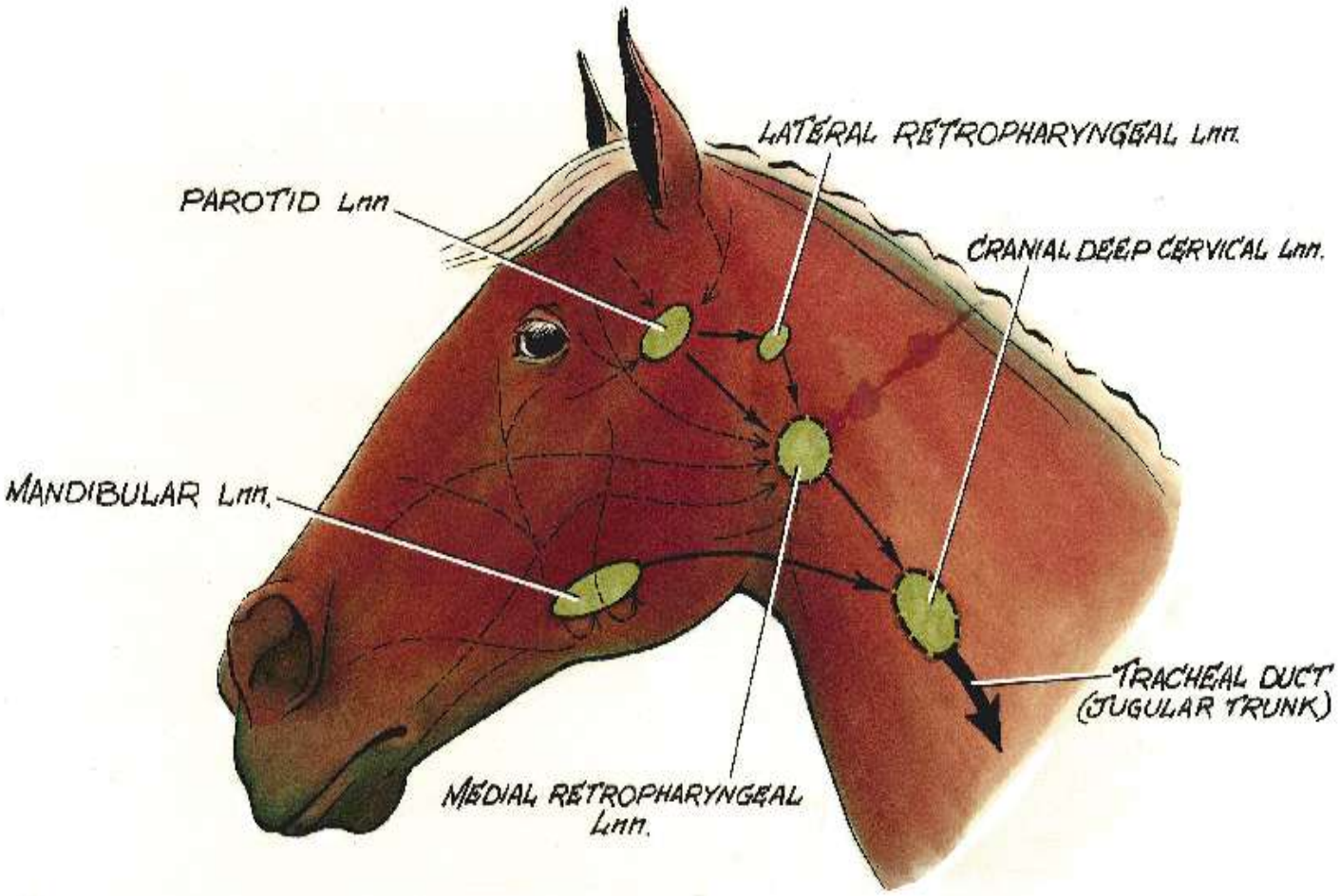
Lancefield group C

Pyogenic streptococci



Clinical signs of strangles

- Marked ‘snotty’ nasal discharge
- Fever, loss of appetite & depression
- Lymph node abscessation
  - submandibular, parotid, retropharyngeal
- +/- cough, ocular discharge, conjunctivitis

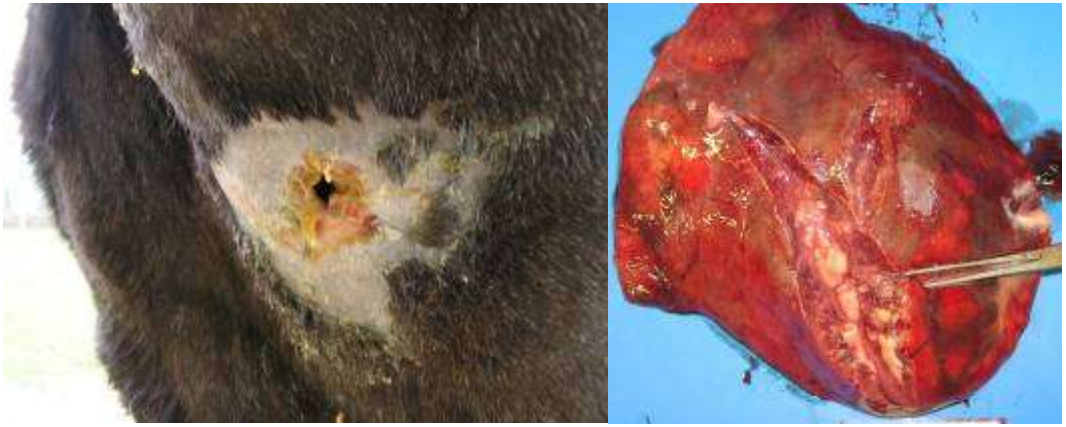


LYMPH NODES OF PAROTID, MANDIBULAR, AND RETROPHARYNGEAL LYMPHOCENTRES AND CRANIAL PART OF DEEP CERVICAL LYMPHOCENTRE OF HORSE'S HEAD.

Complications of strangles

‘Bastard’ strangles

- Abscessation of lymph nodes & organs beyond the head
- Signs often non-specific
- A cause of ‘strangles’ death



Purpura haemorrhagica

- Immune-mediated disease
- Bleeding and swelling
- Frequently fatal when severe

Transmission of *S. equi*

Spread from obviously *sick* horses

- Direct & indirect transmission possible
  - Direct horse to horse contact
  - Shared housing, water & feed utensils
  - Tack, equipment, etc
  - Personnel incl. veterinary surgeon

- **Management & hygiene important**

The hidden threat

Spread from outwardly *healthy* horses

- incubating disease
  - go on to develop clinical signs
- recent convalescents
  - 4-6 weeks after signs have cleared
- long-term, healthy carriers
  - infectious for months or years
  - usually have infected guttural pouch

