

The assessment of URT function  
in the young Thoroughbred  
presented for sale

Gerald Leigh Memorial Lectures 2017

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- Gone with the wind:  
the past, present and future of  
Conditions of Sale relating to  
respiratory impediments

# Conditions of Sale re 'wind'

## Auctioneers' objectives

- To facilitate equitable transactions that enable purchasers to acquire horses which are healthy and fit for purpose
- To institute Conditions of Sale regarding health which are practicable and yet reflect contemporary 'best clinical practice'

# Conditions of Sale re 'wind'

- There are no “wind” Conditions of Sale for foals or mares out of training
- “Wind” Conditions are applied at:
  - Yearling
  - Breeze-up
  - Horses in Training Sales

# Conditions of Sale re 'wind'

## Physiological considerations

- **Minute volume - the volume of air which horses move through the airways from the nostrils to the lungs per minute - ranges from 80 L at rest to 2500 L at exercise**

# Conditions of Sale re 'wind'

'Wind' Conditions of Sale are justifiable because horses with restricted airways cannot be as effective as athletes as those which are normal

Before 1978 there were no 'wind' Conditions and the rule of caveat emptor prevailed

# Conditions of Sale re

‘wind’

Between 1979 and 1983 horses which made ‘characteristic’ respiratory noises when actively exercised were returnable to the vendor

In 1983 horses which made ‘characteristic’ noises or showed endoscopic evidence of laryngeal hemiplegia were returnable. The ‘Wind Panel’ was born!

Since 1984 horses which make ‘characteristic’ noises and show endoscopic evidence of laryngeal hemiplegia are returnable

NB the first flexible endoscopes for equine use arrived in the UK in 1974 necessitating a 9 year time lag for proficiency to reach an acceptable level

# Conditions of Sale re

‘wind’

In 2003 a group of rarer deformities / malfunctions of the upper airways was added to the list of proscribed disorders:

Fourth branchial arch defects (4-BAD)

Clefts of the hard and soft palate

Arytenoid chondritis/chondropathy

Permanent epiglottal entrapment

Sub-epiglottal cyst

In all instances a Lot only becomes returnable if it can be heard to make abnormal respiratory noises at exercise



# Conditions of Sale re 'wind'

In 2013 for Horses in Training, including Breeze-Ups, the option to use dynamic endoscopy has been made available to the 'panel' to decide on issues relating to laryngeal function only

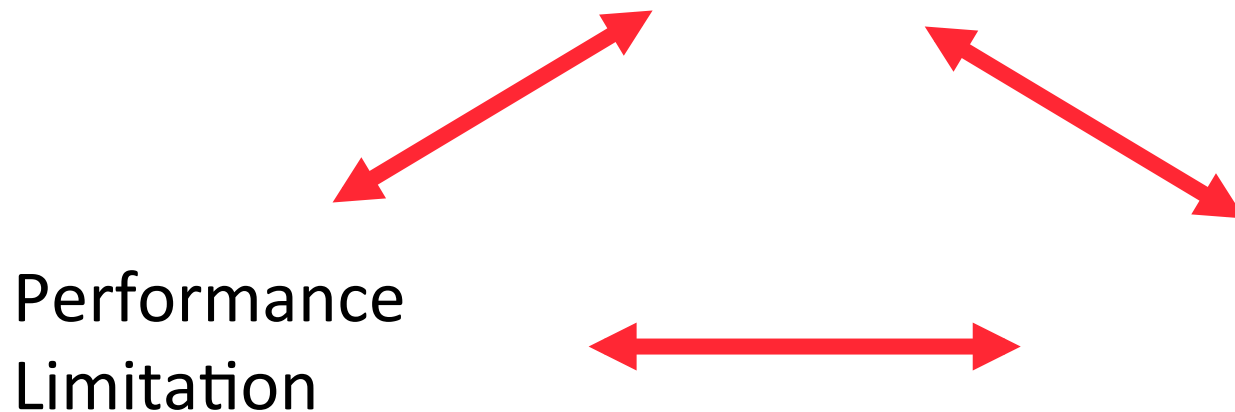
In practice this technique would be used for horses which produce abnormal inspiratory noises during the ridden exercise test but which show normal endoscopic features when standing in a loose box

Other disorders relating to soft palate function or the ary-epiglottal folds would not be considered

# Conditions of Sale re 'wind'

Purchasers' perception:

