Overview of Horse and Donkey Diseases in West Africa

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Different types of diseases

Arthropod –Borne Diseases

- *Culicoides(midges): -African Horse Sickness (EHS)*
  -Equine Encephalosis (EE)
- *Mosquitoes: Alphavirus , Equine Encephalitis in Senegal*
- *Tsetse Flies –biting flies : Trypanosomes*

Tick-Borne Diseases

- Piroplasmosis

Different types of diseases

Virus Diseases

- Generalised diseases including Central Nervous System involvement

- African Horse Sickness	++	9 serotypes	attenuated live vaccine
- Equine Virus Arteritis	+	1 serotype	attenuated live vaccine
- Equine Encephalosis	+	several	NONE
- Infectious Anaemia	+	1 serotype	NONE used
- Rabies	+	1 serotype	inactivated

- Respiratory diseases

- Adenovirus Pneumonia	+	unknown	inactivated + Live
- Rhinopneumonitis (EHV4)	+++		inactivated
- Equine INFLUENZA Virus	++	2	inactivated
- Rhinovirus	+	3	None
- Equine Herpes virus 2 and 5	++	unknown	None

Different types of diseases

- ***Virus Diseases***

- **Enteric diseases**

- Rota virus	+++		None
- Torovirus	+	1	None

- **Reproduction Diseases**

- EHV1 (equine abortion)	+++	Inactivated + Live
- Equine arteritis	+++	Attenuated live vaccine

- **Skin Diseases:**

- Equine Papillomatosis	++	several	None

Different types of diseases

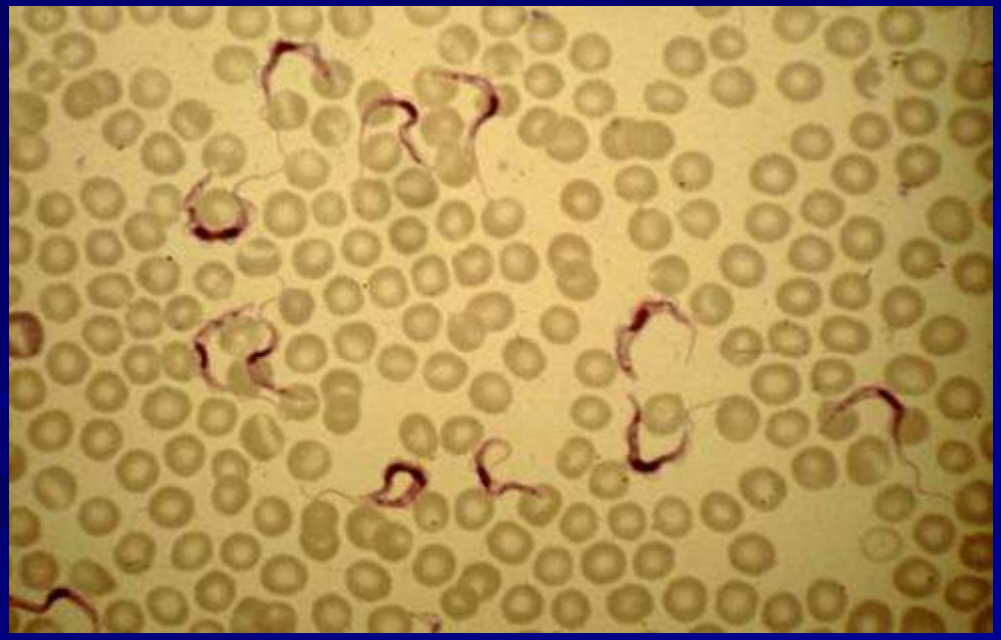
- ***Bacterial diseases***

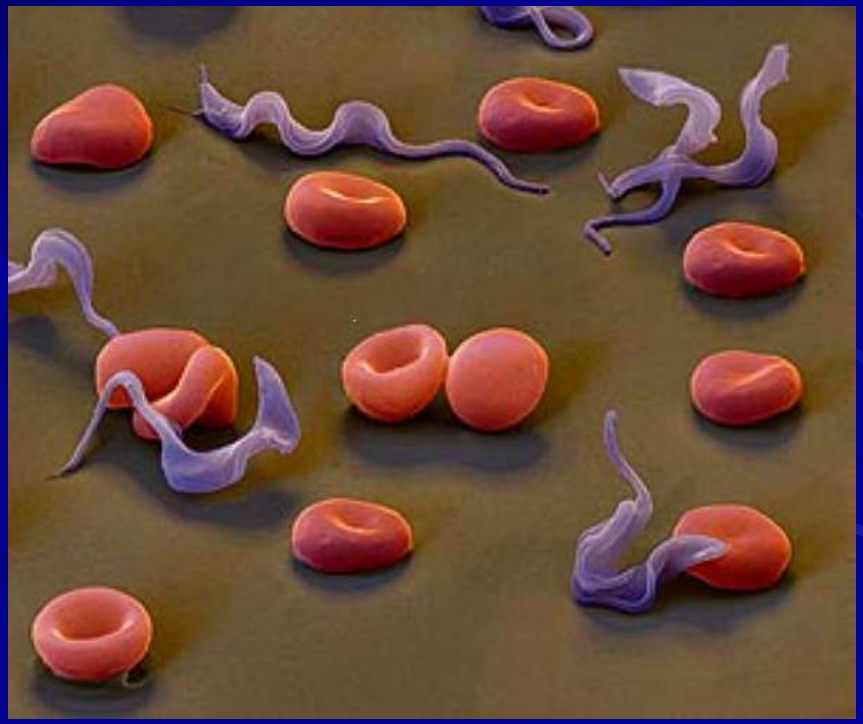
- Many
- Tetanus (*Clostridium tetani*)