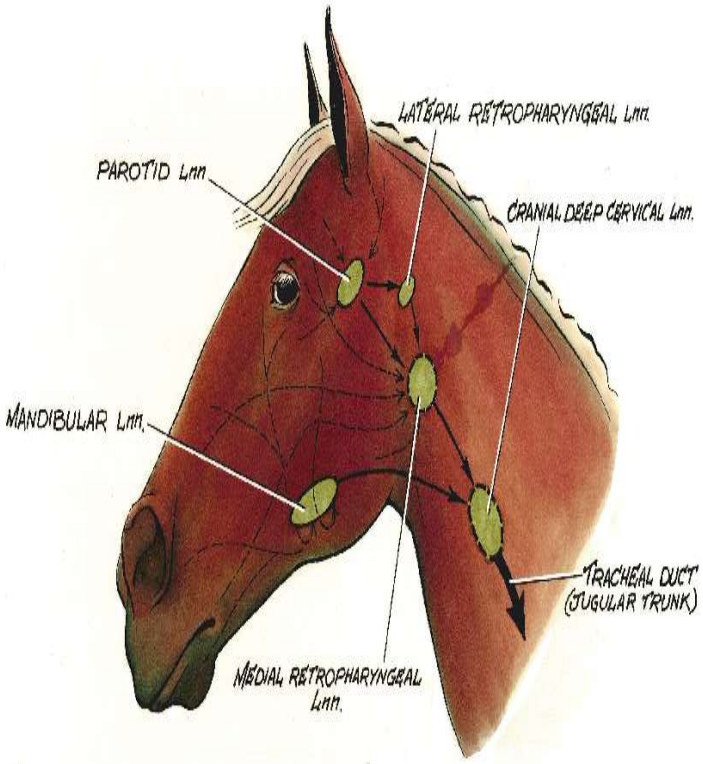
Captain A.G. Todd: AVC, 1910

"Strangles occasionally breaks out in stables which have had no recent arrivals & where there has been no contact with infected horses.

An example of this is where remounts have finished their training, are transferred to the squadron