Abnormal respiratory noise



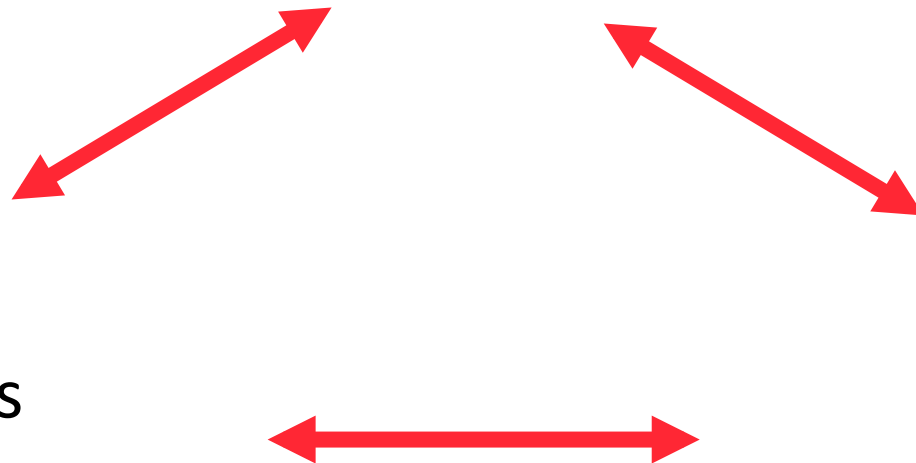
NB trainers'/ owners' interpretations of noises are notoriously inaccurate  
(Witte et al. 2011)

# Conditions of Sale re 'wind'

Veterinary responsibilities at sales:

Auctioneers ?+Insurers

Purchasers



# Conditions of Sale re ‘wind’

- Sales companies appoint veterinary ‘experts’ ( ‘Wind Panel’ ) to assist them in the interpretation of their Conditions of Sale
- The same ‘experts’ should consult with auctioneers regarding scientific developments and ‘best clinical practice’ which might be applied and incorporated into Conditions of Sale
- Settlement of an insurance claim may depend upon the outcome of a wind panel examination

# Conditions of Sale re 'wind'

- Vendors depend upon their veterinary advisers to prevent the embarrassing return of a horse
- Pre-sale examinations should include:
  - Endoscopy ? including video record for repository
  - Exercise test

# Conditions of Sale re 'wind'

- Purchasers rely on their veterinary advisers to identify unsuitable Lots before bidding – palpation; endoscopy; ultrasonography
- To clarify post-sale whether a Lot may be returnable under the Conditions of Sale – exercise test; palpation; endoscopy

- Conditions of Sale re ‘wind’

Adventitious respiratory noise:

Sound frequency analysis can be used effectively to identify horses with recurrent laryngeal neuropathy but is unhelpful in the diagnosis of other causes of dynamic upper airway obstruction

Attenburrow (1978; 1983); Cable et al. (2002);  
Derksen et al. (2003); Franklin et al. (2003)

# Conditions of Sale re 'wind'

- Endoscopy during quiet breathing has been the primary diagnostic method in the investigation of functional disorders of the equine URT for the past 40 years but can we accept the findings without question?
- Inter-observer results are quite consistent but there may be day-to-day minor differences with individual horses (Perkins et al. 2009)



# Conditions of Sale re 'wind'

- Previous surgery
- Horses previously subjected to surgery to correct RLN are returnable to the vendor unless previously declared
- Surgery to manage palatal malfunctions is not declarable largely because of uncertainties re identification

# Conditions of Sale re 'wind'

- There are no races for horses which are standing still and so the only means to make a definitive diagnosis is to evaluate the horse while it is galloping, i.e. on a highspeed treadmill or during overground exercise

# Conditions of Sale re 'wind'

- The common causes of dynamic URT collapse in racing horses are, in order of frequency:
- Dorsal displacement of soft palate (DDSP)\*
- Recurrent laryngeal neuropathy (RLN)
- Medial deviation of AE folds (MDAF)\*
- Congenital laryngeal dysplasia (4-BAD; 6-BAD)
- Ventro-axial luxation of arytenoid cartilage (VALCPA)\*
- Epiglottal entrapment (EE)\*
- Pharyngeal collapse
- Sub-epiglottal cyst (SEC)
- Arytenoid chondropathy (AC)
- Epiglottal retroversion

# Conditions of Sale re 'wind'

- Of the common causes of dynamic URT collapse in racing horses the following can be diagnosed reliably at rest:
- Congenital laryngeal dysplasia (4-BAD; 6-BAD))
- Epiglottal entrapment (EE)
- Sub-epiglottal cyst (SEC)
- Arytenoid chondropathy (AC)

# Conditions of Sale re 'wind'

- Of the common causes of dynamic URT collapse in racing horses the following can sometimes be diagnosed at rest:
- Recurrent laryngeal neuropathy (RLN)
- Ventro-axial luxation of arytenoid cartilage (VALCPA)