Equine trypanosomiasis

- Disease caused by Trypanosomes and transmitted by **biting flies** :*T.b.evansi and T.vivax*

  or **Tsetse flies**: *T.vivax, T.congolense, T.b.brucei*





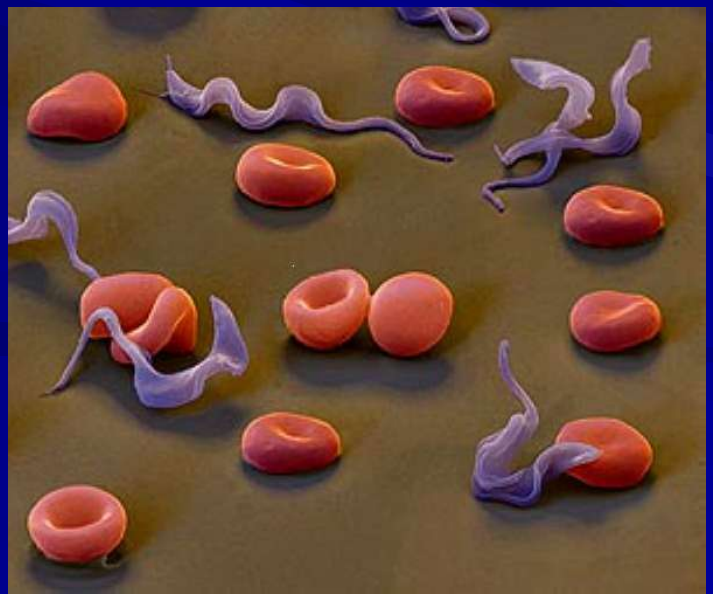
Equine trypanosomiasis

Type species	Cattle	Goats Sheep	Pigs	Horses	Donkeys
T.brucei	+	++	+	+++	++
T.evansi	++	+	++	+++	++
T. equiperdum	-	-	-	+++	++
T.congolense	+++	++	+	++	++
T.vivax	+++	++	-	++	+

Reservoirs !!!

Equine trypanosomiasis

- Very often mixed infections :
- If *T.brucei* and *T.evansi* : no problem because they can be treated with the same drug
- But in case of *T.evansi* or *T. brucei* + *T.congolense* and/or *T. vivax* : Problems because you have to treat with TWO different drugs



Equine trypanosomiasis

- **Epidemiology and Diagnosis** in Donkeys

  will be treated by Andrew TRAWFORD

- **Treatment** and **Chimioprophylaxis**
- 4 families of trypanocidal drugs still available
  - *Phenanthridinium*: **Isometamidium** and **Homidium**
  - *Aromatic amidines* : **diminazene di-aceturate**
  - *Quinoline pyrimidine*: **Quinapyramine sulphate**
  - **Melarsomine**

Equine trypanosomiasis

- **Curative and Prophylactic:**

  - **ISOMETAMIDIUM** (prophylactic up to 3-4 months) (**IV** 0,25MG/Kg)
  - **HOMIDIUM** (prophylactic up to 6-7 weeks)
    - **chloride** : can be dissolved in **cold water**
    - **bromide**: - can be dissolved **only in warm water**
      - **toxic** (Bromide is a heavy metal)

Same family :resistance against one, also resistance against the other

Good efficacy against ***T. congolense, T.vivax***

Not against T.evansi and T. brucei

Equine trypanosomiasis

- **Curative treatments**

- **DIMINAZENE** di-aceturate: **only TREATMENT**
  3,5 mg /Kg Bwth: ***T. congolense , T.vivax***
  7,0 mg/Kg Bwth: ***T.brucei, T.evansi***