stables, & one or two of them will develop the disease."

J comp Path Therap **23**, 212-229

Development of the carrier state



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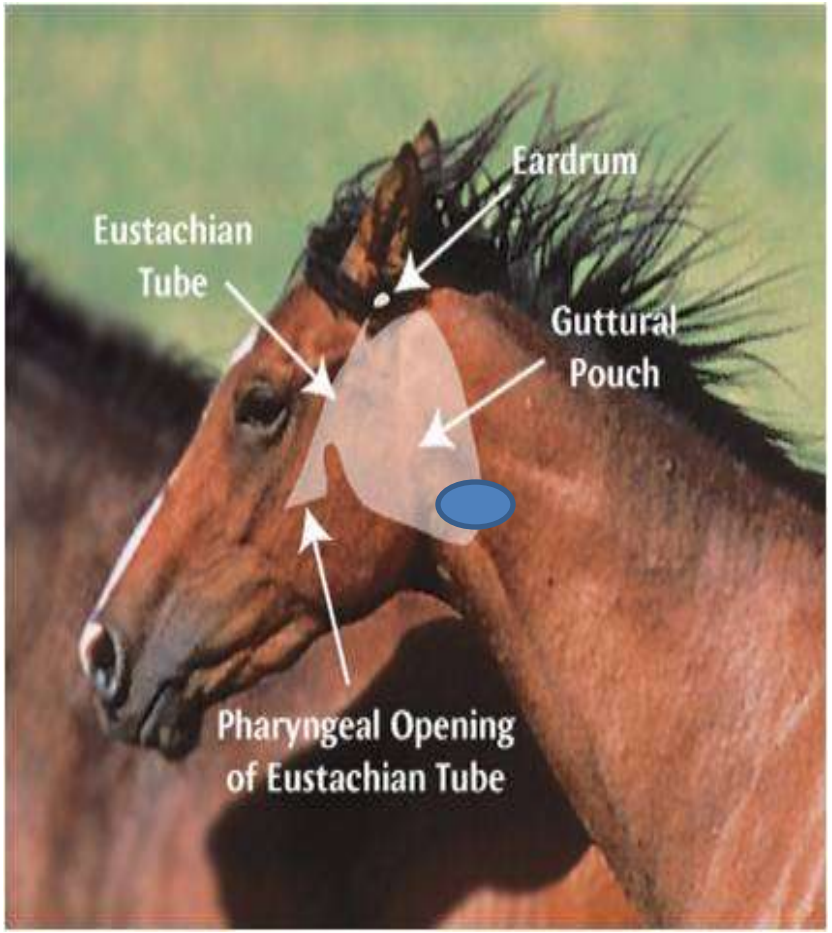
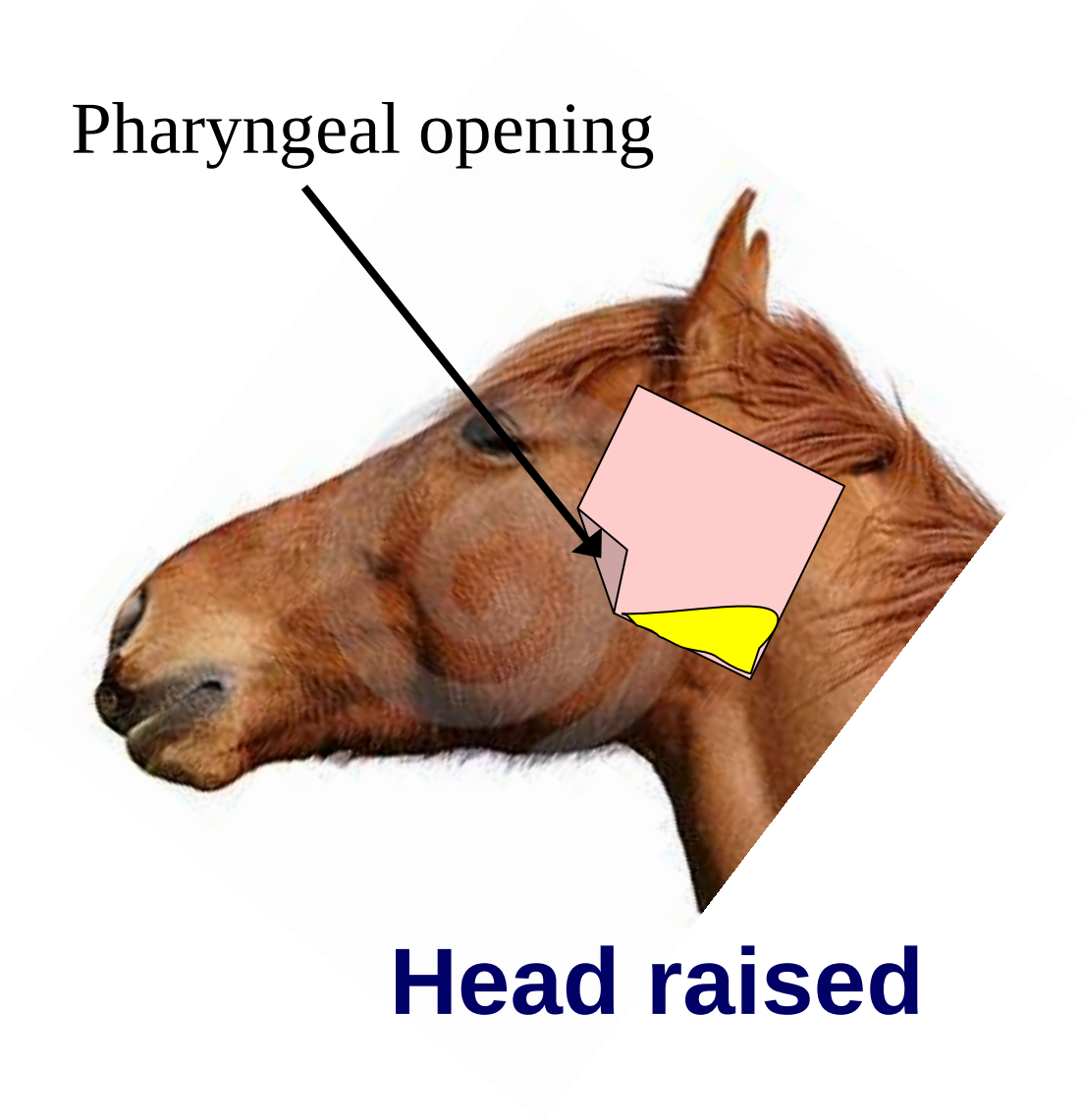
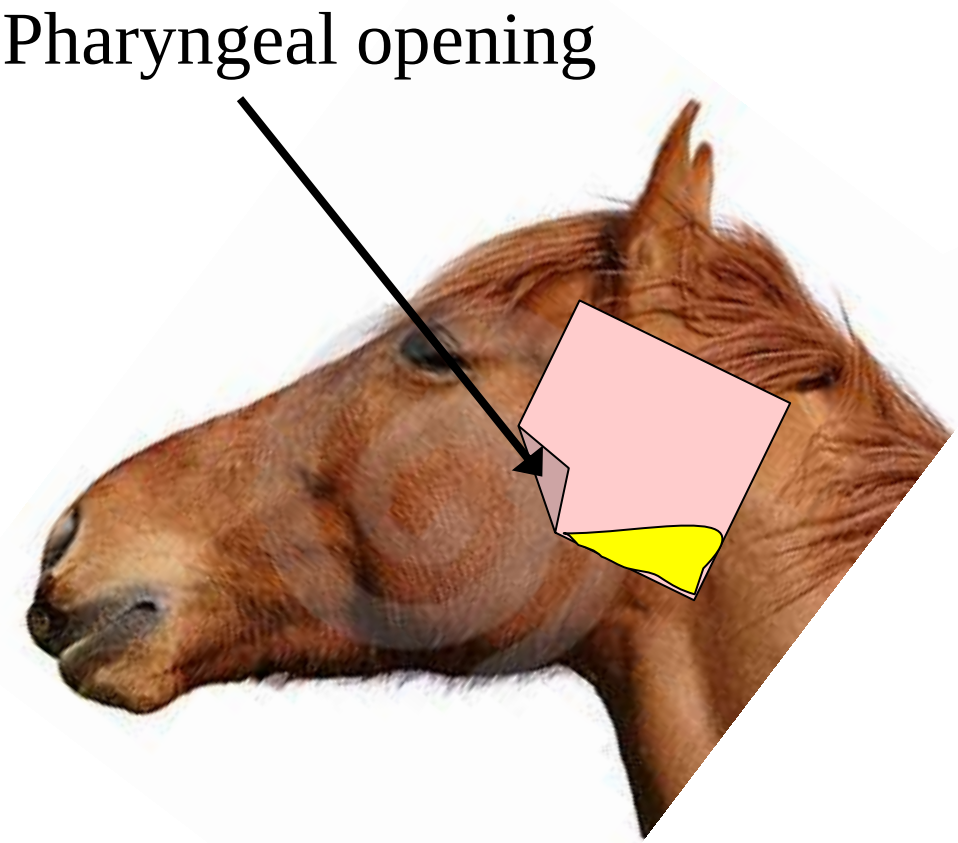