# Conditions of Sale re 'wind'

- Of the common causes of dynamic URT collapse in racing horses the following cannot be diagnosed definitively at rest:
- Dorsal displacement of the soft palate (DDSP)
- Axial deviation of the ary-epiglottal folds (ADAF)

# • Conditions of Sale re ‘wind’

- Dynamic endoscopy has provided an important conclusion for diagnosticians:
- Simple dynamic obstruction in the upper airways is relatively unusual – many horses are afflicted with multiple sources of obstruction

Parente et al. (1994); Tan et al. (2005); Lane et al. (2006);  
Pollock et al. (2009)

## • Conditions of Sale re 'wind'

- Endoscopes have been available for more than a decade for use on exercising horses without resort to a treadmill
  - The technique can be applied to yearlings (Pollock et al. 2013) but may be seen as invasive by vendors
  - Interpretation of the findings is frequently complex
- No all Lots may be temperamentally suitable



# “Conditions of Sale re ‘wind’

- Laryngeal ultrasonography has been shown to be effective in the diagnosis of arytenoid and vocal cord collapse and is superior to resting endoscopy and comparable with dynamic endoscopy (Chalmers et al 2006; Garrett et al 2011)

- URT dynamics in the equine athlete

- Laryngeal ultrasonography offers a good prospect of accurate diagnosis / prognosis in relation to recurrent neuropathy:

# “Conditions of Sale re ‘wind’

- At the major UK and Irish sales horses are subjected to an exercise test as well as endoscopy
- At the major USA, Australian and New Zealand sales endoscopy alone is used to implement the Conditions of Sale
- In France the Napoleonic Code still applies and relates to noise only

- Conditions of Sale re ‘wind’

- A video-endoscopic survey of 3500 yearlings during quiet breathing revealed:

- 784 (22.4%) “pass” LFS Grade 1
- 2006 (57.4%) “pass” LFS Grade 2
- 617 (17.8%) “equivocal” LFS Grade 3
- 69 (2.0%) “fail” LFS Grade 4
- 9 (0.26%) “fail” LFS Grade 5
- 12 (0.34%) Not graded

## Conditions of Sale re 'wind'

A video-endoscopic survey of 3500 yearlings during quiet breathing revealed:

7 (0.2%)cases

5 (0.14%)cases

2 cases

5 cases

0 cases

0 cases

4-BAD

right sided dysfunction

epiglottal entrapment

sub-epiglottal cyst

arytenoid chondropathy

palate defect

# Conditions of Sale re 'wind'

## Comparison of resting endoscopic grading with findings during treadmill endoscopy (Lane 2006)

Grade 1	82 at rest:	>1 ACC 3 VCC
Grade 2	256	> 11 ACC 4 VCC
Grade 3	82	> 20 ACC 9 VCC 53 normal
Grade 4	23	> 19 ACC 0 VCC
Grade 5	6	4 normal > 6 ACC

Every horse with ACC or VCC made an abnormal inspiratory noise

- Conditions of Sale re 'wind
- Therefore no assessment of laryngeal function is complete without an exercise test

- Laryngoscopic findings in foals:
  - Is endoscopy prior to sale a worthwhile technique in foals?



# Endoscopy of foals

- Is this possible?
  - Yes - provided that suitably narrow equipment is available
- Is it safe?
  - Yes - provided that the endoscopist and the handlers are sufficiently experienced
- Is it humane - what are the welfare considerations?
  - Foals require greater restraint than yearlings and therefore repeated endoscopy is undesirable

# Endoscopy of foals

- Upper respiratory tract disorders which can be diagnosed accurately:
  - Clefts of palate
  - Fourth branchial arch defects
  - Epiglottal entrapment
  - Sub-epiglottic cysts
  - Other pharyngeal cysts

# Endoscopy of foals

- Disorders which cannot be diagnosed with accuracy:
  - Recurrent laryngeal neuropathy
  - Epiglottal hypoplasia
  - Dorsal displacement of the soft palate

# Endoscopy of foals

- What are the limitations in the context of pre-sales examinations?
  - Although some congenital defects can be identified with accuracy, prospective purchasers may be falsely influenced by the results, especially in regard to RLN:
  - Some apparently normal foals may show dysfunction by the yearling stage
  - Other ‘abnormal’ foals will ‘improve’ during the following year

# Conditions of Sale re 'wind'

- Summary:
- The diagnosis of upper airway impediments is an inexact science, but.....
- We are improving
- Conditions of Sale should reflect the advances being made