At 7,0 mg/Kg Bwth Diminazene is toxic => Nervous signs
Diminazene di-aceturate is also active against Piroplasmosis (higher dosis)

- **Quinapyramine sulphate**
  - Lot of resistance (created very fast , 6 months after first treatment)
  - **Toxic** (animals have to rest 4-6 hours before)
  - In weak animals devide the dose in two, with 4 to 6 hours interval
  - efficacy against *T. **congolense, T.vivax, T. brucei and T. evansi***

- **MELARSOMINE**
  - Very Safe
  - Very good efficacy against ***T.brucei, T.evansi and T. equiperdum***

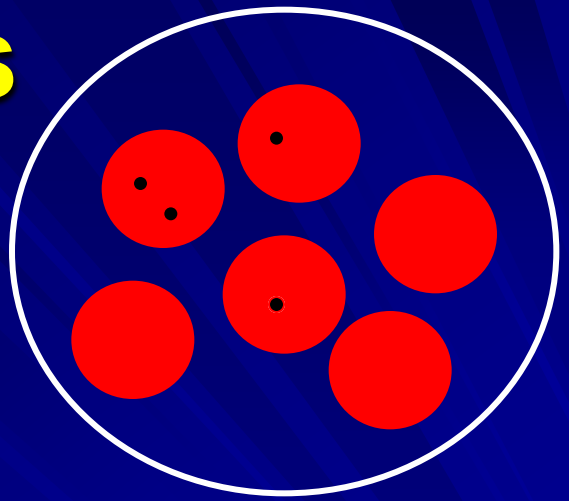
Equine trypanosomiasis

- ***Causes of apparent drug resistance, lack of efficacy***

- **QUALITY OF TRYPANOCIDAL DRUGS USED!!!!**
- Underdosage
- Incorrected calculated dose volume
  - Incorrect injection technique – short needles
  - not sterile / abscessation
  - early withdrawal of the needle
  - leack back of product from injection site
- **AVOID STRESS**
  - Malnutrition
  - Lactation
  - **Working and trekking**
  - **Intercurrent diseases (Immunodepression)**

  => Relapse and/or New Infection
- **REAL RESISTANCE**
- **Reduce tsetse numbers and trypanosome challenges (avoid areas with lot of tsetse flies and biting flies and use insecticidal drugs)**

Equine Piroplasmosis



- Tick-Borne Disease
- Caused by ***Babesia equi*** and *Babesia caballi*
- Clinical symptoms – fever (> 40°C)
  - anorexia
  - progressive anaemia
  - icterus (yellow mucous membranes)
  - pregnant mares may abort
  - **urine** : dark yellow ,orange or brown
  - Tachycardia
  - general weakness
  - sometimes light oedematous swelling of the limbs
    (but NOT as Tryp's, AHS and helminth infestation)
  - Abortion, neonatal death (icterus) after colostrum intake
- Vector : Ticks (*Rhipicephalus, Hyaloma, Boophilus*)

- Different forms : peracute : found dead or moribund
  acute
  subacute
  chronic : inappetance => weight loss
  poor performances

Equine Piroplasmosis

- **Diagnosis**
  - Clinical examination
  - Examination of Blood smear
  - CF (complement fixation test)

- **CONTROL**

- **Diminazene di-aceturate** (at high doses , up to 11 mg/Kg Bwth,
  TOXIC for Horses and Donkeys
- **IMIDOCARB** 2 mg/Kg Bwth (***Carbesia***) 4 weeks of protection
  Repeated doses (2 to 4)may be required for both drugs to sterilise the animals
- **Tetracycline** : 2 or more days at 5,5 mg/Kg Bwth

- **AVOID TICKS ON HORSES and DONKEYS !!!!!**

Equine Viral Diseases

- **Equine Rhinopneumonitis (EHV 4)**
  - Young animals
  - Fever and anorexia
  - Serous to mucopurulent discharge
  - Conjunctivitis
  - => secondary bacterial infection: **Pneumonia**
- **Equine Abortion virus (EHV1 and AHV3)**
  - Most important cause of **abortion** in mares and donkeys without any other **clinical sign**
  - **6 to 11 months of gestation**
  - **Horses and donkeys may abort months or years after primary infection**
- **EHV infections are followed by lifelong , latent infection**
- **EHV1 and EHV4 sometimes associated with neurological signs , ataxia, paralysis fore and hind limbs**
- **Prevention**: vaccination with inactivated (killed) vaccine

Equine Viral Arteritis

- One serotype: BUCYRUS strain
- In horses and donkeys (reservoir)
- **Means of transmission**:
  - Respiratory route by the acutely infected animal
  - By venereal route : infected stallion (persistent infected)
- **Clinical signs** : from none to abortion and fatal in very young foals
  - But also possible: fever, depression , anorexia oedema , nasal discharge , pneumonia.
- Most recover completely without symptomatic treatment
- **Diagnosis**: virus isolation
- **Control**: vaccination live and inactivated vaccines