Guttural pouch drainage

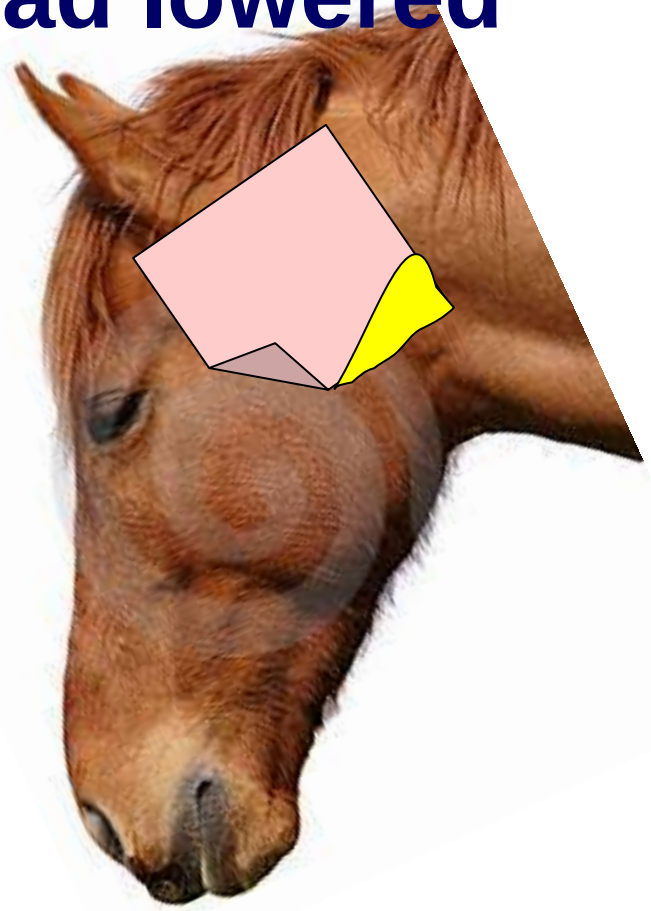


Head raised

Guttural pouch drainage

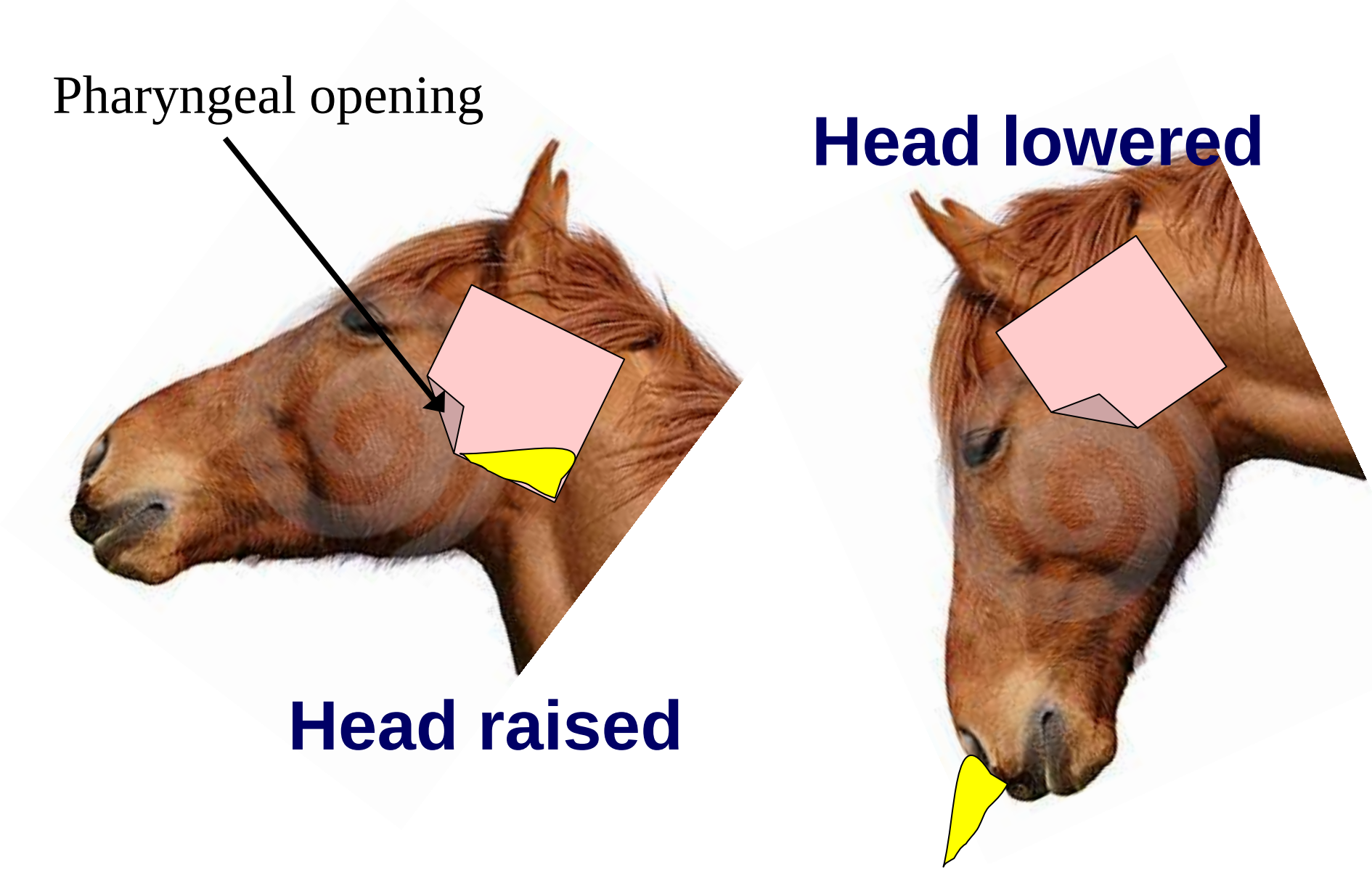


Head raised



Head lowered

Guttural pouch drainage



Diagnosis

- Clinical signs
- Temperature
- Bacterial culture
- PCR (Animal Health Trust)

Correct use of swabs

Diagnosis of Carriers

3 NP swabs in a two week period

Endoscopy and flushing of the guttural pouches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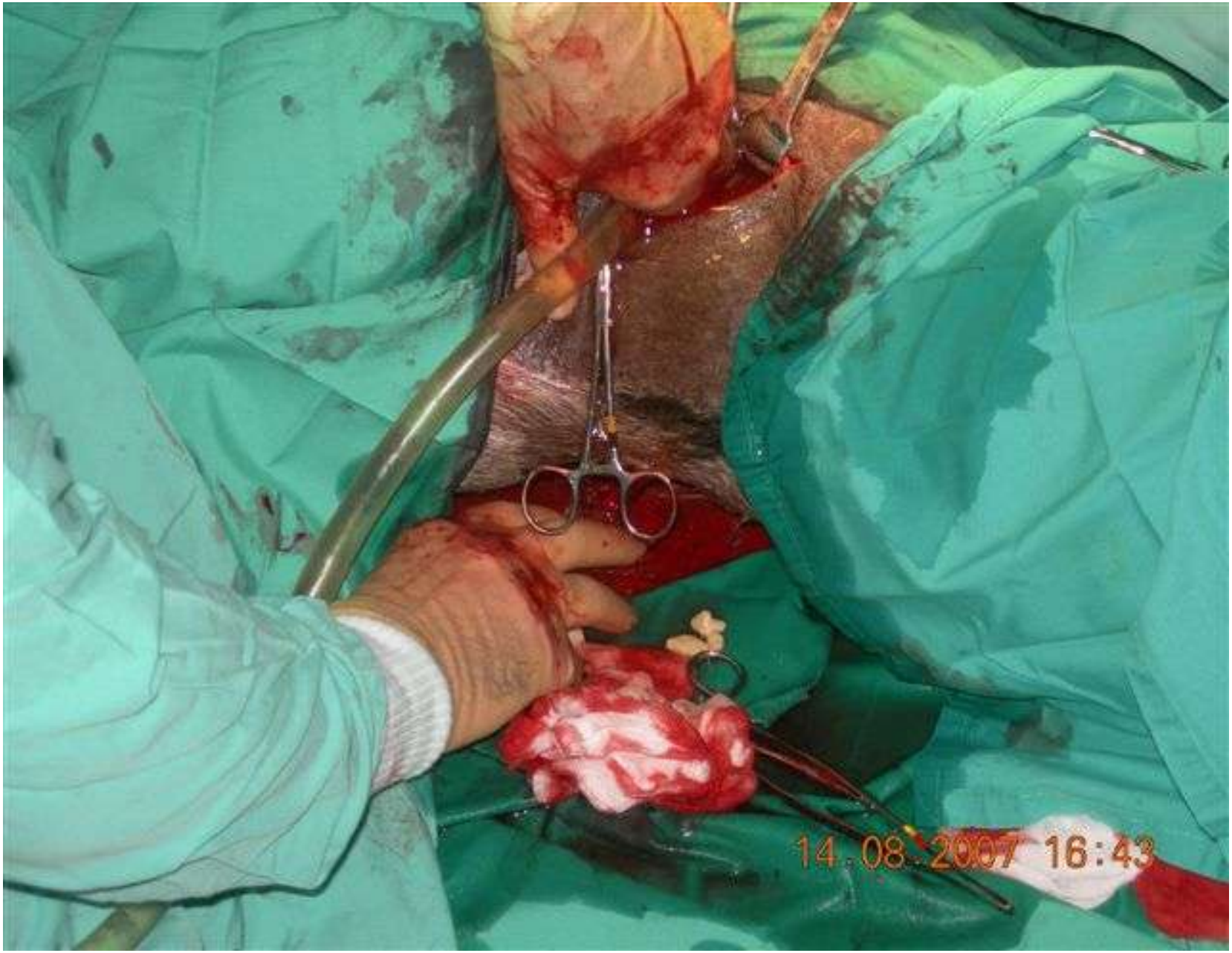
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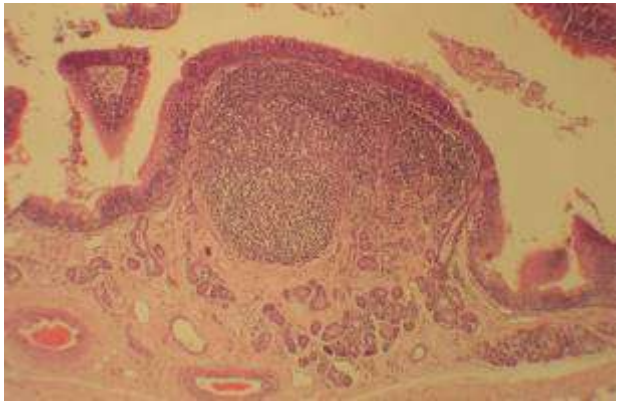
Why do some horses become carriers???

- Immuno-competence of horse
- Genetic component
- Severity of clinical signs
- Prior exposure to *S. equi*
- Inter-current disease / malnutrition
- Use of antibiotics
- Management of horses

Adaptation of *S. equi* in carriers

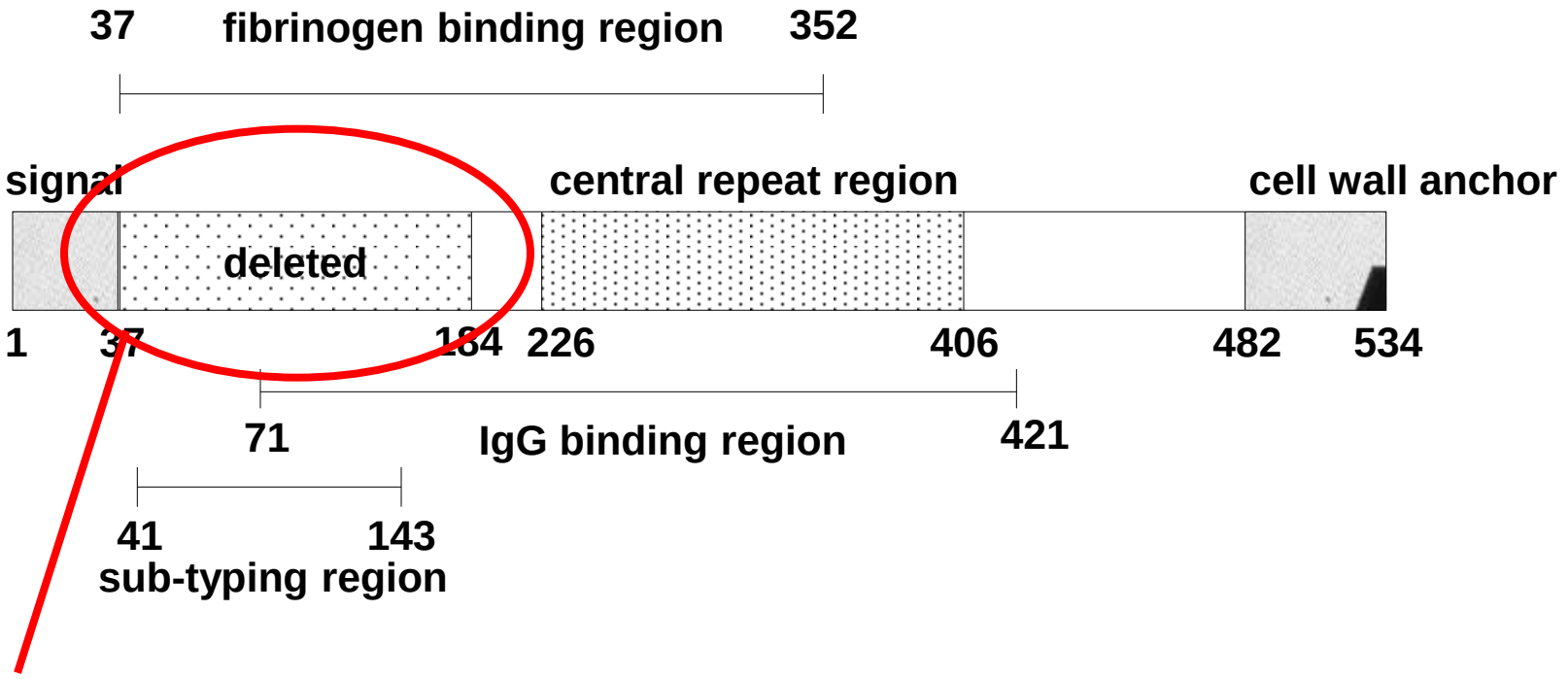
- *S. equi* may persist in the guttural pouch for up to several years

- Sub-clinical inflammation of the guttural pouch epithelium is associated with the presence of chondroids
- May lead to mutations in *S. equi*



Newton, et al., 1997; Newton, et al., 2000; Verheyen, et al., 2000

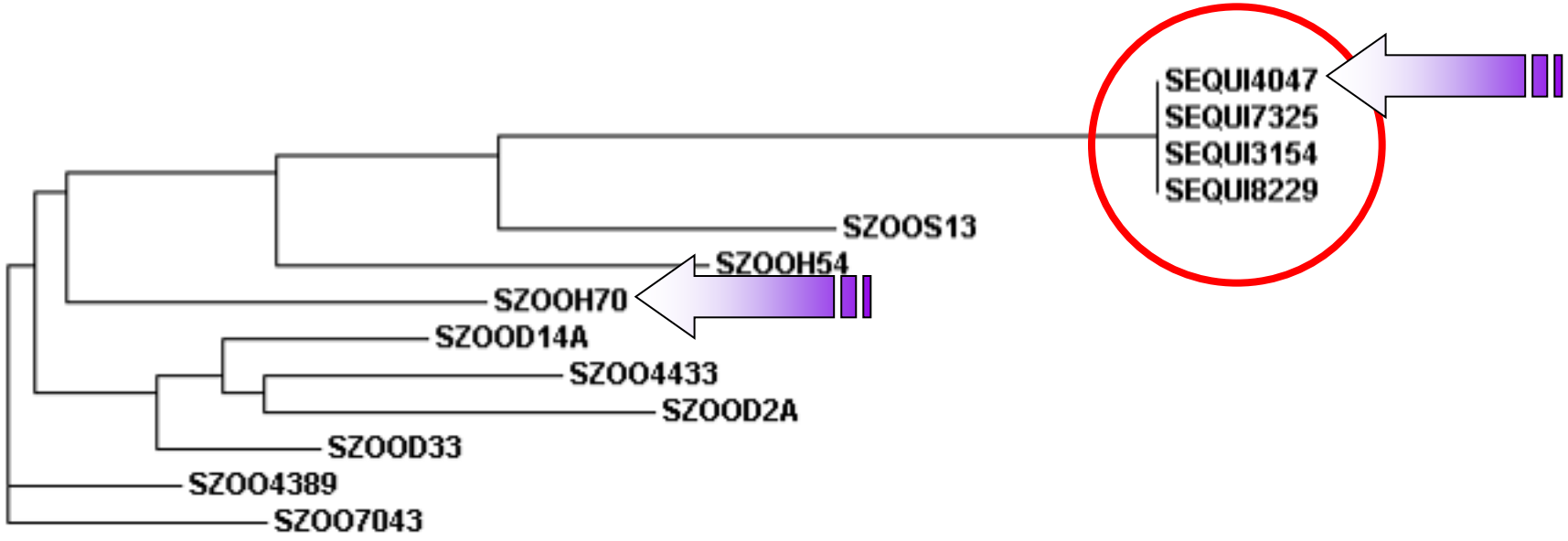
The SeM protein



- Region found to be deleted in 24% of strains causing persistent infections (Chanter et al., 2000)

- Therefore, the SeM gene is **NOT** a good PCR target

- *S. equi* shares over 96% identity with the common equine bacterium *S. zooepidemicus*



Strangles PCR at the AHT

- Targets a gene unique to *S. equi*, which encodes an intracellular enzyme.
- In 2006/2007, of over 700 *S. equi* culture +ve samples all were PCR +ve.
- Can detect *S. equi* in the presence of large numbers of contaminating bacteria.
- Improved sensitivity over culture.

The new ‘real-time’ strangles PCR

- Exploits the same validated gene target as used in the existing PCR test.
- Improved sensitivity – down to 1 DNA copy.
- Faster sample turnaround.