RABIES Virus Infection

- Transmitted by infected dogs , jackals sometimes also cattle (kudu),cats and wild animals as foxes and bats
- Incubation after a bite is between two up to six weeks
- Allways FATAL OUTCOME in non-vaccinated animals

Rabies

Clinical Course

Three overlapping phases:

- **Prodomal phase** (marked change in behaviour)
- **Acute neurologic or « furious » phase**
- **Paralytic or « dumb » phase**

All three phases to death is a matter of 4 to 8 days after the onset of clinical signs

Rabies in equine and donkeys

Clinical Course

- **Prodomal phase**

May last for 2 – 3 days characterised by a **marked change in behaviour**

- Animals may appear anxious, uneasy and irritable and increased sensitivity to noise and light
- Sullen animals may become more alert, restless and friendly, and more friendly ones may become aggressive and attack without provocation, or become more depressed and withdrawn, hiding in dark places
- during this phase there may be a slight pyrexia
- self-mutilation at the site of the bite
- pica

- **Neurologic or « furious » phase**

- animals become increasingly nervous, irritable and vicious, attack and bite
- become more and more aggressive and agitated and often biting at any object
- show far-off look in the eyes
- muscle tremors, flacidity or incoordination usually develop
- eventually (as in humans) spasm and paralysis of muscles of deglutition => difficulty in swallowing and drooling and frothing saliva
- animals want to drink but can not (in rabid humans => hydrophobia)

Rabies

Clinical Course

Paralytic or « Dumb » phase

- Muscular incoordination and convulsions gradually lead to generalised paralysis, => coma and death
- During this phase inability to swallow may cause excessive drooling or foaming at the mouth
- In horses rabies can produce **colics (with heavy pain)** and **excitement, aggressive behaviour** (attack with biting and kicking)

- horses may assume a sitting-dog posture

Inability to swallow may lead owners and Veterinarians into thinking it is choking from a swallowed foreign body

Saliva of horses with Rabies contains lot of rabies virus : **DANGER FOR HUMAN BEINGS** and for Other HORSES and DONKEYS

Rabid Horse

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Rabies in Equine and Donkeys

- **Control**

Through Vaccination

Inactivated vaccine (=killed vaccine)

- **Protocol The vaccination schedule depends first on the horse age:**
- **1/ Over 6 months: once and annual booster**

- **2/ less than 6 months, two situations:**

- From vaccinated mares:

1 injection from 4 months of age,

- From unvaccinated mares :

1 injection from 2 months of age

In the two groups, an additional injection one month later is necessary , than one annual booster injection .

TETANUS

- Tetanus is a **non-contagious** , almost **invariably fatal neurointoxication** in horses and donkeys
- The disease is caused by ***Clostridium tetani*** and usually develops after **DEEP, PENETRATING WOUNDS (nails in hoof, castration, bites, permanent tooth eruptions, umbilical stump of neonates…)**
- **In the damaged tissue the bacteria will develop (anaerobic)** and produce its potent neurotoxin, **TETANOSPASMIN** which causes the **rigidity** and **muscle spasms**
- Tetanus occurs wherever animals are farmed
- **Horses and human** beings are the **most sensitive** to the effects of toxins
- Spores of ***C.tetani*** are present in soil , dust and the faeces of most herbivores, so also in horse manure (***C.tetani*** is part of the normal gut flora)

TETANUS

- Clinical signs

Incubation period : from 3 days to one or three weeks

(exceptionnaly several months or even several years)

Initially a general increase in **stiffness** of the muscles followed very quickly by tetanic spasms of all muscles,in particular when external stimuli (handling , noise) or even sights.

- Prolapse of the third eyelid
- Flared nostrils
- Colic, retention of urine, sweating , dyspnoea, **staring eyes**

Total stiffness of the hind legs

Death usually follows within 12 to 72 hours

TETANUS

- **Diagnosis**

  - Clinical signs

- **Control**

  wound : - local disinfection

  - local infiltration of Penicillin G

  - Hyperimmune serum

- **VACCINATION** : with tetanus toxoid

- **First vaccination**: 2 times at 3 to 4 weeks interval

- **Annual booster**: 1 injection

- **Foals** are protected by colostrum of mares which are vaccinated up to the age of 10 weeks

Tetanus and Rabies

- For ALL persons working with horses and donkeys directly or indirectly, regular vaccination against Rabies and Tetanus is a MUST , because the risk of being COTAMINATED with these two VERY DANGEROUS and FATAL Diseases is VERY HIGH

Thank you very much for your attention