Serology

(AHT – 2008)

Identifies exposed horses

1)Currently infected

2)Previously infected but now immune

3)Previously infected and still infected (carriers)

Serology

Identifies how far the infection has spread

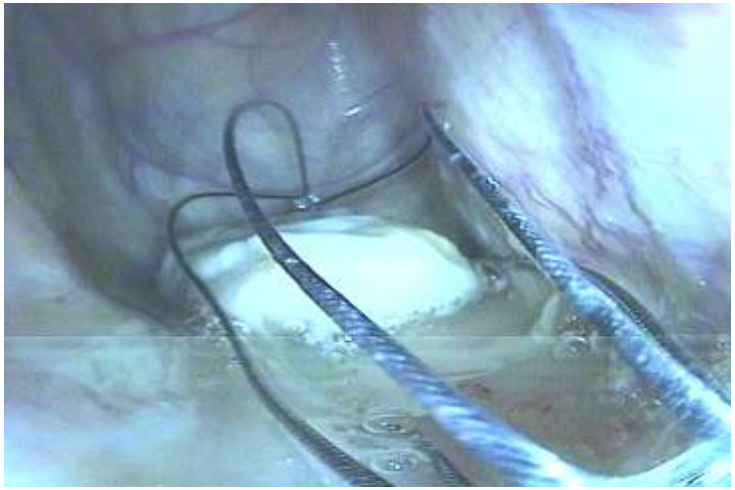
Identifies potential sources of new infections

Treatment of strangles

- Adequate rest
- Anti-inflamatories (bute)
- Hot compresses
- Lancing and flushing abscesses
- Fluids / Soft feeds
- Antibiotics

Endoscopy and treatment of carriers

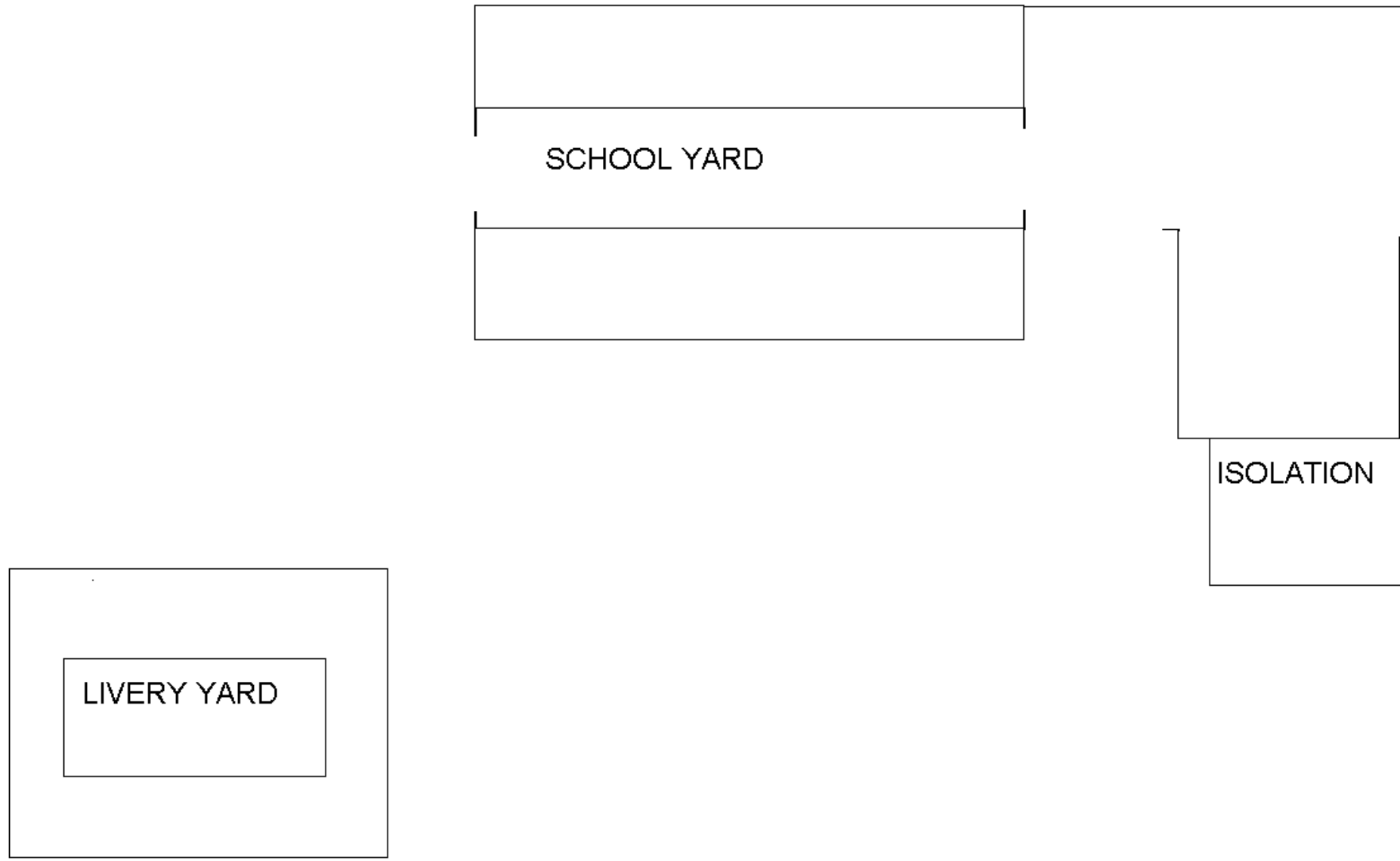
- Physical removal of chondroids.
- Penicillin gel administered into guttural pouches.
- Systemic antibiotics for 2 to 4 weeks.
- Repeat endoscopy and lavage to confirm infection free status

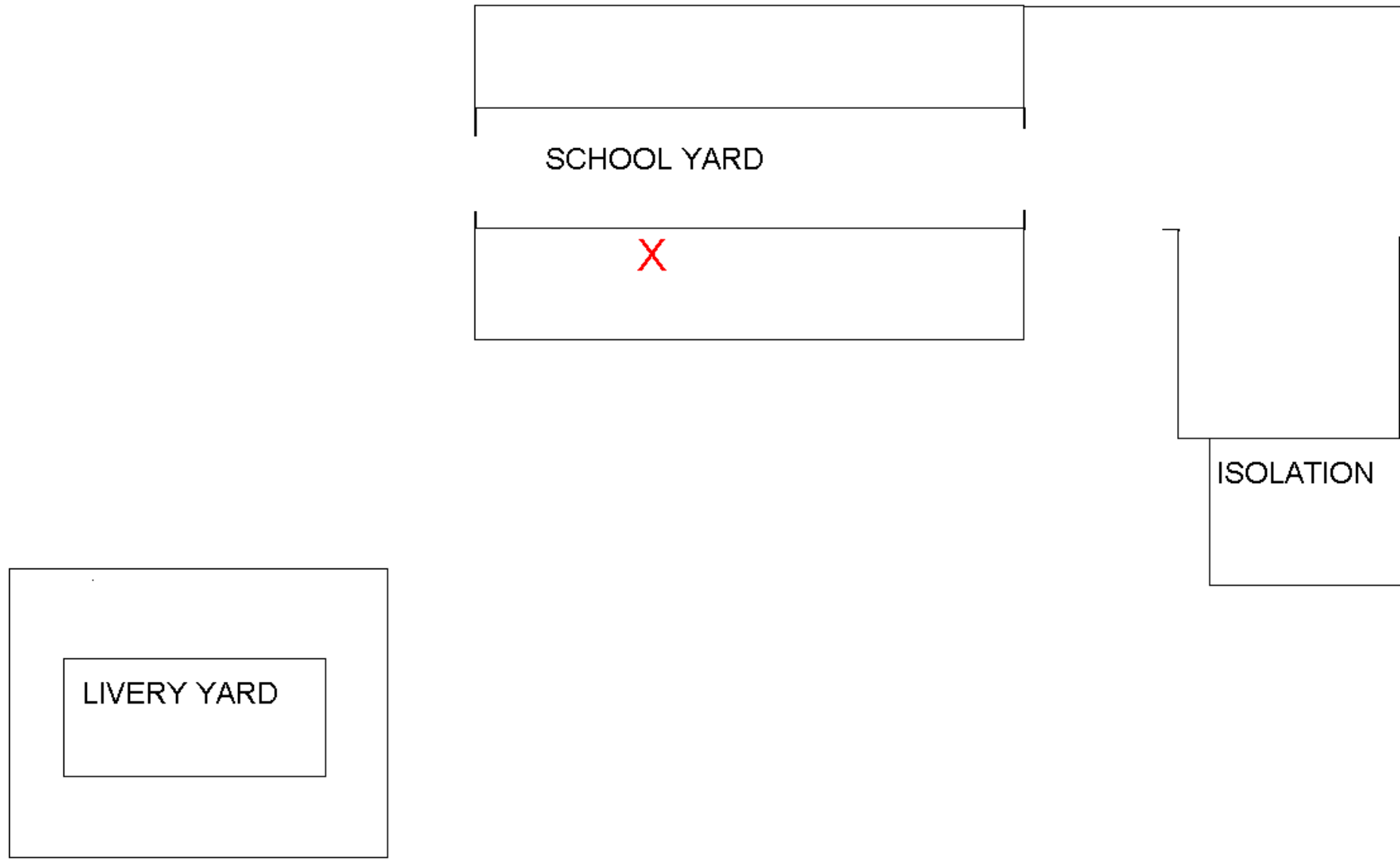


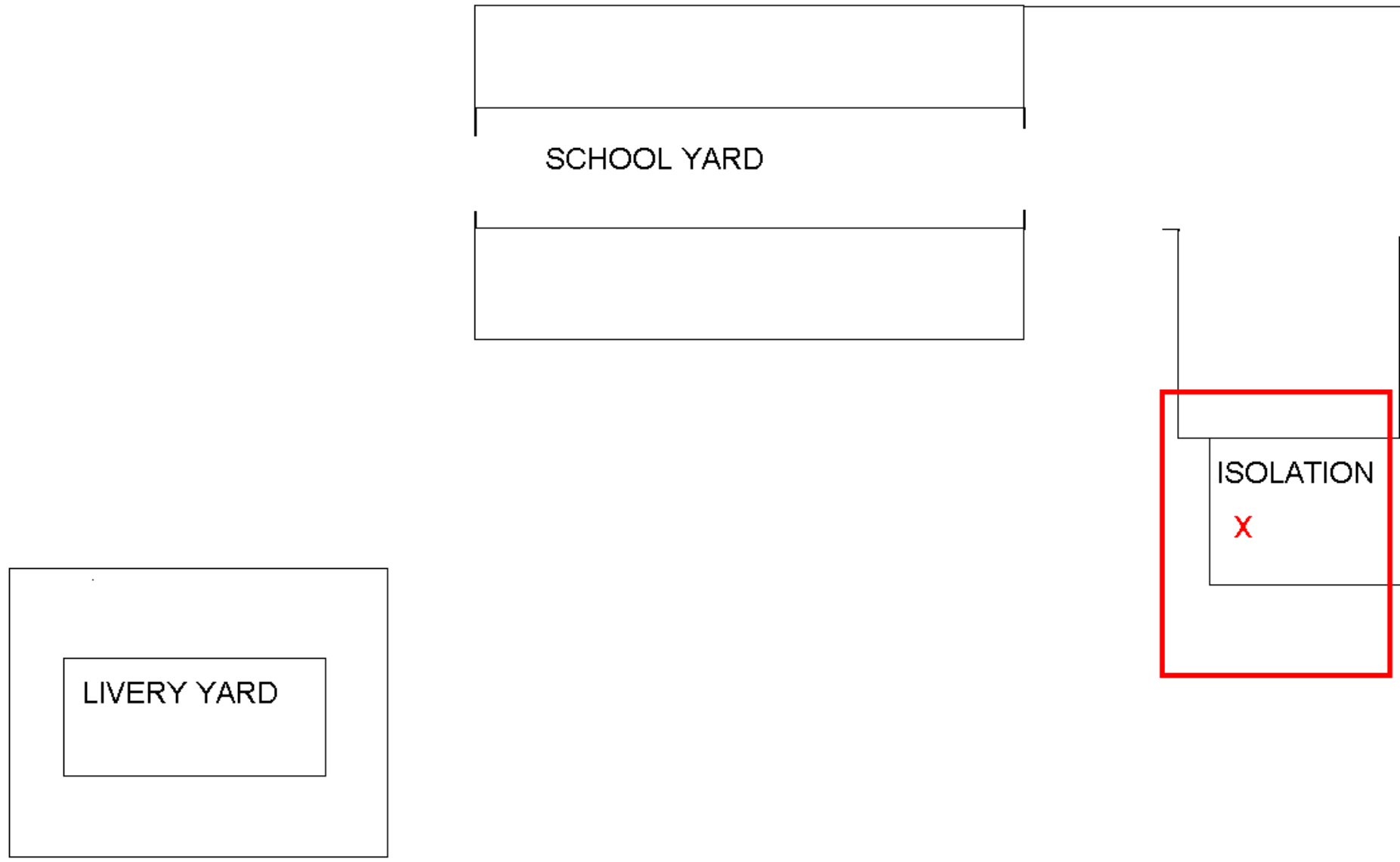
Control of an outbreak

Isolation

- Disinfect or change clothes and footwear
- Dispose of bedding, food, water carefully
- Double bag disposable clothes
- Use approved disinfectant e.g Iodine / chlorine based


SCHOOL YARD
ISOLATION
LIVERY YARD


SCHOOL YARD
X
ISOLATION
LIVERY YARD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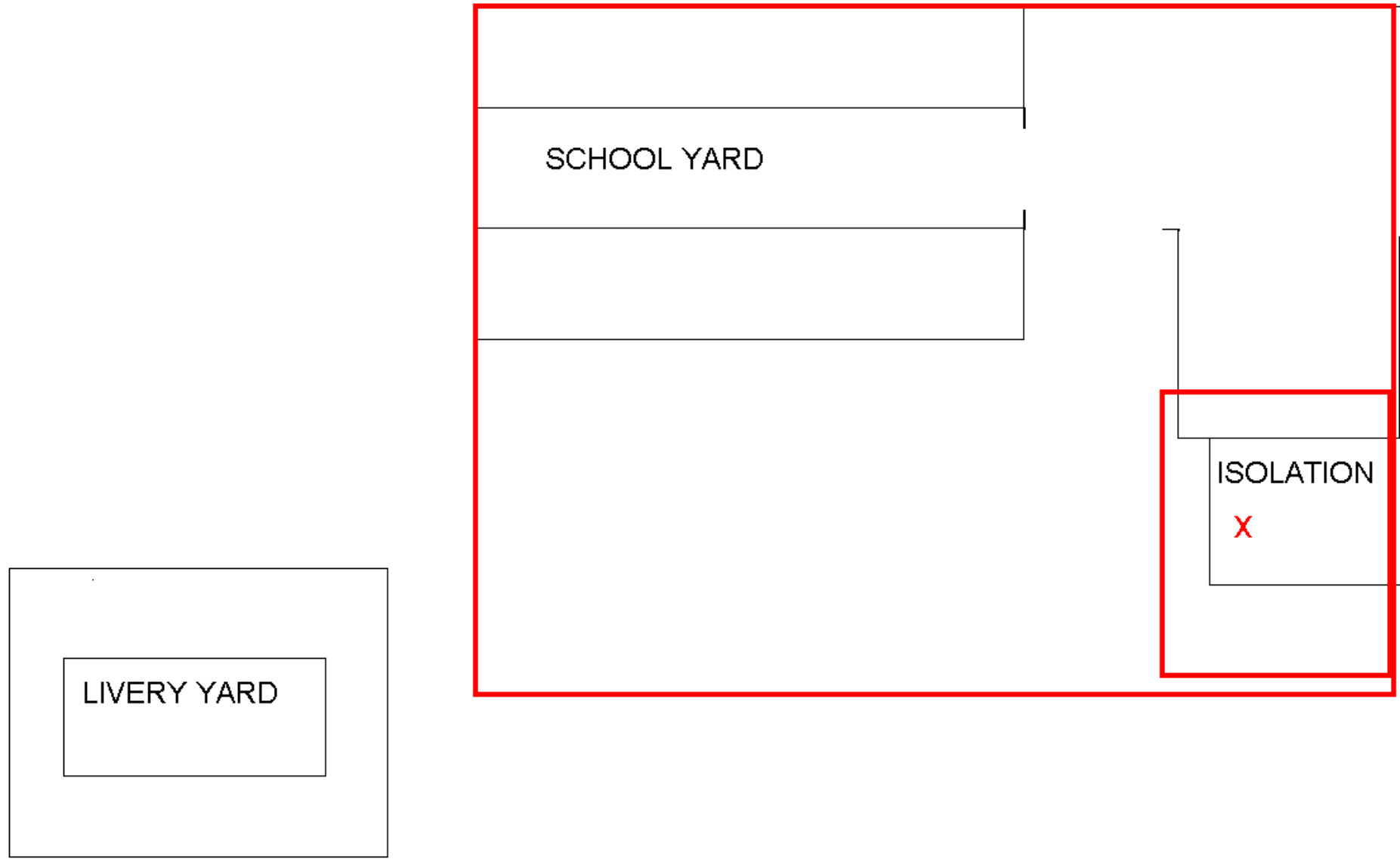
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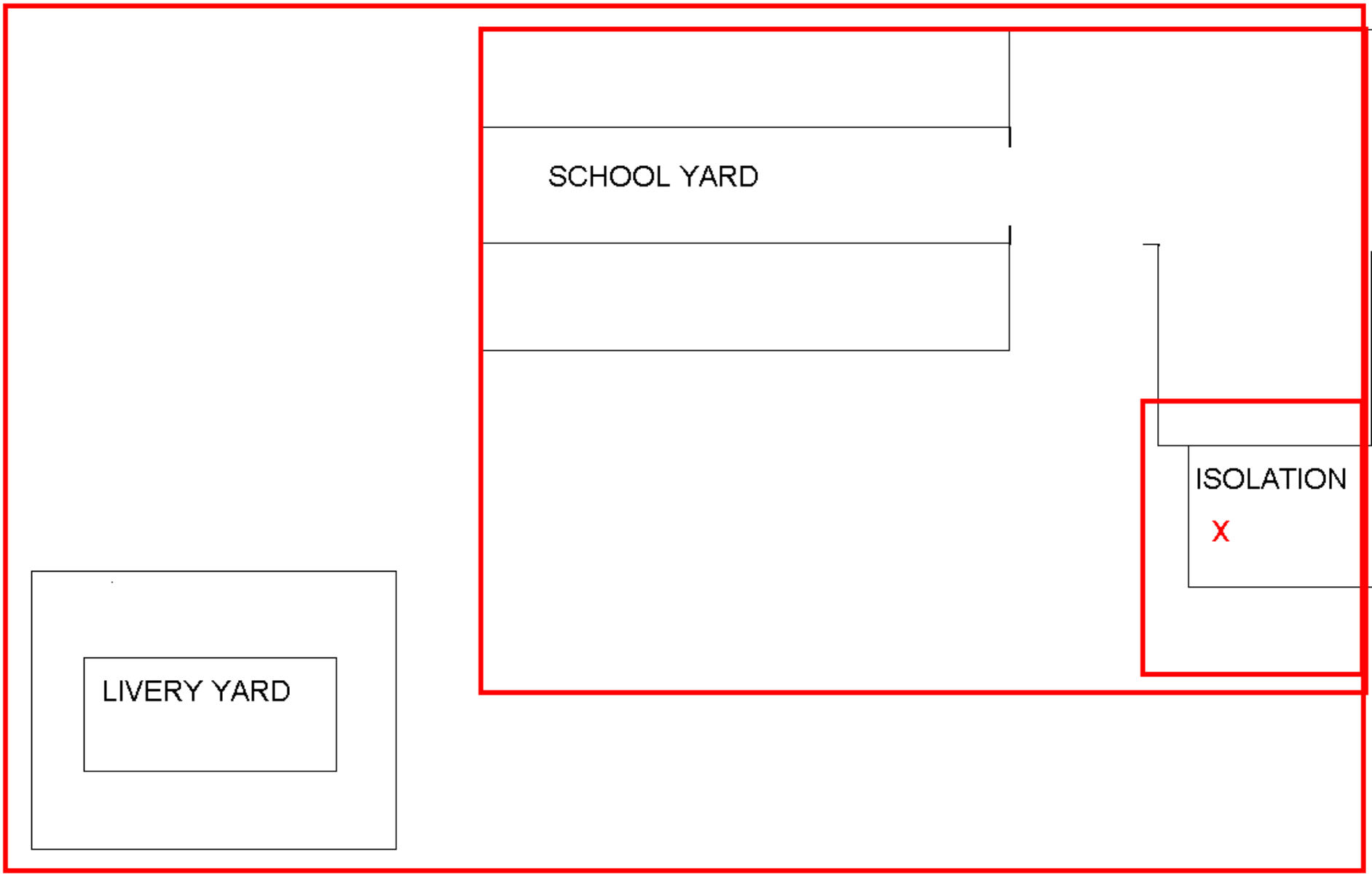
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Vaccination

Control in Africa

Avoid unnecessary contact at markets (Animals or people)

Avoid sharing tack (head collars / bits)

Control in Africa

Avoid water troughs / holes – use stand pipe and own bucket if possible

Isolate new arrivals

(2 to 3 weeks)

Minimise exposure to young or sick animals

Acknowledgements

Andrew Waller (Animal Health Trust Newmarket)

Alasdair King MRCVS (Intervet SP)

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Sam Duff MRCVS

British Horse Society (Scotland) **STEPS**